

THE NEW INTERNATIONAL YEAR BOOK

A COMPENDIUM OF THE WORLD'S
PROGRESS

FOR THE YEAR

1930

EDITOR

HERBERT TREADWELL WADE

NEW YORK
DODD, MEAD AND COMPANY

1931

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PREFACE

THE NEW INTERNATIONAL YEAR BOOK in its 29th volume covering the year 1930 appears at a time when a larger and more intelligent reading public is demanding, as never before, concise and authoritative information on world events and activities. In scope and treatment, the NEW INTERNATIONAL YEAR BOOK vindicates its title. The development of the international mind and of general interest in world affairs has reached a point that the founders of the YEAR BOOK in the last century hardly could have foreseen. A world picture must be presented of business depression in EUROPE, of revolutions in SOUTH AMERICA, of political unrest in INDIA, and of governmental chaos in CHINA. These are no longer isolated events, but are interconnected with world conditions. Political and economic circumstances are world-wide in their bearings and relations, while trends of philosophic and scientific thought are localized no longer in communities or nations. World agencies such as the LEAGUE OF NATIONS and the WORLD COURT are the concern of all, proposals for a UNITED STATES OF EUROPE meet with universal discussion and criticism. A FINANCIAL REVIEW must consider world activities and tendencies in a period of universal economic depression, when trade movements are so interrelated that the producer of RUBBER in the Far East cannot disregard the manufacture of AUTOMOBILES in the United States.

But from generalities and world trends, it is necessary to pass to particular lands and governments, and the NEW INTERNATIONAL YEAR BOOK is placed before its readers just as soon as the nations of the world have prepared their balance sheets and compiled their definite statistics and records. Such countries as GREAT BRITAIN with its Labor Government and economic and Imperial problems must be considered no less than ITALY under the influence of its unique and dominating personality. The problems of GERMANY seeking to meet the REPARATIONS burden of the World War continued to hold attention, while FRANCE, still endeavoring to maintain its hegemony of Europe, notwithstanding frequent changes of ministry and uncertain national political conditions due to the even balance of representation in the halls of Government, presented the usual engrossing picture. RUSSIA reported the progress of its Five Year Plan in its vast and world-compelling experiment in COMMUNISM. INDIA, with its mystical crusader Mahatma Gandhi, during 1930 became at least articulate and its voice was heard at the Round Table Conferences in London, where the rights and aspirations of its people were expressed with force, if not always with unanimity.

In the UNITED STATES, economic depression, as described under BANKS AND BANKING and BUSINESS REVIEW, concerned and affected all. UNEMPLOYMENT shared national attention with CRIME and PROHIBITION, with political conditions uncertain and far from defined either in nation or party.

Passing from politics to literature, the YEAR BOOK, as usual, presents its authoritative summaries again in the international field, as in addition to ENGLISH AND AMERICAN LITERATURE, FRENCH, GERMAN, ITALIAN, SCANDINAVIAN, SPANISH, and SPANISH-AMERICAN literatures are summarized in their various distinctive spheres, while under PHILOLOGY, MODERN, and PHILOLOGY, CLASSICAL, the efforts of other workers in literature and criticism are recorded. The THEATRE and MOTION PICTURES are discussed critically and comprehensively as is MUSIC. Fine arts are

PREFACE

treated under ART EXHIBITIONS, ART MUSEUMS, ART SALES, PAINTING, SCULPTURE, and ARCHITECTURE, while in PHILOSOPHY, PSYCHOLOGY, and PSYCHICAL RESEARCH developments are related. In pure science the reader of the YEAR BOOK has learned to consult the reviews of ANTHROPOLOGY, BOTANY, CHEMISTRY, GEOLOGY, MINERALOGY, and ZOÖLOGY. This year a new contributor presents the PROGRESS OF MEDICINE and the PROGRESS OF SURGERY in attractive and comprehensive form, alluding to the more notable developments.

EDUCATION always presents food for discussion and that article, as well as UNIVERSITIES AND COLLEGES, deals with the general aspects of the situation, while under the separate institutions their developments and status are treated. Likewise, the religious denominations are far from maintaining a static position, and interested authorities from the various churches have prepared authoritative information, not merely statistical, but affording a sympathetic understanding of their work during the year. In applied science, engineering, and transportation, the YEAR BOOK presents its usual record. AGRICULTURE at home and abroad aroused the widest interest and attention, with the Farm Loan Act in the United States and new or proposed tariffs in other countries.

BIOGRAPHY is by no means the least of the YEAR BOOK's concerns, and the notices of prominent persons who have died during the year adequately supplement and bring up-to-date any encyclopedia. A general feature that has been developed is the inclusion of appropriate bibliographical notes with many of the articles, a departure that has been found especially useful by our readers.

In conclusion, the Editor desires to express his thanks to the many friends, official and otherwise, who have aided him and his associates. The United States and other governments continue to show their valuable interest in placing at the disposal of the YEAR BOOK accurate and carefully compiled information. Officials of educational institutions and other organizations have shown their usual care and friendliness in forwarding their summaries for the year, while the large industrial organizations have assisted with their valuable educational and other resources. In conclusion, the record of the year 1930 is submitted with the confident belief that it will prove no less interesting than that of its predecessors.

HERBERT TREADWELL WADE

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KEY TO PRONUNCIATION

| | | | |
|-----------|---|---|--|
| æ | as in ale, fate. Also see ē , below. | ð | as in the Spanish Almodovar, pulgada, where it is nearly like <i>th</i> in English then, this. |
| ā | " " senate, chaotic. | g | " " go, get. |
| ā | " " glare, care, and as <i>e</i> in there. See ē , below. | q | " " the German Landtag, and <i>ch</i> in Feuerbach, buch; where it is a guttural sound made with the back part of the tongue raised toward the soft palate, as in the sound made in clearing the throat. |
| ā | " " am, at. | h | " <i>j</i> in the Spanish Jijona, <i>g</i> in the Spanish gila; where it is a fricative somewhat resembling the sound of <i>h</i> in English hue or <i>y</i> in yet, but stronger. |
| ā | " " arm, father. | hw | " <i>wh</i> in which. |
| ā | " " ant, and final <i>a</i> in America, armada, etc. In rapid speech this vowel readily becomes more or less obscured and like the neutral vowel or a short <i>u</i> (<i>ū</i>). | x | " <i>ch</i> in the German ich, Albrecht, and <i>g</i> in the German Arensburg, Mecklenburg; where it is a fricative sound made between the tongue and the hard palate toward which the tongue is raised. It resembles the sound of <i>h</i> in hue, or <i>y</i> in yet; or the sound made by beginning to pronounce a <i>k</i> , but not completing the stoppage of the breath. The character <i>x</i> is also used to indicate the rough aspirates or fricatives of some of the Oriental languages, as of <i>kh</i> in the word Khan. |
| α | " " final, regal, where it is of a neutral or obscure quality. | ŋ | " " in sinker, longer. |
| ā | " " all, fall. | ng | " " sing, long. |
| ā | " " eve. | n | " " the French bon, Bourbon, and <i>m</i> in the French Étampes; where it is equivalent to a nasalizing of the preceding vowel. This effect is approximately produced by attempting to pronounce "onion" without touching the tip of the tongue to the roof of the mouth. The corresponding nasal of Portuguese is also indicated by <i>n</i> , as in the case of São Antão. |
| ā | " " elate, evade. | sh | " " shine, shut. |
| ē | " " end, pet. The characters ē , ā , and ā are used for ā , ae in German, as in Baedeker, Gräfe, Händel, to the values of which they are the nearest English vowel sounds. The sound of Swedish ā is also sometimes indicated by ē , sometimes by ā or ā . | th | " " thrust, thin. |
| ē | " " fern, her, and as <i>i</i> in sir. Also for ō , oe , in German, as in Göthe, Goethe, Ortel, Oertel, and for eu and oeu in French, as in Neufchâtel, Crèveceur; to which it is the nearest English vowel sound. | th | " " then, this. |
| e | " " agency, judgment, where it is of a neutral or obscure quality. | zh | " <i>z</i> in azure, and <i>s</i> in pleasure. |
| i | " " ice, quiet. | An apostrophe ['] is sometimes used to denote a glide or neutral connecting vowel, as in tā'b'l (table), káz'm (chasm). Otherwise than as noted above, the letters used in the respellings for pronunciation are to receive their ordinary English sounds. When the pronunciation is sufficiently shown by indicating the accented syllables, this is done without respelling; as in the case of very common English words, and words which are so spelled as to insure their correct pronunciation if they are correctly accented. Pronunciation is discussed in the NEW INTERNATIONAL ENCYCLOPEDIA . | |
| i | " " quiescent. | | |
| i | " " ill, fit. | | |
| ō | " " old, sober. | | |
| ō | " " obey, sobriety. | | |
| ō | " " orb, nor. | | |
| ō | " " odd, forest, not. | | |
| o | " " atom, carol, where it has a neutral or obscure quality. | | |
| oi | " " oil, boil, and for eu in German, as in Feuerbach. | | |
| oo | " " food, fool, and as <i>u</i> in rude, rule. | | |
| ou | " " house, mouse. | | |
| ū | " " use, mule. | | |
| ū | " " unite. | | |
| ū | " " cut, but. | | |
| ū | " " full, put, or as oo in foot, book. Also for ū in German, as in München, Müller, and <i>u</i> in French, as in Buchez, Budé; to which it is the nearest English vowel sound. | | |
| ū | " " urn, burn. | | |
| y | " " yet, yield. | | |
| h | " " the Spanish Habana, Córdoba, where it is like a <i>v</i> made with the lips alone, instead of with the teeth and lips. | | |
| ch | " chair, cheese. | | |

THE NEW INTERNATIONAL YEAR BOOK

AAKJÆR, òk'jær, JEPPE. A Danish author, died in Copenhagen Apr. 22, 1930. He was born near Horsens, Jutland, Sept. 10, 1866. He was a "writer of the soil," portraying in his novels, poems, and plays the life of the peasants of Denmark. Among his works are: *Vadmelsfolk* (1912); *Vredens Børn* (1913); *Jens Langknis* (1915); *Konkenschus* (1925); and *Langs Karupaaens Bred* (1929).

ABNORMAL PSYCHOLOGY. See **PSYCHOLOGY**.

ABORTION IN LIVESTOCK. See **VETERINARY MEDICINE**.

ABYSSINIA. See **ETHIOPIA**.

ACADEMIES OF SOUTH AMERICA. See **SPANISH AMERICAN LITERATURES**.

ACADEMY, FRENCH (ACADÉMIE FRANÇAISE). The oldest of the five academies which make up the Institute of France and officially considered the highest; founded in 1635, reorganized in 1816. The membership is limited to 40. The list of the Immortals at the beginning of 1930, in order of their election, was as follows: Paul Bourget; Gabriel Hanotaux; Henri Lavedan; René Bazin; Maurice Donnay; Raymond Poincaré; Eugène Brieux; René Doumic; Marcel Prévost; Henri de Régnier; le maréchal Louis Lyautey; Pierre de La Gorce; Henri Bergson; le maréchal Joseph Joffre; Louis Barthou; Mgr. Alfred Baudrillart; Jules Cambon; Henri Bordeaux; Joseph Bédier; André Chevrillon; Pierre de Nolhac; Georges Goyau; Henri Brémond; Georges de Porto-Riche (q.v., died Sept. 5, 1930); Edouard Estaunié; Henri Robert; Camille Jullian; Georges Lecomte; Émile Picard; Albert Besnard; Louis Bertrand; Auguste de Caumont, duc de La Force; Paul Valéry; Abel Hermant; Émile Mâle; Louis Madelin; Maurice Paléologue; and le maréchal Henri Pétain.

At the meeting of the academy on May 22, 1930, the chairs formerly occupied by the late Georges Clémenceau and the late Count François de Curel were filled by the elections of André Chaumeix and Charles Le Goffic. M. Chaumeix, one of the most eminent of French journalists, has served as editor of the *Gazette des Beaux-Arts*, as political and literary editor, and then as editor-in-chief, of the *Journal des Débats*, and as director of the *Revue de Paris* and of the *Figaro*. M. Le Goffic, the Breton novelist and poet, has gained renown for his historical romances and for his critical and sociological works. He was thrice chosen laureate by the academy, which also crowned two of his works: *Le Crucifié de Kéralès* in 1892 and *Sur la Côte* in 1897. At the annual

meeting on Nov. 15, 1930, announcement was made of the completion of the grammar upon which the academy has been engaged for almost three centuries, in carrying out its special function to improve and conserve the French language.

ACADEMY, ROYAL SPANISH. See **SPANISH LITERATURE**.

ACADEMY OF ARTS AND LETTERS, AMERICAN. A society founded in 1904 by members of the National Institute of Arts and Letters, its charter of incorporation being approved by Act of Congress Apr. 17, 1916. It corresponds to the French Academy, its membership being limited to 50 chairs, and vacancies caused by death are filled by election by the members from the National Institute on the basis of lifetime achievement in literature, painting, sculpture, architecture, and music.

The membership of the academy as of Dec. 1, 1930, consisted of the following in the order of their election: Daniel Chester French, Robert Underwood Johnson, Henry van Dyke, Edwin Howland Blashfield, George Whitefield Chadwick, George de Forest Brush, Bliss Perry, Abbott Lawrence Lowell, Nicholas Murray Butler, Owen Wister, Herbert Adams, Augustus Thomas, Timothy Cole, Cass Gilbert, Robert Grant, Frederick MacMonnies, William Gillette, Paul Elmer More, Gari Melchers, Elihu Root, Brand Whitlock, Hamlin Garland, Paul Shorey, Charles Adams Platt, Archer Milton Huntington, Childé Hassam, David Jayne Hill, Lorado Tait, Newton Booth Tarkington, Charles Dana Gibson, John Charles Van Dyke, Royal Cortissoz, Henry Hadley, Charles Downer Hazen, George Pierce Baker, Edwin Anderson Alderman, Edward Channing, Wilbur L. Cross, Herman A. MacNeil, John Russell Pope, Edwin Arlington Robinson, James Earle Fraser, John Huston Finley, William Mitchell Kendall, Edwin Markham, Robert Frost, Irving Babbitt, James Truslow Adams, Edith Wharton, and George Grey Barnard.

On Nov. 13-14, 1930, the Academy opened its second building, containing a large auditorium and an art gallery, at 632 West 156th Street, and entertained, in honor of the occasion, distinguished delegates representing the Academies of 10 countries. The ceremonies were opened by the annual meeting on November 13. In connection with this session the following medals were awarded: The gold medal of the Academy for distinction in sculpture, to Anna Hyatt Huntington; the Howells medal for the best American fiction published during the last five years, to Willa Cather; the

Academy's medal for good diction on the stage, to George Arliss; and the gold medal of the Academy for good diction on the radio, to Alwyn Bach. The new members elected were: Robert Frost, Irving Babbitt, James Truslow Adams, Edith Wharton, and George Grey Barnard. The English poets, Sir William Watson and John Masefield, were elected corresponding members.

The annual meeting was followed in the afternoon of November 13 by formal dedication of the auditorium of the new building and dedication of the bronze doors to both buildings designed by Herbert Adams, a member of the Academy, and presented by an anonymous friend. On this occasion the keys to the new building were turned over to the president by the architect, Cass Gilbert, himself an Academician, and an ode was read by Robert Underwood Johnson, secretary of the Academy. There was also opened in the art galleries of the two buildings an exhibition of the works of the living artists members of the National Institute of Arts and Letters (which includes the members of the Academy), to be continued until May 15, 1931.

At the morning session on November 14 the Academy associated itself with the celebration of the 2000th anniversary of the birth of Vergil, the principal address entitled "Vergil's Two Thousand Years" being given by Dr. John H. Finley, on the Evangeline Wilbour Blashfield Foundation. In the afternoon the medals, which were awarded at the annual meeting were publicly presented to the recipients, and in the evening the Academy presented its fourth concert of all-American music in the new auditorium. Dr. Henry Hadley conducted the Manhattan Symphony Orchestra and was assisted by the Mendelssohn Glee Club.

The officers of the Academy in 1930 were: President, Nicholas Murray Butler; secretary, Robert Underwood Johnson; directors, Herbert Adams, Royal Cortissoz, Wilbur L. Cross, Hamlin Garland, Robert Grant, Cass Gilbert, Archer Milton Huntington. The offices of chancellor and treasurer were not filled. Headquarters are at 633 West 155th Street, New York City.

ACADEMY OF SCIENCES. See NATURAL ACADEMY OF SCIENCES.

ACCIDENTS. See RAILWAY ACCIDENTS; WORKMEN'S COMPENSATION.

ADAMOWSKI, JOSEPH. A Polish-American cellist, died in Cambridge, Mass., May 8, 1930. He was born in Warsaw, Poland, July 4, 1862, and studied at the Warsaw Conservatory under Kontski and Goebelt and at the Moscow Conservatory under Fitzenhagen and Tchaikovsky. He made his debut in Warsaw in 1883, and after teaching for several years at the Cracow Conservatory traveled in 1888 as a concert soloist in Russia and Germany. In 1889 he came to the United States, joining the Boston Symphony Orchestra with which he was associated until 1907. He also founded the Adamowski Quartet and the Adamowski Trio. In 1903 he became professor of cello and director of ensemble and quartet classes at the New England Conservatory of Music. He was founder and director of the Boston Symphony Orchestra's pension institution and a trustee of the Paderewski Prize Fund, which had been established by the Polish pianist to encourage American musical effort. He also edited *Schirmer's Library of Musical Classics*.

ADAMS, EPHRAIM DOUGLASS. An American educator and historian, died in Palo Alto, Calif.,

Sept. 1, 1930. He was born in Decorah, Iowa, Dec. 18, 1865, and was graduated from the University of Michigan in 1887. On receiving the Ph.D. degree from his Alma Mater in 1890 he became assistant professor of history and sociology at the University of Kansas. In 1894 he was appointed associate professor, and in 1889 professor of European history. He was made associate professor of history at Leland Stanford Jr. University in 1902 and, four years later, professor. He was also director of the Hoover War Library. In 1917 the LL.D. degree was conferred on him by Grinnell College, and in 1918 the Litt.D. degree by Tufts College. He was an authority on American-British relationships, his published works including: *The Control of the Purse in the United States Government* (1894); *The Influence of Grenville on Pitt's Foreign Policy* (1904); *British Interests and Activities in Texas* (Albert Shaw Lectures, Johns Hopkins University, 1910); *The Power of Ideals in American History* (Dodge Lectures on Citizenship, Yale University, 1913); *Great Britain, America, and Democracy* (1919); and *Great Britain and the American Civil War* (2 vols., 1925).

ADCOCK, (ARTHUR) ST. JOHN. A British novelist and journalist, died in Richmond, Surrey, June 9, 1930. He was born in London, Jan. 17, 1864. Although educated for the law he abandoned it in 1893 to devote himself to literature. He contributed numerous essays, poems, and short stories to various periodicals and published several books on London life, including: *East End Idylls* (1897); *From a London Garden* (1903); *London Etchings* (1904); *London from the Top of a Bus* (1906); *Famous Houses and Literary Shrines in London* (1912); *Modern Grub Street and Other Essays* (1913); *The Bookseller's London* (1913); *City Songs* (1926); and *The Glory That Was Grub Street* (1928). He was also the author of three long satirical poems: *Tod MacMammon Sees His Soul* (1920); *Exit Homo* (1921); and *The Divine Tragedy* (1922), which reflected the post-war pessimism. He served as acting editor of the *Bookman* in 1908, and in 1923 succeeded to the editorship. He was a fellow of the Royal Society of Literature.

ADDISON'S DISEASE. See MEDICINE, PROGRESS OF.

ADELBERT COLLEGE. See WESTERN RESERVE UNIVERSITY.

ADELPHI COLLEGE. A nonsectarian college of arts and sciences for women in Garden City, N. Y., incorporated in 1896. Adelphi was located in Brooklyn, N.Y., until the autumn of 1920 when it was transferred to its new home in Garden City, where it has a campus of about 70 acres and three buildings which can accommodate 1000 students. The enrollment for the autumn term of 1930 was 582 students. The faculty numbered 58. A department of speech was added during the year. The endowment was \$889,686, while the income for 1929-30 was \$254,167. The library contained 28,348 volumes. President, Frank Dickinson Blodgett, LL.D.

ADEN, ʾāden or ʾāden. An important, fortified coaling-station and transshipment point, situated on a volcanic peninsula on the southwestern coast of Arabia about 1000 miles east of the Strait of Bab-el-Mandeb; belonging to Great Britain since 1839. The area of the peninsula is 75 square miles and that of Aden protectorate, including the hinterland, the peninsula of Little Aden, and the island of Perim, 9000 square miles. Population of

Aden and Perim in 1921, 54,923, largely Moham-medan.

The principal commercial centre of the Arabian peninsula, Aden's imports of merchandise in 1928-29 totaled 76,488,000 rupees (\$27,895,000), compared with 81,182,000 rupees (\$29,478,000) in 1927-28. Merchandise exports in 1928-29 were 61,882,000 rupees (\$22,568,000), compared with 63,776,000 rupees (\$23,157,000) in the previous year. Imports and exports of treasure in 1928-29 were 6,318,000 and 6,201,000 rupees, respectively. The chief commodities of trade were cotton piece goods, grain, hides and skins, tobacco, coal, gums, and provisions. Salt and cigarettes are manu-factured locally. In 1928-29, 1635 merchant ves-sels of 5,788,548 net tons entered the port of Aden. Attached to Aden are the Kuria Muria Is-lands, ceded by the Sultan of Muscat for use as a landing for the Red Sea cable. On Aug. 15, 1929, control of the military government was trans-ferred from the Viceroy of India to the Resident and Commander-in-chief at Aden. Internal ad-ministration remained in the hands of the Gov-ernment of India. Resident and Commander-in-chief in 1930, Lieut.-Col. Sir Stewart Symes.

ADULT EDUCATION, AMERICAN ASSOCIA-TION FOR. An organization formed in 1926 to serve as a source of information concerning adult edu-cation activities and particularly to act as a clearing house through which the experience and findings of every adult educational enterprise may be made available to others. The association also seeks to advise those who are already en-gaged in adult education, to aid those who are planning to initiate such work, to publish and secure the publication of material useful to those in the field, and to assist in studies of problems fundamental to adult education. Its view is that adult education should count in its enrollment those men and women, young and old, who are no longer in contact with formalized education, whose primary interest lies in a vocation but who possess a secondary interest in their own edu-cational improvement as a sustained and contin-uing process.

The association continued its coöperation dur-ing the year with the People's Institute toward the working out of teaching methods and subject mat-ter for adult education in experimental classes in various sections of Greater New York. An investi-gation of the ability of adults to learn was made by Edward L. Thorndike and his associates at Teachers College, Columbia University, under the auspices of the association and was published in 1928 under the title, *Adult Learning. Education Tunes In*, published by the association in 1930, was a report of a six months' survey of the field of educational broadcasting, one of the results of which was the organization of the National Ad-visory Council on Radio in Education, with head-quarters in New York City. Other studies, made at the instance of the association, included the reading habits and interests of adults, prison edu-cational programmes, correspondence-school methods, the little-theatre movement in relation to adult education, and the continuing education of collegiate alumni.

The national conference of the association was held in Chicago May 12-15, 1930. The officers elected were: President, Newton D. Baker; vice presidents, Dorothy Canfield Fisher, Everett Dean Martin, C. F. D. Belden, Leon J. Richard-son, Walter Dill Scott; chairman, James E. Rus-sell; treasurer, J. H. Puelicher; secretary, Mar-

garet E. Burton; director, Morse A. Cartwright. The officers and 14 other members constitute the executive board of the association. Headquarters are at 60 East Forty-second Street, New York City.

ADVANCEMENT OF SCIENCE, AMERICAN ASSOCIATION FOR THE. This organization was founded in 1848 to advance science, to give a stronger and more general impulse and more systematic direction to scientific research, and to procure for the labors of scientific men in-creased facilities and a wider usefulness. In 1930 its membership included more than 19,000 in-dividuals interested in the advancement of science and the progress of knowledge and education. There were also 122 autonomous and independ-ent associated scientific societies, of which 91 were officially affiliated with the association, 25 being local academies of science. The asso-ciation has 15 sections representing the main current subdivisions of science: Mathematics, physics, chemistry, astronomy, geology and geo-graphy, zoölogical sciences, botanical sciences, anthropology, psychology, social and economic sciences, historical and philological sciences, en-gineering, medical sciences, agriculture, and edu-cation. Its activities are of three kinds: Those related to the holding of the annual and other meetings; those related to publications; and those related to the advancement of knowledge by research.

The eighty-seventh annual meeting of the as-sociation was held in Cleveland, Ohio, Dec. 29, 1930, to Jan. 3, 1931, with an attendance of more than 5000 scientists from all parts of the United States and Canada. There also were 40 scientific organizations meeting with the association. At its 300 sections about 1800 papers and addresses were given by 2000 speakers. The science exhibi-tion also was well developed, with exhibits by com-mercial firms, individuals, and scientific organ-izations. Dr. Robert A. Millikan, director of the Norman Bridge Physical Laboratory of the Cali-fornia Institute of Technology, delivered the retiring presidential address on "Atomic Dis-integration and Atomic Synthesis," expressing the belief that the creation of the universe is a continuing process. At a joint symposium ses-sion of the American Society of Naturalists, the Botanical Society of America, and the American Society of Zoölogists on "The Future of Man in the Light of His Past," Dr. A. V. Kidder of the Carnegie Institution of Washington presented the view of the archæologist; Prof. William F. Ogburn of the University of Chicago, that of the sociologist; and Prof. E. M. East of Harvard University, that of the geneticist. Dr. C. E. K. Mees of the Eastman Kodak Company spoke on "The Science of Photography," exhibiting the first photograph of the curvature of the earth taken on super-sensitive plates from an airplane; Dr. M. M. Slipher, director of the Lowell Ob-servatory, Flagstaff, Ariz., on "Searching Out Pluto, Lowell's Trans-Neptunian Planet"; and Dr. Paul R. Heyl of the U. S. Bureau of Stand-ards, on "Weighing the Earth," in which he described the process by which the weight of the earth had been found to be about six thousand million million million tons.

The annual association prize of \$1000 for the paper describing a noteworthy contribution to science presented at the annual meeting was awarded to M. A. Tuve, L. R. Hafstad, and O. Dahl, of the Carnegie Institution for their paper on

high-voltage tubes. The succeeding annual meeting was to be held in New Orleans, La., Dec. 28, 1931, to Jan. 2, 1932.

The official organ of the association is a weekly journal, *Science*. In addition, the association issues the *Scientific Monthly*, an illustrated magazine of timely articles of general interest by eminent men of science; prepares an elaborate programme for each annual meeting; and publishes at four-year intervals a volume of *Summarized Proceedings*, including a directory of members. The permanent endowment of the association, the income from which is employed to advance scientific research, amounted on Sept. 30, 1930, to \$162,226; grants are made annually to individuals or scientific organizations to promote research. Two regional divisions are under the auspices of the association: The Pacific division, including the Pacific States, Alaska, the Philippines, and the Hawaiian Islands; and the South-western division, including Arizona, New Mexico, Colorado, western Texas, and northern Mexico. These divisions are autonomous, holding annual and other meetings and engaging in special projects in their respective fields.

The president of the association for 1930 was Thomas Hunt Morgan, director of the Kerekhoff Laboratories of the Biological Sciences, California Institute of Technology. The president-elect for 1931 was Franz Boas, professor of anthropology at Columbia University. The other officers who were to serve until 1932 were: Permanent secretary, Charles F. Roos of Cornell University; general secretary, Burton E. Livingston of the University of Chicago; and treasurer, John L. Wirt of the Carnegie Institution of Washington. Headquarters are in the Smithsonian Institution Building, Washington, D. C.

ADVENT CHRISTIANS. See ADVENTISTS.

ADVENTISTS. The Advent Movement had its origin in America with William Miller, who believed not only in the coming of Christ in person, power, and glory, but that such an advent was at hand and that the date might be fixed with some definiteness. The movement, however, began in England and on the Continent, under the leadership of the Rev. Hugh McNeile and the Rev. Edward Irving, in England, and the Rev. Joseph Wolfe, DD., LL.D., in Prussia. A Prophetic Conference was held in Albury Park in 1836, at the residence of Henry Drummond, Esq., afterwards a member of the British Parliament, with "eight days of serious study of the prophecies," at which the Rev. Hugh McNeile presided. The first general gathering in America of those interested took place in Boston in October, 1840, the movement at that time being wholly within the existing churches, but in April, 1845, a conference was held in Albany, N. Y., at which the adherents of the Adventist doctrine were organized and a declaration of principles adopted, embodying the views of Mr. Miller. For the next ten years this organization included practically all the Adventists, but gradually separate bodies developed, beginning with the Advent Christian Church, in 1855, and including the Seventh-Day Adventists, organized in 1860; Life and Advent Union, in 1864; The Church of God (Adventists), in 1866; and The Churches of God and Christ Jesus, in 1888.

ADVENT CHRISTIAN CHURCH. This church, which is congregational in church government, holds simply to the general imminence of Christ's return but takes the position that the day cannot

be determined. Statistics reported for 1929, covering 44 conferences, showed 527 churches, 494 ordained ministers, 109 licensed ministers, 29,381 church members, 333 Sunday schools, 20,139 Sunday-school members, 131 Senior Young People's Societies of Loyal Workers, with 2831 members, and 33 Junior Young People's Societies with 480 members. The denomination maintains three publication societies and three educational institutions: Aurora College in Aurora, Ill.; the New England School of Theology in Boston; and the Advent Christian Seminary in Bridgeport, Ala. Periodicals published include *The World's Crisis* (Boston), *Messiah's Advocate* (Oakland, Calif.), and *Present Truth Messenger* (Live Oak, Fla.). Among the philanthropic institutions of the denomination are the American Advent Christian Home and Orphanage in Dowling Park, Fla., and the Vernon Home for ministers and missionaries in South Vernon, Mass.

The biennial general conference of the Advent Christian Church was held in Aurora, Ill., June 12-17, 1930. The general director's survey and the report of the commission appointed to make a study of denominational conditions indicated progress and advancement of an encouraging nature. A change in administrative policy for the next biennium resulted in the transfer of the executive duties from a central office to four regional offices operating under the direction of four regional boards of councillors. The duties and prerogatives of the general directors were transferred to the conference president, and the office of general director was dispensed with temporarily. The following clergymen were elected officers: Irving F. Barnes, D.D., president; C. O. Farnham, D.D., T. P. Stephens, Burr A. L. Bixler, Lee E. Baker, vice presidents; C. H. Hewitt, secretary; J. William Denton, treasurer.

SEVENTH-DAY ADVENTISTS. This denomination which is the largest of the Adventist group, embraces 12 union conferences in the United States and Canada. It believes that the seventh day of the week, from sunset on Friday to sunset on Saturday, is the Sabbath established by God's law and that immersion is the only proper form of baptism. The local church is congregational in government, although under the general supervision of the conference. The statistical report of the denomination for 1929 indicated 2249 churches in the North American division, 905 ordained ministers, and 117,771 church members; Sabbath schools numbered 2754 and the membership, 121,757. The foreign divisions, including the African, Australasian, Central European, Far Eastern, Inter-American, Northern European, South American, Southern Asia, Southern European, and Union of Socialist Soviet Republics divisions, consisted of 4308 churches, 1082 ordained ministers, 181,784 church members, and 6767 Sabbath schools, with an enrollment of 237,087. Throughout the world there was an increase in membership of 14,262 over 1928. The movement maintains in the United States and Canada 109 educational institutions, which in 1929 had an enrollment of 16,788 students. There are also 95 educational institutions maintained in foreign countries, with an enrollment of 8482 students. The denomination has 18 publishing houses in North America and 40 in other countries. During 1929 denominational literature was issued in 141 languages, and evangelistic work was conducted in 139 countries, total contributions from all sources for this work amounting

to \$3,837,788 for the North American division and to \$3,983,403 for the other divisions. Periodicals of the movement include *The Advent Review and Sabbath Herald* (Washington), *Signs of the Times* (Mountain View, Calif.), and *The Watchman* (Nashville, Tenn.). The headquarters of the general conference of Seventh-Day Adventists are at Takoma Park, Washington, D. C.

AERONAUTIC ROCKET EXPERIMENTS.

During the year Dr. Robert H. Goddard, Professor of Physics at Clark University, Worcester, Mass., carried on a series of promising experiments on methods of propulsion of rockets, with which he hoped to attain and explore altitudes above the reach of balloons and airplanes. Dr. Goddard first began his work in this field in 1912 while at Princeton University, and from 1914, when he went to Clark University, he was active in researches and experiments, with grants from the Smithsonian Institution and the Carnegie Institution of Washington.

The Goddard rocket which had an important trial flight on July 17, 1929, was essentially the same as the similar pyrotechnic device, being propelled by the recoil from the discharge of gases, and it was believed that the rocket would work as well outside the earth's atmosphere as in it. In place of gunpowder or similar explosives, Professor Goddard developed a liquid propellant, and as this burns the rocket continually becomes lighter until the fuel is exhausted, when a parachute would come into action and bring the device safely to earth. Should the device work according to the hopes of the inventor, it was thought it might be possible to study the spectrum of the sun without the screen effect of the ozone layer 50 to 75 miles above the earth, which cuts out a large part of the solar radiation, while knowledge would doubtless be gained of the Kennelly-Heaviside layer, the ionized stratum in the atmosphere making possible long distance radio. Furthermore, it might be possible to bring down samples of the atmosphere from high altitudes for analysis, and prove that at certain heights the rarefied atmosphere consists mainly of hydrogen and helium, instead of oxygen and nitrogen. The experiments of Professor Goddard, first planned for Camp Devens, Mass., later were arranged for Roswell, New Mexico, where favorable climate and country and clear atmosphere have seemed more advantageous for the projection of rockets into the air.

AERONAUTICS. Aeronautics in 1930 continued to be marked by active progress and advances with increased use of aircraft for commercial transportation. As in other fields, commercial conditions prevailing the world over acted to restrict development and on the commercial side the aircraft industry suffered a slump that was as inevitable as it was expected. In the United States during 1930 there was a decrease in the production of airplanes, and diminished exports, but there was increased flying and passenger traffic, which was beginning to become more stabilized, though it had not become generally profitable. There were the usual number of serious and distressing accidents during the year, but with the increased flying, greater relative safety was indicated, and in all of the commercial nations of the world greater attention was being paid to the qualification of pilots and the safe operation of airplanes. As summarized below, there were many and important notable flights, although it must be confessed that public interest

was considerably less, and this held true for long distance, trans-Atlantic and transcontinental flights, duration, and other records.

Flying by women made notable advances, and competition and long distance flights resulted in an increased number of new records, several of which were of extreme importance. Blind or instrumental flying developed during the year with improved instruments providing increased safety.

NATIONAL BALLOON RACE. The National Balloon Race started at Bellaire Field, Houston, Texas, on July 4, and was won by Roland J. Blair, pilot of the entry made by the Goodyear Zepelin Corporation. Blair, with his aide, F. A. Trotter, covered a distance of 768 miles, landing 2.5 miles northwest of Greensburg, Kentucky. Second place was won by the entry of the Detroit Balloon Club, piloted by E. J. Hill, with A. G. Schlosser, aide, with 688 miles, landing 3¾ miles southwest of Russellville, Kentucky. Third place was won by the entry of the United Van Service, Inc., George Hineman, Pilot, and Milford Vanik, aide, with 685 miles, landing 1.6 miles west of Kirkmansville, Kentucky. Fourth and fifth places were taken by balloons of the U. S. Navy, while sixth and seventh places went to the balloons of the U. S. Army. The shortest flight of any of the 14 contestants was 250 miles made by the balloon of the Cleveland Chamber of Commerce, which landed near Cuthland, Texas.

GORDON BENNETT BALLOON RACE. The 1930 Gordon Bennett Balloon Race was held from the Cleveland Airport at Cleveland, Ohio, starting on September 1. For the fifth consecutive year, first place was taken by the United States with a balloon piloted by Ward T. Van Orman and Alan MacCracken, aide, which achieved a distance of 548 miles, landing in Norfolk Co., Mass., near North Canton. Second place went to E. Demuyter and L. Coeckelberg of Belgium with 448 miles, landing on the eastern slope of Mt. Greylock, Berkshire Co., Mass. Third place was won by Edward J. Hill and Arthur J. Schlosser of the United States with 417 miles, landing at Ten Eyck Powel Farm, Albany County, N. Y.

According to the official results with distance scaled by the U. S. Geological Survey, the official standing of the contestants and the balloons, pilots, aides, landing places, and distances in miles were as follows:

First, United States, Ward T. Van Orman, Alan MacCracken, 1 mile north Canton, Mass., 542 miles.

Second, Belgium, E. Demuyter, L. Coeckelberg, eastern slope of Mt. Greylock, Berkshire Co., Mass., 448 miles.

Third, United States, Edward J. Hill, Arthur J. Schlosser, Ten Eyck Powel Farm, Albany Co., N. Y., 417 miles.

Fourth, United States, R. J. Blair, F. A. Trotter, 1½ miles south Copenhagen, N. Y., 348 miles.

Fifth, Germany, Dr. Hugo Kraulen, Carl Gotze, 1 mile south New Lisbon, N. Y., 343 miles.

Sixth, France, Albert Boitard, Jean Herbe, 3 miles north Smithville, Ontario, 185 miles.

BRITISH AIRSHIPS. The two British airships, the *R-100* and the *R-101*, the construction and test of which have been described in earlier **YEAR BOOKS**, went into service during the year and while the former made a successful transatlantic flight, the *R-101* was destroyed in one of the most serious and deplorable tragedies in the history of aeronautics. The *R-100*, it will be recalled, was built at Howden, Yorkshire, by the Airship Guarantee Company, a private firm, and was completed toward the end of 1929, making several

flights in November and December of that year. It is about 70 feet shorter than the *Graf Zeppelin* and a third larger in diameter.

On July 28, 1930, this airship with a crew of 40, under the command of Squadron Leader R. S. Booth, left Cardington, England, and after a non-stop flight of 3400 miles in 78 hours, 52 minutes, was moored successfully at St. Hubert airport at Montreal at 5:33 o'clock, after a voyage of 3228 miles. This was the ninth attempt to cross the Atlantic by rigid airships and all were successful and without loss of life. The airworthiness of the ship was put to test during the voyage by two periods of bad weather, including a violent thunder storm accompanied by tempestuous winds while proceeding up the St. Lawrence valley. Although the fabric of one of the stabilizer fins was damaged, causing some eight hours delay during repairs, the craft was at no time in serious danger.

It was planned to make an extensive trip through Canada after the damage was repaired, in order to call attention to the importance of imperial air navigation, but this was seriously restricted, and on August 10 the *R-100* made a short flight over eastern Canada visiting Toronto.

On Thursday, August 14, the *R-100* left Montreal on her return trip and arrived at Cardington on Saturday morning, making the return voyage in 57 hours, with one of the six engines unserviceable. The trip took 57 hours, or two hours more than the fastest airship flight from America to England of the *Graf Zeppelin*, and it was considered a typical journey under ordinary conditions.

DESTRUCTION OF THE "R-101." During the first half year the airship *R-101*, which had been built by the British Government for service between England and India, underwent further modification and improvement, including the lengthening of the ship by the insertion of an extra bay providing an additional gas bag and increasing capacity by about 500,000 cubic feet, and air lift by about 15 tons. As thus improved, she was the largest airship in the world, as well as the longest, with a greater length than the German airship, *Graf Zeppelin*.

Everything was made ready for the experimental flight to India by way of Ismailia, which was begun on the evening of Saturday, October 4. The ship carried a complement of 54 passengers and crew, including Lord Thomson, Secretary of State for Air; Sir Sefton Brancker, Director of Civil Aviation; Wing-Commander R. B. B. Colmore, Director of Airship Development; Lieut.-Col. V. C. Richmond, Assistant Director of Airship Development (Technical); Maj. G. H. Scott, Assistant Director of Airship Development (Flying); Maj. P. Bishop, Chief Inspector, Aeronautical Inspection Department, Air Ministry; Squadron Leader F. M. Rope, attached to Directorate of Airship Development, and Flight-Lieut. H. C. Irwin, Captain of the Airship.

On the morning of Sunday, October 5, the airship struck the ground near Beauvais, northern France, and was completely destroyed by fire, all but eight of the crew and passengers perishing and one of the survivors dying shortly after rescue. It was quite certain that the ship was flying low, but aside from that the cause of the accident was not definitely ascertained, even in the course of the official investigation, which began in November. This tragic catastrophe not only made a

great impression in Great Britain, but throughout the Dominions, as the development of airship transportation was heralded as an important step toward greater unity of the Empire and the extension of commercial relations. Expressions of sorrow were world-wide, and all interested in aeronautics were stunned by the misfortune.

UNITED STATES AIRSHIPS. During the year considerable progress was made on the U. S. N. *ZRS-4*, described in the YEAR BOOK for 1929, and under construction by the Goodyear-Zeppelin Corporation at its large hangar at Akron, Ohio. The skeleton frame of this 6,500,000 cubic feet craft was nearing completion and considerable interest was being manifested in the development of the work, particularly in view of the various vicissitudes undergone by lighter-than-air craft during the year. The *Los Angeles* continued in active service during the year, and after making a number of flights, received an official survey which indicated that the craft was in good condition and serviceable for from two to four years. The two non-rigid airships of 200,000 cubic feet volume of the U. S. Navy also operated from the airship base at Lakehurst, N. J., for training and experimental work. During the year a larger non-rigid airship, with a capacity of 320,000 cubic feet, was ordered for experimental work with fuel gas.

"GRAF ZEPPELIN." During the year the *Graf Zeppelin* described in detail in earlier YEAR BOOKS, was constantly in flight, and in April made trips to Seville, Spain, and Cardington, England, landing at that airport on April 26. Captain Eckener of the *Graf Zeppelin* was in conference with the British Air Ministry during the year in regard to the exchange of information and experience. Later in the year Captain Eckener testified at the inquiry held in regard to the accident of the *R-101*. The most notable trip of the *Graf Zeppelin* was begun on May 18 when, with a crew of 42, 22 passengers, and considerable mail, a trip from Friedrichshafen to South America was begun. The first leg of this flight was to Seville, Spain, and on May 20 the *Graf Zeppelin* flew to Pernambuco, Brazil, reaching there on May 22, after a flight of 62 hours. It was the first lighter-than-air craft to cross the Equator and fly over southern waters. After touring Brazil the *Graf Zeppelin* stopped at Rio de Janeiro, and on May 28 started north and landed in the United States at Lakehurst on May 31. On June 2 the airship, with renewed fuel and added supplies, started on its return trip, stopping at Seville on June 5 and reaching Friedrichshafen on June 6.

Among the flights in Europe made by the *Graf Zeppelin* during the year was one from Friedrichshafen to Moscow, which was reached on September 10, where Dr. Eckener and his companions received an enthusiastic welcome. It was stated that the Aero-Arctic Commission in Leningrad was considering the use of the *Graf Zeppelin* in a flight in 1931 from Wardze, Norway, to Fairbanks, Alaska, across Greenland and Grant Land, returning along the Siberian Coast to Wrangel Island, Fridtjof Nansen Land, and Wardze. It was also stated that a number of Soviet scientists were to take part in the flight for the purpose of gathering geographical and meteorological information for the development of Northern Siberia.

The year was one of considerable activity for the *Graf Zeppelin* and before it went out of commission in November, it had made a total of 155

flights, covering a distance of 144,275 miles and carrying 6278 passengers and 2,200,000 pieces of mail and freight weighing approximately 12,166 lbs. As soon as the ship was placed in the hangar and the gas removed, a thorough inspection was begun of all the parts, so that a study of the normal life and depreciation of an airship could be undertaken. It was found that the sale of passenger tickets for the various flights made by the *Graf Zeppelin* covered the cost of fuel, salaries, insurance and depreciation, so that the economic value of the Zeppelin apparently was established. A special gold medal was awarded by the National Geographic Society to Dr. Eckener in Washington on March 27.

During the year there was constructed a new and larger hangar for the building of the newest Zeppelin, the *LZ-128*. The plans for this ship were well advanced during the year, but after the destruction of the British *R-101*, Dr. Hugo Eckener, the technical director of the German Zeppelin industry, stated that the construction of a new airship would be delayed, pending the consideration of using helium gas, the exportation of which it was believed the American Government, which enjoyed a monopoly in this field, would permit. Helium gas, it will be recalled, is non-inflammable, but, having a slightly less lifting power than hydrogen, requires a greater capacity to secure the same lifting effect.

NOTABLE AIRPLANE FLIGHTS. Among the many notable performances of the year the following may be summarized:

A trans-Atlantic mail flight from St. Louis, Senegal, on the west coast of Africa, to Natal, Brazil, was made by Jean Mermoz, who, after 20 hours and 15 minutes in the air, completed the 1990-mile crossing on May 13, and on the following day delivered 308 pounds of mail at Buenos Aires. He was successful in reducing the time for French mail from Paris to Brazil from 7 to 3½ days. The return trip with 600 pounds of mail was delayed on account of unsatisfactory weather conditions and Mermoz was forced down.

Notable and picturesque among the flights of the year was that made by Miss Amy Johnson flying from Croyden, England, to Australia, the first woman to make this 12,000-mile journey alone. Leaving Croyden airport on May 5, she landed at Port Darwin, May 24, and would have bettered the record of Hinkler of 16½ days were it not for delays and accidents in India and Java. Miss Johnson's trip was marked by storms and various other difficulties involved in flying over wild and inhospitable country, and was acclaimed throughout the British Empire. She was enthusiastically received on her return to England, and on June 2 was made a Commander of the Order of the British Empire.

One more trans-Atlantic trip was scored when the Australian aviator, Maj. Charles Kingsford-Smith, with E. M. Van Dyke, relief pilot; Capt. J. P. Saul, navigator, and J. W. Stannave, wireless operator, flew in the rebuilt Fokker F-7 monoplane *Southern Cross* from Port Marnock, Ireland, on the evening of June 23 with New York as their objective. Major Kingsford-Smith, while in contact by radio with various steamships and radio stations on the first part of his flight, lost his course on June 25 for a while and, with fuel supplies running low, landed at Harbor Grace, Newfoundland, whence on June 26 he flew to New York and landed at Roosevelt field. This trip was of further interest because it was made in the

Southern Cross, originally used by Sir Hubert Wilkins in Arctic exploration and flown across the Pacific from California to Australia, and from Australia to England. For this trip it was equipped with three Wright 5-5 engines. Major Kingsford-Smith then flew across the American continent, making stops at Chicago and Salt Lake City, reaching Oakland, California, on July 4, thus completing the second navigation of the world.

Later in the year Kingsford-Smith, flying from England on October 10 in a light airplane, an Avro Avian sports machine equipped with a 120-horse power Gipsy engine, named *Southern Cross Jr.*, landed at Darwin, Northern Australia, at 1.55 A.M. Sunday, October 19. On the following day Commander Smith flew from Port Darwin to Cloncurry, a distance of 907 miles. In this connection it is interesting to state that 4½ days were taken from the previous record, and that in a light airplane Commander Kingsford-Smith made the journey in two days less than it took him in the previous year to go the same route in his three-engined Fokker.

Another notable trans-Atlantic flight was that of Capt. Wolfgang von Gronau in a two-engined Dornier Wal flying boat that had been operated by the aviator Courtney and was celebrated for its employment by Amundsen and Ellsworth in their Polar flight. Captain von Gronau, with a crew of three, in what was originally intended as a training flight, left the Isle of Sylt in the North Sea August 18, and flew first to the Faroe Islands and then to Reykjavik, Iceland; thence they proceeded to Igivut, Greenland, to Cartwright, Labrador, to Queensport, Nova Scotia, to Halifax, Nova Scotia, and then to New York, arriving August 26.

An event of the year was the first direct non-stop flight from Paris to New York made by Coste and Bellonte in their Breguet plane *Question Mark* equipped with Hissco engines. This flight, which began on Sept. 1, 1930, took 37 hours, 18 minutes for the 4100 miles and was made in a plane several years old in which Coste had made several non-stop flights of greater distance than from Paris to New York.

After the *Columbia* had made its round trip non-stop flight from New York to Bermuda, mentioned below, Capt. Errol Boyd, a Canadian, and Lieut. Harry P. Connor, formerly of the U. S. Navy, took off on October 10 with this airship from Harbor Grace, Newfoundland, flying to the Scilly Islands off the southwest coast of England. The trip was made in 47 hours and 41 minutes, and while a forced landing at Tresco in the Scilly Islands was made somewhat short of the mainland, on account of a shortage of fuel, yet the flight was in every way well executed. The airplane, *Columbia*, designed and built by B. L. Bellanca in 1926, had a notable record. It not only won two trophies in the 1926 National Air Races, but in April, 1927 achieved a world's non-fueling endurance record, and in June with Clarence Chamberlin as pilot, and Charles A. Levine, made a trans-Atlantic flight, landing in Germany. In all of these trips a Wright Whirlwind engine of 225 horse power was employed, and the designer, Charles L. Lawrence, shared the credit with the designer of the plane.

On February 15 Lieutenant White and Lieutenant McMullen on their route from New York to Buenos Aires, a distance of 6870 miles, flew from Miami, Florida, to the Panama Canal,

This was the first time the trip had been made by a heavier-than-air machine. The entire flight, from New York to Buenos Aires, 6870 miles, was made in 52 actual flying hours, or five days for the trip, which was a record for the entire distance, and also for the intermediate distances between the South American cities. From Colon the flight was continued to Lima, Peru, with a brief stop at Talara, Peru. From Lima the next stage was to Arica, thence to Santiago, and from Santiago to Buenos Aires in 7 hours and 40 minutes.

An interesting flight was that of Captain Yancey in the J6-9 Stinson-Detroit airplane, *The Pilot*, fitted with pontoons, from New York to Bermuda. Starting on April 1 with a pilot and radio operator, he flew until 6.00 o'clock when he landed on the water about 60 miles from Bermuda. The following morning he took off from the calm sea at 5.45 and reached Bermuda at 9.00 o'clock. The trip from New York to Bermuda was of unusual interest, in addition to the meteorological conditions involved due to change of temperature in passing over the Gulf Stream, in view of using this island as a way station on a trans-Atlantic commercial route. A further test of flight between New York and Bermuda was made on June 29 when Roger Q. Williams, Errol Boyd, and Lieut. H. P. Connor in the Bellanca monoplane, *Columbia*, referred to above, flew from Roosevelt field, New York, and returned the same day circling over Hamilton, Bermuda, and covering 1560 miles in 17 hours and 1 minute.

One of the most picturesque and important flights of the year, was begun on December 17, when 14 Italian seaplanes, commanded by General Balbo, Italian Air Minister, left Orbetello, Italy, for Cartagena, Spain, on a long distance flight of some 6000 miles to Brazil. By December 25th the squadron had reached Bulama, Portuguese Guinea, West Africa, but in taking off for the trans-Atlantic passage two of the planes met with disaster and five aviators were killed. Two of the replacement units included in the original group were forced down in mid-ocean and one of these later was repaired so as to complete the trip.

Col. Charles A. Lindbergh, the American aviator, continued his activity during the year and on April 20, accompanied by Mrs. Lindbergh, he flew from Glendale, Calif., to Roosevelt Field, Long Island, in 14 hours and 45 minutes, making one stop for fuel at Wichita, Kan. Colonel Lindbergh flew a low-winged Lockheed Sirius plane with a Wasp engine, and his time was a record which, as will appear, was broken shortly afterwards by Captain Hawks. Another notable flight by Colonel Lindbergh was from New York to the Canal Zone on the inauguration of the seven-day air mail service from Miami to Buenos Aires. He left Roosevelt Field near New York City on April 24 for Florida, and on April 26 flew from Miami to Havana in 2 hours 3 minutes. The following day he flew from Havana to Cristobal, Canal Zone, stopping at Puerto Cabezas, Nicaragua, to take on fuel. He made the 1033 miles to Cristobal in 9 hours, 58 minutes. The mail was carried to Buenos Aires by another pilot, but on the return trip Colonel Lindbergh flew from the Canal Zone on May 1, reaching New York on May 3.

On June 18 a transcontinental record between Jacksonville, Florida, and San Diego, California, a distance of 2112 miles was made by Edward F.

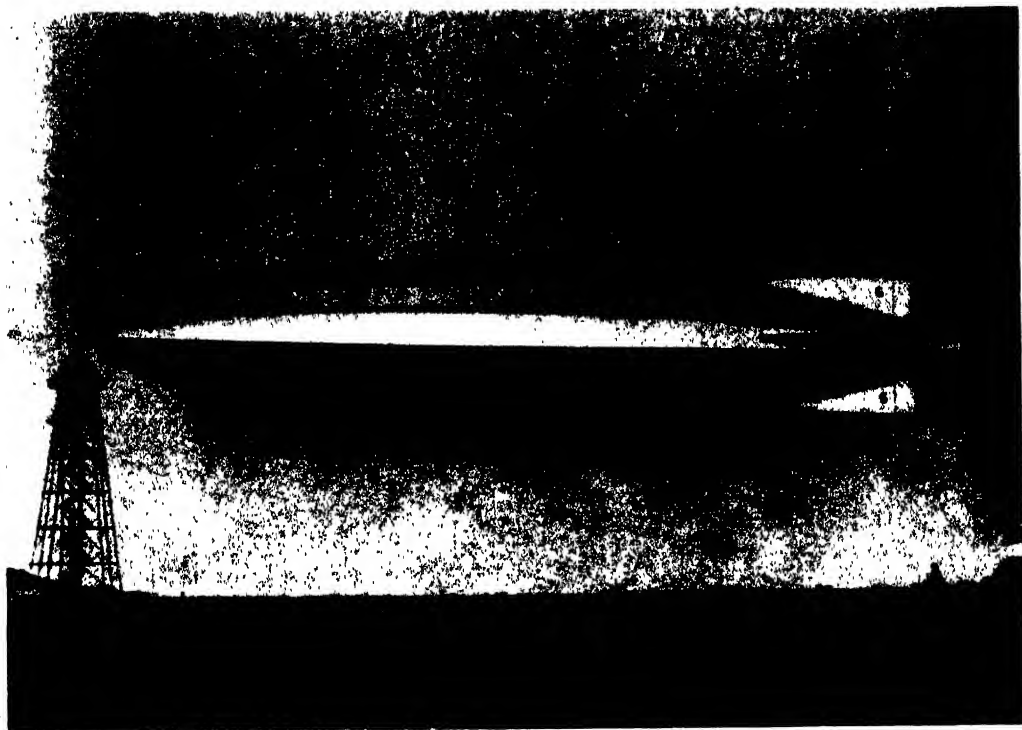
Schlee and William A. Brock, in a Lockheed-Vega monoplane. The time required was 13 hours and 55 minutes. On a return trip 16 hours and 50 minutes were required from the Pacific coast to Tallulah, La., where a landing for more fuel was required. The round trip involved a total elapsed time of 31 hours and 58 minutes.

On May 27 Lieut.-Col. Roscoe Turner made an east to west transcontinental record crossing the United States in 18 hours and 42 minutes, stopping to refuel at Wichita, Kan. Previously on May 13 he had flown from Los Angeles to New York in 15 hours, 32 minutes. The westerly transcontinental record was again broken on August 6 when Capt. Frank Hawks, in a Travel Air low-wing plane with J-6 engines flew from Curtiss Field, N. Y., to Los Angeles in 14 hours and 50 minutes, or 3 hours and 52 minutes less than the time of Roscoe Turner in May. Hawks' actual flying time was 13 hours and 35 minutes, but he made five stops for gasoline. However, his flight averaging 200 miles per hour was hailed as showing the possibility of rapid commercial and passenger service across the American continent. On August 13 Captain Hawks flew from Los Angeles to New York in 12 hours 25 minutes making stops at Albuquerque, Wichita, and Indianapolis.

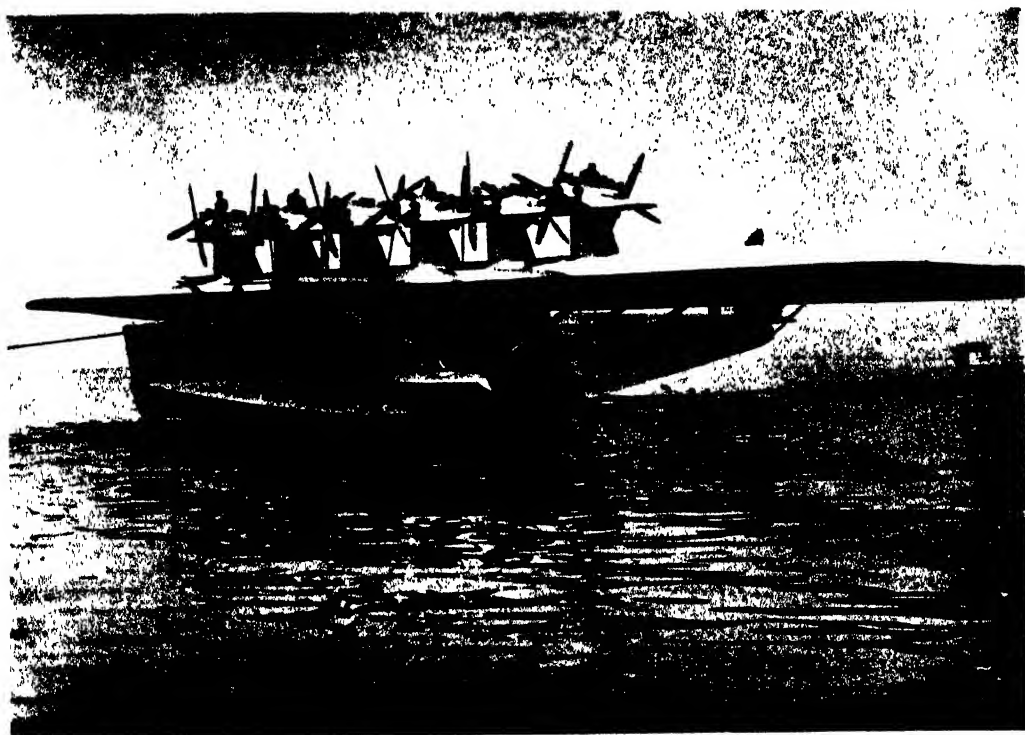
During the autumn of 1930 Captain Hawks, flying in a J6-9 special Travel Air low-wing "Texaco 13," made a number of notable flights and speed records. On October 1 he flew from Detroit to New York in two hours and 41 minutes, and on October 7 from Boston to the Curtiss Valley Stream Airport at New York, 190 miles, in 53 minutes. On October 8 Captain Hawks flew from the Camden Airport to the Curtiss Airport at Valley Stream in 20 minutes, bringing to New York City pictures of the World Series baseball game. On October 21 he flew from New York to Washington, 225 miles, in 71 minutes, and made the return trip in 63 minutes. On November 6 he flew from New York to Havana, 1400 miles, stopping for fuel at Jacksonville, Florida, and Miami, Florida. As he stopped 23 minutes at the first place and 20 at the latter, his flight involved 8 hours and 38 minutes of actual flying time, or a total of 9 hours and 21 minutes. Three days later he made the return trip to New York in 8 hours and 44 minutes, stopping at Miami and Charlotte, N. C., the actual flying time being 8 hours and 3 minutes.

AIRPLANE DESIGN AND CONSTRUCTION. The tendency toward the construction of large airplanes continued in Europe, and aroused considerable interest, the Dornier Wals *Do-X*, the Junkers, and the Handley Page, Ltd. 40-seater, being notable examples of the work of the year. In the United States while as large craft had not been built there was considerable increase in size of new ships for the various passenger and mail routes, a typical airplane illustrated.

A notable plane of the year was the Dornier *Do-X*, which was designed for a trans-Atlantic flight, and for passenger transport. This craft, which had a wing spread of 157 feet, enjoyed the reputation of being the largest heavier-than-air craft in the world in 1930, and was powered with 12 Curtiss Conqueror water-cooled engines, which took the place of 12 air-cooled Siemens Jupiter engines originally planned, increasing the horse power from 6300 to over 7000. The tests of the *Do-X*, which were carried on in November and December, were marked by extreme caution, as it



BRITISH AIRSHIP R-100 AT MOORING MAST



DORNIER DO-X SEAPLANE
Built for Trans-Atlantic Flight

EUROPEAN AIRCRAFT OF 1930

Photographs by courtesy of Aviation, N. Y.

was desired to develop safety in the highest possible degree, and while a trans-Atlantic trip was contemplated it was not to be undertaken until all conditions were favorable.

On November 5 a trial flight was made at Altenrhein, Lake Constance, Switzerland, with the craft manned by a crew of 16. After a trip of 5 hours and 40 minutes, the huge seaplane made a landing at Amsterdam on the Zuyder Zee. This initial trip was in every way successful, with a speed averaging from 98 miles per hour to 102 miles per hour, with a gross weight of 46 tons. On November 10 the *Do-X* flew from Holland to Calshot, England, carrying a crew of 15 and 21 passengers, with a total weight of 50½ tons, of which fuel counted for about 11. Three hours and 51 minutes were required for the trip down the coast and across the Channel to Calshot.

The *Do-X* attracted great attention while in England, and on one of its flights the Prince of Wales, who was a passenger, navigated the ship from the control board. The *Do-X* left England on November 14 and proceeded to Bordeaux, France, being delayed by unfavorable weather. It was here decided to relinquish, at least temporarily, any idea for trans-Atlantic flight, as it was desired to have the airplane in proper condition. The ship then proceeded to Santander, Spain, and thence to Lisbon, Portugal, where on November 29 in a fire produced by a short circuit, a wing was seriously burned. This necessitated extensive repairs so that up to the end of the year no protracted flight was attempted.

In connection with airplane design in 1930, a condition similar to that in the automotive field prevailed, with developments concerned more with economics than with fundamental innovations or inventions. Aerodynamic refinement, decreased structural weight, and elimination of wasted energy all figured in the new craft, and the proper design of fuselage and landing gear figured to a marked degree. The Guggenheim Safe Aircraft competition of the previous year in the United States developed a number of interesting features which were studied, while new research was carried on on a conservative, but systematic basis.

In its review of the year, *Aviation* (New York) noted a continuous trend toward the monoplane, both in Europe and America. There was no tendency toward the change of the number of engines or their arrangement manifested over the previous year, but elaborate tests were being carried on at Langley Field, with the new tunnel elsewhere described, in order to study various arrangements of the power plant and its design.

During the year there were published a number of studies of the Packard Diesel engine, which had aroused a great deal of interest for several years, and also of the Junkers Diesel engine. The high-speed Diesel engine research continued at Langley Field and elsewhere, and it is safe to say that important advances were recorded. The Pratt & Whitney Wasp engine, operating with fuel injection into the cylinders in connection with electric ignition, worked satisfactorily, and additional developments were looked for in this new device which might make possible the use of the lighter fuel oils.

Another important field of investigation during the year was supercharging not merely for altitude performances, but for increasing sea level power output. The U. S. Bureau of Standards provided with an altitude chamber paid considerable attention to this problem during the

year for the air services of the Army and Navy. This same institution carried on an extensive research into fuel for carburetor engines, as did the laboratories of the United States Air Service at Wright Field. The investigations developed considerable information regarding the characteristics of aircraft fuels and the conditions under which they are employed. Advances were recorded in the improvement of airplane engines, looking for greater power and lower weight for a given piston displacement. An improved internal type of propeller reduction gear was developed for the Pratt & Whitney engines, though it was stated that American commercial aviation seemed to be behind European practice in this respect.

Important results were being obtained with large water-cooled engines in England and Continental Europe, of which the Rolls-Royce model, the Hispano-Suiza 600-horse power model, and the 1000-horse power Isotta-Fraschini were notable examples.

RECORDS FOR THE YEAR. During 1930 a number of new records for airplanes for speed duration, altitude, and lifting power were made and accepted by the Federation Aeronautique Internationale, the body entrusted with the approval of records of the world.

For airplanes flying in closed circuit, U. Maddalena and F. Ceconi of Italy, in a Savoia-Marchetti S-64 plane, with a Fiat A-22 T engine, flying from Montecelio on May 30-June 2, 1930, made a duration record of 67 hours and 13 minutes, and a distance record of 8188.80 kilometers (5088.27 miles).

The world and American airplane altitude record went to the United States where Lieut. Apollo Soucek, U.S.N., in a Wright "Apache" landplane, with a Pratt & Whitney 450-horse power engine, at Anacostia, D. C., June 4, 1930, ascended to a height of 13,157 meters (43,166 ft.).

The world airplane speed record for 1000 kilometers went to Czechoslovakia, whose representative, Adjutant Chef Vojtech Svozil, in an Aero A-42 plane, with an 800-horse power Asso engine, on the Praha course on Sept. 25, 1930, accomplished 274.094 kilometers (170,313 miles) per hour.

During the year Spain gained the airplane speed record for 2000 kilometers when Carlos de Haya Gonzalez and Cipriano Rodriques Diaz, with a 600-horse power Hispano Suiza engine, at Seville, Oct. 11, 1930, made 220.428 kilometers (136.967 miles) per hour. These men in this same flight secured for Spain the speed record for 5000 kilometers, also, with 208.152 kilometers (130.19 miles) per hour.

For airplanes with pay load of 500 kilograms (1102.31 lbs.), the French aviators, Dieudonne Costes and Paul Codos, in a Breguet 19 plane, with a Hispano-Suiza 600-horse power engine, at Istres, on Jan. 17-18, 1930, made a world's duration record of 23 hours, 22 minutes and 49 seconds. This same flight also resulted in a world's distance record of 4,361,980 kilometers (2710.40 miles).

In this same class, however, the United States secured a speed record for 100 kilometers when Leland F. Schoenhair, in a Lockheed Vega "Executive" monoplane NC-308 H, with a Pratt & Whitney 450-horse power supercharged engine at Jacksonville, Fla., on Feb. 18, 1930, made a speed record of 298.510 kilometers (185.49 miles) per hour. In this flight they also made a speed record

for 500 kilometers (171.228 miles), but on Oct. 12, 1930, it was broken by Capt. Joseph Kalla of Czechoslovakia, who, in the airplane Letiv S-516, with an 800-horse power Asso motor on the Praha course, made 276.375 kilometers (171.731 miles) per hour. He also secured the world's speed record for 1000 kilometers on the same flight with 275.269 kilometers (171.043 miles) per hour. The speed record for 2000 kilometers was broken by Carlos de Haya Gonzalez and Cipriano Rodriguez Diaz, in the flight of Oct. 11, 1930, mentioned above, when a speed of 220.428 kilometers (136.967 miles) per hour was made, supplanting the record of Costes and Codos made on the flight of Jan. 17-18, 1930.

With a pay load of 1000 kilograms (2204.62 lbs.), Costes and Codos in the Breguet plane already referred to, at Istres, on Feb. 15-16, 1930, returning to the point of departure, made a duration record of 18 hours and 1 minute, and also a closed circuit distance record of 3309.900 kilometers (2056.672 miles).

The United States gained two speed records for an airplane with a pay load of 1000 kilograms; namely, 283.250 kilometers (176 miles) per hour for 100 kilometers, and 270.800 kilometers (168.27 miles) per hour, when Leland F. Schoenhair, in the plane mentioned above, flew at Jacksonville, Fla., on Feb. 20, 1930. A speed record for 1000 kilometers made on this flight by Schoenhair, was broken by Adjutant Chef Vojtech Svozil of Czechoslovakia on Sept. 25, 1930, in the flight already mentioned, when he made 252.380 kilometers (156.821 miles) per hour.

The United States also gained the speed record for 100 kilometers with a pay load of 2000 kilograms (4400.24 lbs.) when W. J. Fleming, flying in a Bach monoplane with one Pratt & Whitney "Wasp," 2 Wright J-6 engines, on Mar. 26, 1930, at Los Angeles, Calif., made a speed record of 229.591 kilometers (142.66 miles) per hour. This was in turn supplanted by a record of 264.628 kilometers (164.432 miles) per hour made by Leroy Manning and Carl Wenzel in a Ford Transport plane, with three Pratt & Whitney "Wasp" engines of 420 horse power, at Dearborn, Mich., on Sept. 29, 1930.

For an airplane with a pay load of 5000 kilograms (11,023 lbs.), Wilhelm Zimmerman in a Junkers J-38 plane with 2 Junkers L-55 engines of 600 horse power each, and two Junkers L-8 of 400 horse power each, at Dessau-Leipzig on Apr. 10, 1930, made a duration record of 3 hours, 2 minutes, and a distance record of 501.590 kilometers (311.6724 miles). On this flight he also achieved a speed record for 100 kilometers; namely, 184.404 kilometers (114.62 miles) per hour, and on April 30 for 500 kilometers a speed record of 172.950 kilometers (107.466 miles) per hour.

A notable flight was made on Feb. 22, 1930, by Cav. Domenico Antonini Caproni in a "Ca-90" biplane with 6 Isotta-Fraschini Asso motors of 1000 horse power each, at Cascina Malpensa. In the course of this trip he secured the world's record for airplanes, with pay load of 750 kilograms (1653.47 lbs.), for duration of 1 hour and 31 minutes and for altitude of 3231 meters (10,597 feet). Also this flight secured the duration and altitude records for 10,000 kilograms (22,046 lbs.), and the record for the greatest pay load carried to 2000 meters (6577.7 feet).

The United States gained the duration record for airplanes refueling in flight and returning to

the point of departure, Sky Harbor, Ill., on June 11 to July 4, 1930, when John and Kenneth Hunter in the *City of Chicago*, a Stinson Detroit plane with a Wright 300-horse power "Whirlwind" engine, were in the air 553 hours, 41 minutes, and 30 seconds.

The duration record, with refuel in flight, was broken by Dale Jackson and Forest O'Brien in the airplane, *Greater St. Louis*, a duplicate of the *St. Louis Robin*, which had figured in their record attempts of the previous year. Flying just above the Lambert, St. Louis, field, they stayed in the air 647 hours, 28 minutes and 30 seconds, landing on August 17, their descent due to a cracked crank case. Two hundred and twenty-three contacts were made with the refueling plane, and 7630 gallons of gasoline, and 410 gallons of lubricating oil were passed to the *Greater St. Louis*. Estimates of 41,500 miles for the entire flight were made.

In the women's category for airplane records, Mademoiselle Lena Bernstein of France in a Farman monoplane, type 192, Salmson 230-horse power motor, flying from Le Bourget, May 2, 1930, achieved a duration record of 35 hours and 46 minutes. In the United States Miss Elinor Smith in a Bellanca monoplane, with Wright J-6 300-horse power engine, flying at Roosevelt Field, N. Y., Mar. 10, 1930, achieved a height of 8357 meters (27,417 feet).

Several records were made with light airplanes during the year, both in the first category for two seaters weighing empty less than 400 kilograms (881 lbs.); in the second category for two seaters weighing empty less than 200 kilograms (400 lbs.); in the third category for single seaters weighing empty 200-300 kilograms, inclusive (440-771 lbs.); and in the fourth category for single seaters weighing empty less than 200 kilograms (440 lbs.).

In the first category a duration record of 29 hours and 4 minutes, and a closed circuit distance record of 2746.200 kilometers (1706.405 miles) were made by the Italians Renato Donati and M. Capannini in a Fiat A. S.-1, with a Fiat A-50 engine, flying from Montecelio, Rome, January 19-20, 1930.

An altitude record in this category was made by the Germans, Woldemar Voight and K. H. Gaule, of the Akademische Fliegergruppe Darmstadt, in a D-18, Armstrong Siddeley plane, with a Genet Major 100-horse power engine, at Darmstadt, Apr. 21, 1930, attaining a height of 7521 meters (24,672 feet). A similar plane flown at Darmstadt on Apr. 23, 1930, by Rudolph Neininger and Kurt Stark, achieved a record of speed for 100 kilometers of 214.848 kilometers (133.49 miles) per hour.

In the second category for light airplanes, Madame Margaret Fusbahn and Monsieur Fusbahn of Germany, in a Klemm L-25 monoplane, with a Salmson 40-horse power engine, made a height record of 4614 meters (15,137 feet) at Bollinger-Wartemberg on Apr. 11, 1930.

In the third category for light airplanes, a duration record of 37 hours and 55 minutes was made by the French aviator, Madame Maryse Bastie, on Sept. 2-4, 1930, at Le Bourget, flying in a Klemm monoplane with a Salmson 40-horse power engine. In this category a closed distance record of 2714.400 kilometers (1686.646 miles) was made by the French pilot, Lailhe, in an Albert monoplane with a Salmson 40-horse power engine flying at Le Bourget, Sept. 4-5, 1930.

The altitude record in this category went to the German aviator, Woldemar Voight of the Akademische Fliegergruppe, Darmstadt, flying in a D-18 Armstrong Siddeley plane with a Genet Major 100-horse power engine at Darmstadt, May 30, 1930, the height attained being 8142 meters (26,712 feet).

In the fourth category, records for both duration and distance went to the French aviator, G. Fauvel, in a Peyret-Mauboussin A.B.C. plane, with a Scorpion 34-horse power engine at Le Bourget, Sept. 12, 1930. The duration record was 12 hours and 3 minutes, and the distance (closed circuit) was recorded at 1258.800 kilometers (782.156 miles).

The United States took the speed record in this category for 100 kilometers when Clarence O. Prest, in a Prest Baby Pursuit plane with a Szekely 40-horse power engine in San Bernardino Co., Calif., May 28, 1930, made a speed record of 162.21 kilometers (100.79 miles) per hour.

In the class for seaplanes returning to the point of departure without refueling, the French aviator, Mermoz, in a "Latecoere" 28, Hispano-Suiza, 600-horse power engine at Marignane on Apr. 11-12, 1930, flew a distance of 4308.340 kilometers (2677 miles). While in this plane with two companions, he made an airline distance record of 3173.2 kilometers (1971.731 miles), flying from St. Louis, Senegal, to Natal, Brazil, on May 12-13, 1930.

A speed record for 2000 kilometers for seaplanes was made on June 23, 1930, at St. Laurent de la Salanque, when Lieutenant de Vaisseau of Paris and M. Hebert, in a "Latecoere" 28 plane with a Hispano-Suiza 600-horse power engine, achieved a speed of 185.931 kilometers (115.396 miles) per hour.

Flying with a pay load of 500 kilograms (1102.31 lbs.), Lieut. de Vaisseau of Paris and M. Hebert in the plane mentioned above in the same flight made a duration record of 31 hours and 1 minute, and on July 17 a distance record of 4202.496 kilometers (2611.305 miles). On June 23, 1930, they made a speed record for 2000 kilometers of 185.931 kilometers (117.396 miles) per hour.

The altitude record, with a pay load of 500 kilograms for a seaplane went to the United States when Boris Sergievsky, in a Sikorsky S-38 plane with two Pratt & Whitney "Hornets," 575-horse power engines, flying from Bridgeport, Conn., on July 21 reached an altitude of 8208 meters (26,929 feet). This record also held for the pay load of 1000 kilograms (2204.62 lbs.).

With a pay load of 1000 kilograms, Lieut. de Vaisseau and M. Hebert, in their flight on June 22, 1930, made a world's duration record of 20 hours and 2 minutes, and a distance record of 2854.244 kilometers (1773.603 miles).

The altitude record went to the United States for the flight of Boris Sergievsky on July 21, 1930, already mentioned, when he made an altitude of 8208 meters (26,929 feet). Sergievsky also achieved a world's record with this plane with a pay load of 1000 kilograms (2204.62 lbs.) for 100 kilometers on Mar. 13, 1930, at North Beach, Queens, N. Y., when he made a speed of 266.71 kilometers (165.73 miles) per hour.

The speed record for 100 kilometers—namely, 190.004 kilometers (118,085 miles) per hour, and for 2000 kilometers—185,931 kilometers (117,396 miles) per hour, went to Lieutenant de Vaisseau of Paris and M. Hebert, in a "Latecoere"

28 plane with a Hispano-Suiza 600-horse power engine at St. Laurent de la Salanque on June 23, 1930.

With a pay load of 2000 kilograms, Boris Sergievsky piloted a Sikorsky S-38 plane, with two Pratt & Whitney "Hornet" engines of 575 horse power each, to a height of 6074 meters (19,928 feet), at Stratford, Conn., August 11, 1930, making a world and American record. The last named aviator on Mar. 13, 1930, at North Beach, Queens, N. Y., in the same category had made a world speed record for 100 kilometers of 231.38 kilometers (143.77 miles) per hour. The speed record for 500 kilometers in this category went to the French aviator, Prevot, flying in a "Latecoere" 28 monoplane with a Hispano-Suiza, 650-horse power engine, at St. Laurent de la Salanque, Mar. 5, 1930—namely, 202.092 kilometers (125.573 miles) per hour.

New world records, all of which went to Germany, were made in the first category for light seaplanes, two seaters weighing empty less than 600 kilograms (1322 lbs.). Alfred Grundke and Gottlieb Pfeiffer, flying in a Junkers J. 50-W plane, with an Armstrong Siddeley Genet 85-horse power engine, at Dessau on June 6, 1930, made a duration record of 8 hours and 27 minutes; a closed circuit distance record of 900.180 kilometers (559.344 miles), and a speed record for 100 kilometers of 164.309 kilometers (102.096 miles) per hour. The altitude record was made at the same place on June 4, 1930, by Wilhelm Zimmerman and Schinzinger in a similar plane and was 4614 meters (15,137.765 feet).

In the third category of light seaplanes, two seaters weighing empty less than 350 kilograms (771 lbs.), Germany also achieved records through the flight of pilot Alfred Grundke in the plane already referred to, at Dessau on June 13, 1930. The duration record was 16 hours and 29 minutes; the closed circuit distance record 2100.420 kilometers (1330.97 miles), and the speed record for 100 kilometers 165.44 kilometers (102.80 miles).

For the fourth category, or single seater light seaplanes weighing empty less than 250 kilograms (551 lbs.), Wilhelm Zimmerman, in a Junkers J. 50-W plane, with an Armstrong Siddeley Genet 85-horse power engine at Dessau on June 4, 1930, rose to a height of 5652 meters (18,543.269 feet), thus gaining a world record.

THE NATIONAL AIR TOUR. The Sixth National Air Tour left Ford Airport, Detroit, on the morning of September 11, returning on September 27, after flying on schedule over 4800 miles. The trip involved 30 legs, or separate flights, taking the fliers to 14 States and 3 Provinces of Canada. Lethbridge, Alberta, was the furthest north reached on the tour, and Colorado Springs the point furthest west. Eighteen planes competed for the Edsel B. Ford trophy, and there were approximately a dozen official and other ships accompanying the contestants.

The National Air Tour was planned as a flying experimental laboratory in which all of the planes passed over the same route, and their speed and other performances were recorded. It is interesting to record that in 1930 all the planes entered, which represented various types, completed the scheduled flight, while of the accompanying planes all but two were able to fly the course arranged. One of these with a small engine was unable to combat the severe headwinds in the early days of the flight, and the other was

wrecked, making a night landing at an unlighted airport not on the route of the tour.

In the 1930 competition a new basis of scoring was developed, which was considered an improvement over that employed in previous years. The formula developed consisted of the useful record as computed by the U. S. Department of Commerce, divided by the rated horse power, also according to the Department of Commerce specifications. To this quota was added 160 divided by the takeoff and landing time of the ship, plus 10, and this gave a factor which, multiplied by the actual leg speed, gave the number of points for the leg.

It will be apparent that the speed of the airplane was a most important factor, and as a result the various aircraft were flown at high speeds, giving a fair though severe test of the various engines. Furthermore, piloting and navigating ability figured as never before, and as a result the performances of the various entrants were on a high plane.

The winning plane was the Ford Standard Model 7-AT, all metal Ford cabin monoplane, with one 420-horse power Pratt & Whitney Wasp, and two 300-horse power Wright Whirlwind engines, flown by Harry L. Russell, the total points scored being 58,575.6, with an average speed of 131.9 miles per hour. Second place in the competition went to the Waco plane with a single Wright engine flown by John Livingston, which made a score of 55,628.2 points with an average speed of 148.3 miles per hour, and third place to the Waco plane with a single Wright engine flown by Art Davis, which gained a total of 55,226.0 points and had an average speed of 148.4 miles.

As showing the range of the competition, it may be said that the lowest number of points, 27,899.6, was achieved by a plane, the average speed of which was 94.8 miles per hour.

NATIONAL AIR RACES. The National Air Races for 1930 were held at the Curtiss-Reynolds Airport, Chicago, from August 23 to September 1. Among the events, interest was attached to the non-stop derby from Los Angeles, California, to Chicago, 1760 miles, in which five planes competed and in which the difference in time between the first and the last was but 49 minutes, 37 seconds. First place was won by the Lockheed cabin plane with Pratt & Whitney Wasp engine, Wiley Post pilot, the distance being accomplished in 9:09.04. The second place was taken by a similar plane, piloted by Arthur Goebel, with the time 9:21.21.4. The first prize in this competition was \$7500, and second, \$4500.

There was also a Women's Class "A" Pacific Derby, where Gladys O'Donnell in a Waco plane flew from Long Beach, Calif., to Chicago in 15:13.16, winning \$3500 from a field of six entrants, one of whom was forced down at Emporia, Kan. The Women's Class "B" Dixie Derby from Washington, D. C., to Chicago was won by Phoebe F. Omie in a Monocoupe plane in 11:42-21, taking first prize of \$2000. There were five competitors, all of whom finished.

In the Men's Class "B" Atlantic Derby, Hartford, Conn., to Chicago, there were four contestants, J. Wesley Smith winning first prize of \$1250, with the time of flight 8:24.37.1.

In the Men's Class "A" Pacific Derby, Seattle, Wash., to Chicago, John Blum in a Lockheed plane flew the distance in 18:24.31.1, winning a first prize of \$3500. In the Closed Event for attack planes of the U. S. Marine Corps, Lieutenant San-

derson, flying in a Boeing plane, made a speed of 142.36 miles over 10 laps of a 5-mile course. The Men's Free For All contest for the Thompson trophy, with a prize of \$5000, was flown over 20 laps of a 5-mile course and was won by Chas. Holman flying a Laird plane, entered by the B. F. Goodrich Company, equipped with a Pratt & Whitney engine. The time was 29:43.0, and the speed achieved was 201.91 miles per hour.

In addition to the events noted, a number of other contests were held, such as acrobatic exhibitions, speed and efficiency races, also gliding competitions, landing competitions, balloon bursting contests, and parachute descents.

During August an international Round-Europe contest for light airplanes was held and was again won by Herr Morzik, who was successful also in the previous year. The contest involved a 5000-mile circuit where, in addition to speed and trustworthiness, comfort and economy were considered. Herr Morzik flew in a B. F. W. plane and achieved 427 points out of a possible 500.

AIR TRANSPORT. During the year 1930 there was an important gain in the commercial air transport in the United States, with an increase over the previous year in miles flown and passengers carried, as well as in the total number of commercial routes. Much of the air transport on a commercial basis was carried on at a loss by the operators during the year, and there was considerable uncertainty as to rates, which for passenger traffic finally became fixed at about 6 to 8 cents a mile, which compared favorably with railway fare on the better trains. During the year transcontinental passenger service was reduced to a 36-hour schedule on the central route operated by the Transcontinental and Western Air, Inc., and this was to be decreased to approximately 24 hours with night flying planned for the year 1931.

The Watres Bill passed by Congress during 1930 made provision for mail subvention with direct financial aid to the major air-transport systems, and it was thought possible that aerial express traffic could be developed as a result of lowered rates and increased business. The Watres Bill resulted in the addition of some 9000 miles of mail routes, and an increase of 35,000 miles a day flown with mail, and a definite schedule of compensation was provided, which was considered satisfactory to the operators.

During the year there was a considerable increase in short distance air lines or air ferries operated as at Seattle to Bremerton, Wash., across 12 miles of water, and the 6-mile air ferry across San Francisco Bay. The New York-Philadelphia-Washington airways started operation with an every hour, on-the-hour, schedule and was successful.

The total mileage of established airways at the close of 1930, according to *Aviation*, was 47,184 as against 36,330 in 1929, and 16,667 in 1928. The total miles scheduled daily increased to 123,771 in 1930 from 87,684 in 1929, and 39,060 in 1928. For the first six months of 1930 mail loads increased over the same period for 1929 by about 10 per cent, and express loads by more than 16 per cent. The total mileage flown in 1930 was estimated at about 43,000,000 as compared to 25,000,000 in 1929, and 10,000,000 in 1928.

An estimate of passengers carried by American transport lines during 1930 was more than 400,000, and the total passenger miles flown approxi-



PITCAIRN-CIERVA AUTOGIRO
In Flight Over New York City



SIKORSKY AMPHIBION "S-41"

A 16-Place, 2-Engine Cabin Flying Boat Built for Pan-American Airway Service in Central and South America

AMERICAN AIRCRAFT OF 1930

MAIN

mated 100,000,000, comparing approximately with 150,000 passengers carried in 1929 and 48,000,000 passenger miles flown.

There were produced in the U. S. 2684 commercial and military airplanes valued at \$21,468,763 in 1930, according to the Aeronautical Chamber of Commerce of America. In the commercial field, 1937 airplanes were built and 2324 were sold. In the military field, 747 planes were manufactured and 801 were delivered to the Government. The number of military planes produced actually represented an increase of 70 over the 677 manufactured in 1929. The commercial field showed a decided curtailment of production if the 1937 planes manufactured in 1930 were compared with 5357 made in 1929.

In the Soviet Union during 1930 civil aviation made considerable progress, and plans were prepared for airway lines to be in operation in 1931 covering some 26,000 kilometers. It was planned, in this connection, to open an air route from Moscow to Welland, in the extreme northeast of Kamchatka—a distance of 13,000 kilometers, or nearly twice the length of the British line to India, as well as a trans-Asian line 8000 kilometers in length between Moscow and Vladivostok, by way of Irkutsk and Khabarovsk. The Russian government had already operated a line between Moscow and Irkutsk, 4700 kilometers in length.

Three Soviet single-motored two-passenger open airplanes made what was known as the "Great Eastern Flight" through Turkey, Persia, and Afghanistan, and returned to Moscow in September, spending 15 days on the trip, six of which were in three eastern capitals. A distance of 10,500 kilometers along the route Moscow-Sebastopol-Angora-Tiflis-Teheran-Termez-Kabul-Tashkent-Orenburg-Moscow was covered in actual flying time of 61 hours and 30 minutes.

WIND TUNNEL. During the year progress was made on the largest wind tunnel in the world, and a covered body of water nearly half a mile in length served as a seaplane testing basin at the Langley Memorial Aeronautic Laboratory, Langley Field, Virginia. These facilities at the end of the year had neared completion, and would afford increased opportunity for scientific investigation destined to improve the aerodynamic efficiency of airplanes. The wind tunnel, in particular, was desirable in order to obtain data so that designers could make machines where the flow of air around them was smooth and free from eddies. Among the problems that had been solved in wind tunnels was the design of a cowl or hood for standard air-cooled engines, which resulted in an increase of speed of approximately 20 miles per hour for the ordinary commercial airplane.

GLIDING. Gliding and soaring in 1930 took on an increased importance in the United States, and the first national soaring meet staged by the National Glider Association in Elmira, New York, September 21 to October 5, attracted considerable attention. Among the achievements at this event was an altitude of 2928 feet above the starting point, attained by Wolf Hirth using a German soarer, and a height of 2409 feet made by Warren Eaton in an American secondary glider. Hirth was able to fly 33 miles across country and Albert Hastings made a duration flight of 7 hours, 43 minutes and 11 seconds, though Hawley Bowlus and Jack Barstow at Point Loma, Calif., made an unofficial duration

record of 15 hours, and 13 minutes in a sail plane. The Department of Commerce during the year established Federal rules and regulated the operation and licensing of gliders. Mention might be made of Lieut. R. S. Barnaby's successful descent to earth on a glider launched from the airship Los Angeles.

HELICOPTERS. Experiments continued during the year with various types of helicopters or autogyros, both in the form of small models and full-sized craft. Notable among the work in this field were the Curtiss-Bleeker helicopter, which was under test, and the "Cierva autogiro," which was actively flown in a number of types during the year. As in other fields of experimentation, there was found to be considerable discrepancy between the performances of models and full-sized machines when constructed. Lifting ratios greater than 100 lbs. per horse power were frequently achieved in models, where only a fraction of a horse power was applied and very little weight was lifted. The ratio, however, was found not to hold for a man-sized craft, as structural bracing of the requisite strength and weight required for real machines was a very difficult matter. Furthermore, the rotating wings of models could be turned much faster than those of big machines, because ability to rise depended more on circumferential speed at the wing tip than on revolutions per minute. Hence a small propeller made more revolutions than a large one, a condition readily realized in small models, but not in big machines requiring heavy and clumsy gearing to reduce the speed of high-speed-gasoline aircraft motors to about 130 revolutions per minute, with consequent loss of power.

In the Curtiss-Bleeker helicopter, propellers were used on each rotating wing driven at high speed by direct gearing to the motor and, in turn, driving the rotating wings. The rotating surfaces, it has been found by experiments lasting over a number of years, must be large and their linear speed must compare with airplane speed, yet this speed, in turn, is limited by a fast increase in power. The rotating surface consequently must be large.

The "autogiro" described in previous YEAR Books and illustrated on the accompanying plate, is unlike the helicopter in that its rotating wings, which exert vertical lift, are driven indirectly by the backwash from an ordinary airplane propeller. It has an airplane fuselage. The helicopter has no airplane fuselage or propeller, and its rotating wings are powered directly.

During the year the D'Ascanio helicopter, the design of Corridino D'Ascanio, in Italy, was tested and made a series of successful flights. In this machine, two 2-bladed rotors formed a lifting surface, being free to rotate in a vertical plane, and relying on centrifugal force to maintain an approximately horizontal position. The two rotors turn in opposite directions, making about 75 revolutions per minute. Each blade is fitted with a small, trailing stabilizer, controlled from the cockpit, and can itself be rotated about its longitudinal axis through the same set of controls. A 90-horse power Fiat air-cooled engine drives the rotors, and fuselage of nickel-steel tinny tubing, mounted on 3 wheels, is used.

The machine was stated to have made a vertical climb from a 50-foot circle to a height of 20 feet, remaining motionless over a fixed point for one minute and 31 seconds, and a flight in a closed circuit not less than 3000 feet in length,

returning to the point of takeoff. This helicopter had also risen to an altitude of 59 feet, and had flown in a straight line 1836 feet within the boundary of the field. It had also made a duration flight of 8 minutes and 45 seconds.

"The National Conference on Uniform Aeronautic Regulatory Laws was held in Washington, December 16 and 17, under the auspices of the Aeronautics Branch of the Department of Commerce. The programme covered five fundamental subjects: (1) Uniform basic regulatory State air law; (2) adoption of Federal air-traffic rules by the States for purposes of local enforcement; (3) methods of local enforcement; (4) State enabling acts for airport acquisition and control; and (5) importance of uniform airport field rules."

AÉROPLANES. See **AÉRONAUTICS**.

ÆSTHETICS. See **PHILOSOPHY**.

AFGHANISTAN, af-gān-'i-stān'. An independent kingdom of central Asia, serving as a buffer state between India and Soviet Russia. The estimates of the area vary from 245,000 to 270,000 square miles, while the population is roughly estimated at 8,000,000 to 10,000,000. King in 1930, Muhammed Nadir Khan, who was called to the throne Oct. 16, 1929. Capital, Kabul, with a population of about 100,000.

Other important towns are Kandahār (60,000), Herāt (121,000), and Mazar-i-Sharif (46,200). The Afghan is the dominant race and the chief tribes are the Durrani and the Ghilzais, numbering about 2,200,000. The prevailing languages are Persian and Pushto and the dominant religion is Islam.

Although Afghanistan's natural resources are unsurveyed, fairly rich copper and lead deposits are reported in the northern part and precious stones, particularly lapis lazuli, are found. Manufacturing, chiefly of the cottage industry type, supplies the local demand for cloth, soap, boots, and other articles. Carpets and rugs are made for export. Trade is mainly with India, the exports consisting chiefly of fresh and dried fruits, carcass skins, rugs, wool, grain and pulse, animal casings, and small quantities of hides and skins. Cotton piece goods, sugar, metals, and motor cars are the principal imports. The two leading trade routes to India are from Kabul to Peshawar by way of the Khyber Pass and from Kandahār, centre of a rich fruit growing region, to the railway terminal at Chaman, India. There are no railways in Afghanistan. Rough motor roads connect Kabul with the principal cities.

In normal years Afghanistan's trade with India averages about \$15,000,000 annually. Due to disturbed conditions in 1929, however, the volume of foreign trade was reduced to one-fourth that of 1928. In 1930 much machinery and factory equipment ordered by King Amanullah during his tour of Europe in 1927 and 1928 was still lying unpaid for at Karachi, India.

Constitutional government in the country, which was interrupted during the civil strife of 1929, was reestablished with the crowning of Muhammed Nadir Khan. (See 1929 YEAR BOOK.) There are legislative and state assemblies and a Cabinet presided over by the King. The country is divided into five major and four minor provinces, each administered by a governor. In 1930 the Afghan consul general at Delhi announced that annual revenues approximated \$23,400,000.

HISTORY. The authority of King Nadir Khan was gradually extended throughout the country

during 1930, despite some opposition among the tribesmen. A programme of development announced by the new King early in the year included the construction of roads, the fostering of improved means of transport, promotion of industry, agriculture, and fruit growing, exploration of the country's mineral resources, and the establishment of friendly relations with foreign countries. The road programme included the completion of the highway from Kabul to Peshawar, which was half-constructed when the revolt against King Amanullah in 1928 interrupted the work. With regard to internal reforms, the King made it clear that he would not repeat the mistake of King Amanullah, who lost his throne through attempting to modernize the country overnight.

British fears that the appointment late in 1929 of King Nadir Khan's brother as Minister to Soviet Russia indicated a pro-Soviet leaning on the part of the new monarch were stilled when early in 1930 Shah Wali Ali Kahn, another of the King's brothers, was appointed Minister to Great Britain. The Afghan monarch used his influence to discourage the tribes on the northwest frontier of India from joining the Mohmand, Afridi, and other mountain clans in their raids into the Indian plains during the year. Revolting tribesmen, who sought to capture Kabul during July, were defeated after a two-day battle not far from the city.

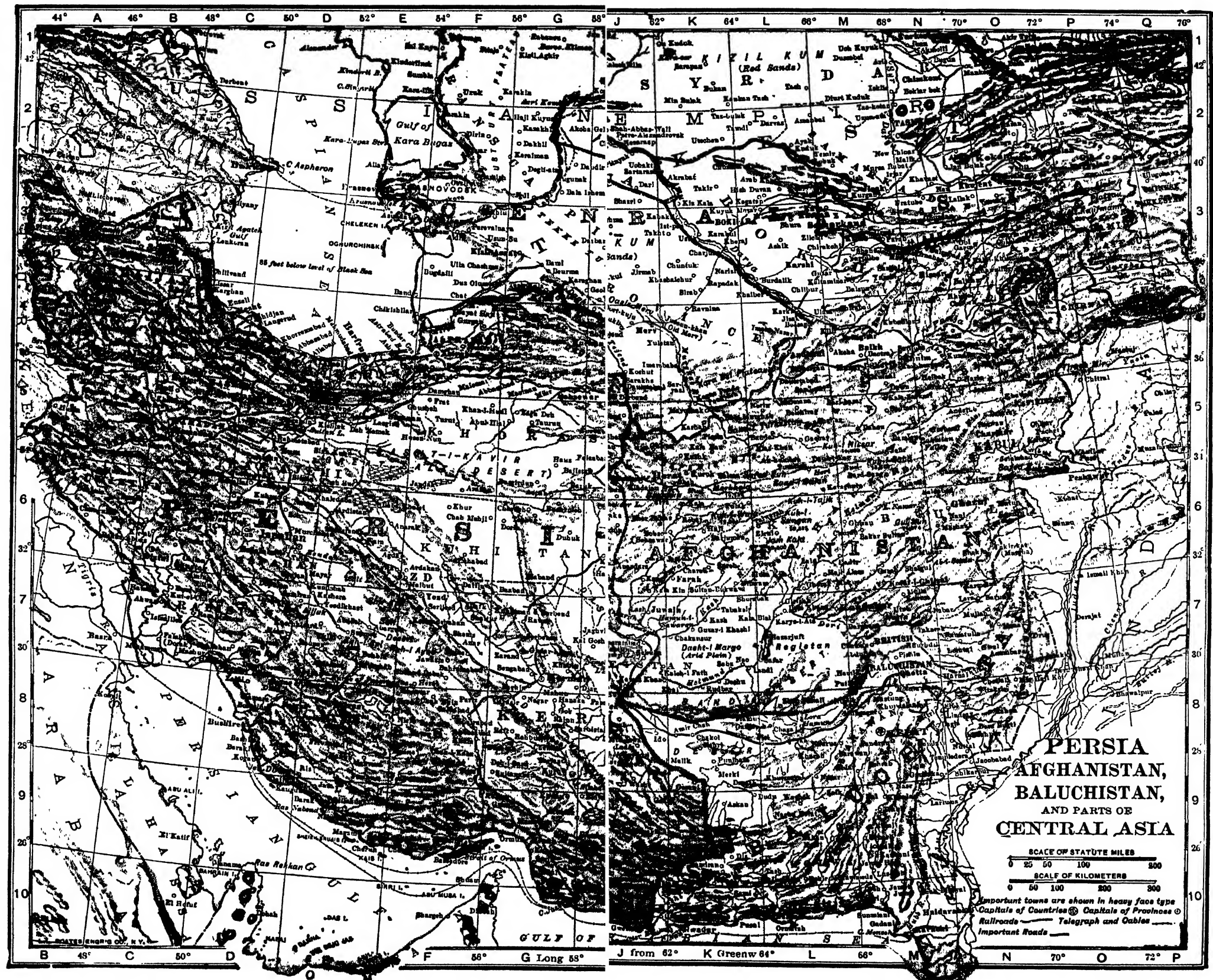
Two reports early in the year tended to confirm rumors that ex-King Amanullah was nursing the ambition to regain his throne. Indian authorities arrested two of his representatives, one of them a half-brother, in the Northwest Frontier Province of India on a charge of conspiring "to disturb the peace of Afghanistan." Shortly afterward, Amanullah traveled from Italy to Ankara to visit President Mustapha Kemal Pasha. It was recalled that a Turkish military mission was sent to aid Amanullah in his unsuccessful campaign to regain his throne following his forced abdication in 1929. The deposed King spent the summer at a villa on the Bosphorus, returning to Rome in October. See **INDIA** under *History*. Consult Sir George MacMunn, *Afghanistan, From Darius to Amanullah* (London, 1929).

AFRICA. The various divisions of Africa in this volume are discussed under their own heads. See articles on the respective countries and territories, including **ETHIOPIA**; **KENYA**; **EGYPT**; **MOROCCO**; **TUNIS**; **SOUTH AFRICA**, **UNION OF**, etc. See also the articles **ANTHROPOLOGY**; **ARCHAEOLOGY**; **PHILOLOGY**, **MODERN**; and **EXPLORATION**.

AFRIDI RAIDS. See **INDIA** under *History*.

AGNES SCOTT COLLEGE. An institution for the higher education of women in the borough of Decatur, Atlanta, Ga.; founded in 1889. The enrollment for the autumn of 1930 was 449. The faculty numbered 51 members, and the officers of administration, 14. The endowment amounted to \$1,250,000, while the gross income for the year was \$344,570. There were 21,250 volumes in the library. During 1930 a campaign to raise \$1,500,000 was completed, of which \$1,000,000 was to be used for new buildings and improvements and \$500,000 for endowment. The General Education Board of New York and the Presser Foundation of Philadelphia were among the chief contributors to this fund. President, James Ross McCain, Ph.D., LL.D.

AGNULOCYTIC ANGINA. See **MEDICINE**, **PROGRESS OF**.



AGRARIAN CONFERENCES. See JUGOSLAVIA under *History*; AGRICULTURE under *World Agriculture*.

AGRICULTURAL EXPERIMENT STATIONS. Agricultural research at the experiment stations in the United States, its territories, and insular possessions continued to flourish under the stimulus of increased financial support from Federal, State, and other sources. Of the available funds totaling about \$17,000,000, the Federal Government supplied \$4,335,000 which comprised \$90,000 for each State and \$15,000 for Hawaii. A total of \$247,000 was appropriated for stations maintained by the U. S. Department of Agriculture, in Alaska, Hawaii, Porto Rico, Guam, and Virgin Islands. The stations' income was increased to a still greater extent from State and local sources with the result that they were coöperating effectively with each other and the U. S. Department of Agriculture in a research programme covering practically every phase of agriculture and rural life.

The expansion of the system was indicated further by the growing number of research projects which totaled over 7000. The Adams fund supported 438 projects and the Purnell fund 1336. The *Experiment Station Record* reviewed during the year nearly 1000 publications reporting station work. Changes occurred in the directorships of the California, Mississippi, and Porto Rico (Federal) Stations. The regular personnel amounted to more than 3100 workers.

The New Jersey State Experiment Station celebrated its semi-centennial October 8 with appropriate exercises. Organized in 1880, several years before the Hatch act, it still operates without direct Federal aid, although associated closely with the New Jersey College Station under a common directorship since 1895.

The Hawaii Experiment Station increased its efficiency and economy of administration in the first year under the joint control of the University of Hawaii and the U. S. Department of Agriculture, provided for by an Act of Congress of May 16, 1928, extending benefits of the Hatch and supplementary acts to Hawaii. The work of the Alaska Stations was partly reorganized and the investigations were being centred at the Matanuska Station.

The enlarged incomes were evident in the improved facilities for research. New buildings erected in 1930 included the Atwater Laboratory at the Connecticut Storrs Station to house research in animal diseases and genetics; an agricultural and biology building at the New Mexico Station; structures for horticultural manufactures and for research in meats and meat products at the Massachusetts Station, and laboratories at the Porto Rico Insular Station. Giannini Hall at the University of California, built primarily to house the Giannini Foundation for Agricultural Economics, was completed and ready for occupancy by divisions of the College of Agriculture.

In Virginia, \$500,000 was appropriated for buildings and equipment at Virginia Polytechnic Institute, of which \$150,000 was for a dairy products building and \$30,000 for an agricultural engineering laboratory.

Additions to facilities, resources, and responsibilities of the College of Agriculture and allied divisions at Cornell University and the New York State Station at Geneva made available during 1930 were greater than ever before. Construction

started on a building for agricultural economics and related lines to cost \$650,000, and \$995,000 was made available for a new home economics building. Other items included \$160,000 for barns and facilities for animal husbandry and additional land, \$415,000 for equipment of the plant science building, and substantial allotments for research and other activities. The State Station was granted \$285,000 for a horticultural laboratory building and other funds aggregating \$330,650. A legislative act, signed March 21, admitted all of the staff and other employees of the State colleges and stations to privileges of the State retirement act.

The demands of important local problems and special crops were factors responsible for the establishment of substations near Windsor, Conn., Blairsville, Georgia, and Kearneysville, West Virginia, for various phases of research with vegetables, fruit, and forest trees; at Glade Spring, Va., for pasture problems, at Homestead and Quincy, Florida, for agriculture and crops peculiar to their sections; and in the new irrigation district near Isabela, Porto Rico. The Texas legislature provided funds for four additional substations, one to be at Winter Haven, in the winter garden region. Coöperating with State stations and other agencies, the U. S. Department of Agriculture was locating soil erosion experiment stations in the principal erosion regions in the United States.

NECROLOGY. Station workers dying during 1930 included Patrick B. Kennedy, agrostologist of the California station; Frank T. Meacham, in charge of the North Carolina Piedmont Substation since its establishment; Irving J. Jensen, superintendent of the Montana Judith Basin Substation, and Herbert J. Pack, entomologist of the Utah Station. George F. Freeman, director of the Porto Rico Federal Station, and from 1923-1930 head of the Service Technique d'Agriculture of Haiti, died September 17. Among British agriculturists, Sir Francis Watts, K.C.M.G., first principal of the Imperial College of Tropical Agriculture in Trinidad, and long connected with agricultural research in the West Indies, died September 24. James Wilson Robertson, eminent for his services to Canadian agriculture and education, first president of MacDonald College, died March 19. Gabrielle L. C. Howard, second Imperial Botanist to the Government of India, also died during the year.

BRITISH EMPIRE. Agricultural research in the British Empire continued to be promoted by the Empire Marketing Board, the Empire Cotton Growing Corporation, the governments of the many political divisions, universities, agricultural colleges, and by organized research stations as those at Rothamsted, East Malling, Cheshunt, and Long Ashton, and the John Innes Horticultural Institution. The British golf unions opened at Bingley, Yorkshire, the St. Ives Research Station for investigation of greens-keeping problems.

The Dominion Experimental Farms in Canada and the provincial agricultural colleges maintained their usual high standards of research. The National Research Laboratory, which embraces a division of economic biology and agriculture was to be housed in a building at Ottawa, to be completed in 1931 at a cost of about \$3,000,000.

The Australian Commonwealth Council for Scientific and Industrial Research was erecting at the University of Sydney a laboratory building

costing £20,000, for investigation of problems of animal health, especially sheep.

The Egyptian Ministry of Agriculture decided to establish at Cairo an agricultural museum, costing about \$1,000,000, and invited the director of the Budapest Agricultural Museum to undertake the organization.

The Central Agricultural Experiment Station at Santiago de las Vegas, Cuba, was rebuilt and its personnel enlarged.

ITALY. A decree, prescribing that no new experiment stations shall be set up in Italy or subsidized by the government for a ten-year period, provided for the organization of the existing stations known as Royal Agricultural Experiment Stations and those of societies (*consortia*), both being under the control of the Ministry of Agriculture. The measure provides for an expenditure of 8,000,000 lire, during the next two fiscal years, for organizing the government stations, and for annual grants, the amounts to be determined later by the Ministries of Agriculture and Finance. This decree followed one passed in September, 1929, regarding the transformation of the Ministry of National Economy into a Ministry of Agriculture and Forests, which also was to handle coordinated land reclamation matters. Italy has a number of experiment stations which deal with most branches of science related to agriculture.

RUSSIA. The All-Union Academy of Agricultural Sciences named after Lenin assumed the reorganization of research and experimental work in agriculture in the U. S. S. R. The Academy, headed by Prof. N. I. Vavilov, in 1930 was engaged in preparing programmes for fifty research institutes. Most of these were to be established in provincial cities throughout the U. S. S. R., in view of the diversity of agricultural conditions and the need for bringing new territories under cultivation. Thus grain institutes were planned for Viatka to extend grain farming into the North, in Saratov to develop more stable agriculture, in Omsk (Siberia) and Kharkov (Ukraine). Cattle breeding institutes were to be established in Siberia, Kazakhstan, the Ukraine, and Uzbekistan. Institutes specializing in certain crops were to be opened in suitable localities, as a cotton institute in Uzbekistan, a maize institute in Dniepropetrovsk, and a sugar-beet institute in Kiev. Special institutes were to be opened in Moscow, Leningrad, Kharkov and Saratov for training scientific workers in agriculture. Besides research activities and the solution of important practical agricultural problems, the Academy was to have charge of the organization of congresses and conferences and the representation of the U. S. S. R. at future international congresses.

Consult also *Report on the Agricultural Experiment Stations, 1929*, by W. H. Beal and H. M. Steece; (U. S. Department of Agriculture), *Report of the Acting Chief of the Office of Experiment Stations, 1930*, by Walter H. Evans (U. S. Department of Agriculture).

AGRICULTURAL EXTENSION WORK.

Substantial progress was made by the cooperative extension organization in teaching rural people the value of better practices in farming and home making, despite the fact that the serious emergency situation facing agriculture made it necessary for county extension agents to devote much of their time and efforts to relief measures. The educational work in agriculture and home economics was carried on in 48 States and the Terri-

tories of Hawaii and Alaska through a nationwide organization which was established under the provisions of the Smith-Lever Act of May 8, 1914, and further strengthened by the Capper-Ketcham Act of May 22, 1928. The system operated on a cooperative basis, funds for the purpose being provided from Federal, State, and county sources. County agricultural agents, home demonstration agents, and boys' and girls' 4-H club agents, working under the cooperative supervision of the U. S. Department of Agriculture and of State extension directors and supervisors located at the State agricultural colleges, carried direct to farmers, farm women, and farm youth the best methods of farming and home making made available through experimentation in research institutions. The knowledge and use of these methods were taught through practical educational media, such as farm and home demonstrations, extension meetings, tours, campaigns, publications, news releases, lectures, radio talks, exhibits, and conferences with farm men and women. The primary object of cooperative extension work was to make the country a better place in which to live, both by making farming more profitable and permanent and by aiding rural people to improve their home conditions.

Unusually adverse conditions caused by the world-wide economic depression, unfavorable markets, and overproduction of some of the major farm commodities, particularly wheat and cotton, made the year very difficult for the farmer. The situation was further complicated by a severe drought which extended over a wide area from the Atlantic Coast of Maryland and Virginia to Oklahoma and Texas. The production of corn, hay, and feed crops was seriously depleted and pastures and ranges were greatly damaged by the drought.

In carrying on activities to relieve the distress of farmers in the drought area, the cooperative extension organization again demonstrated its ability to cope with emergency situations. The resources of information and knowledge at its command in the U. S. Department of Agriculture and other departments of the Federal Government, in the State agricultural colleges, and in the State experiment stations were quickly mobilized, adapted to the local conditions, and taken to the farmer in a practical manner by the county extension agents. Because of the scant feed supplies available, farmers were assisted in planning emergency rations for their livestock; they were taught how to cull their herds and flocks; they were given assistance in locating needed supplies of feed and forage; they were urged to plant forage crops for fall and early spring pasture; and were helped in obtaining financial backing.

County agricultural agents in the drought areas were also designated as officials to decide which individuals were entitled to receive the reduced freight rates granted by the railroads on the movement of hay and feed into the drought areas or of livestock shipped out of these areas. The agents approved applications for lower rates on the movement of approximately 60,000 carloads of hay, feed, and livestock at a saving to the drought sufferers of several millions of dollars. The home demonstration agents taught farm women how to can vegetables and meat; they provided them with information concerning the most economical and wholesome foods to purchase to prevent nutritional diseases caused by poorly balanced diets, and encouraged them to grow fall gardens of rapidly maturing vegetables, such as

turnips and peas, to replace the summer gardens destroyed by the drought.

Coöperative marketing and farm economics, which have been given prominence in extension teaching in recent years, received still further impetus in 1930 as a result of the agricultural depression and overproduction. County extension agents aided farmers in a better understanding of the programme of the Federal Farm Board to establish national commodity coöperative-marketing agencies through which local, State, and regional coöperatives might function more effectively. Farmers were advised about the objects and operations of the coöperative associations and the requirements for membership. The efforts of the Federal Farm Board to adjust the production of commodities to meet the existing demand and to eliminate or reduce surpluses were also vigorously supported by the coöperative extension service. Facts concerning the production and existing supply of wheat and cotton and the probable demand for these crops were supplied to farmers in the wheat and cotton States and enabled them to plan their farm operations with a more intelligent understanding of the economic conditions. Methods of lowering costs of production and of bettering the quality of these crops were also emphasized.

Regional outlook conferences of extension workers and subject-matter specialists were held at Salt Lake City, Utah, Ames, Iowa, Washington, D. C., and Atlanta, Ga. The probable future situation of various farm commodities was discussed at these meetings and attention was given to methods of applying the information to the problems of the individual farmer. At county and State economic conferences following the regional meetings, farmers were advised about crop acreages, conditions, and probable production; economic changes in progress; trends in production and consumption; and prospects for the future. Extension programmes were prepared based on the facts supplied and farmers were aided in adjusting their farming operations to the conditions likely to confront them.

Major farm production activities and home-making interests continued to receive the attention of extension workers and farm people. More emphasis was placed on the improvement and conservation of the soil as a means of economical crop production. The control of plant diseases, noxious weeds, and insects was featured and in vegetable-growing sections the introduction of disease-resistant and disease-free seed was encouraged. One of the substantial accomplishments during the year was the greater control of wheat smut. Forest-tree planting proved to be popular during the year and agents helped farmers in such phases of forestry improvement as cutting, timber estimating, fire prevention, and the establishment of windbreaks and shelter belts. Other important activities conducted by county agricultural agents during the year included the control of livestock diseases and pests, better breeding of livestock, dairy feeding and management, culling, use of modern farm machinery and equipment, construction of improved farm buildings, and the installation of sewage, water, heating, and lighting systems.

Wholesome and inspiring results in the improvement of home life on the farm were obtained through the efforts of home demonstration agents to aid farm women in raising their standards of living. Among the more popular phases of extension work with farm women were the

proper selection and preparation of food to meet the requirements for health and growth. Substantial increase was also made in the number of women learning better practices of sewing, millinery, home management, house furnishing, landscape improvement, and marketing. Home demonstration agents showed farm women how to increase the family income by growing vegetables, fruits, and flowers for sale and by developing such home industries as weaving, basketry, and the preservation of fruits, preserves, and jellies for the market. Greater interest was shown in the care and training of children, home nursing, and the use of sanitary measures about the home. The development of cultural, social, and recreational activities was more pronounced during 1930.

In adapting the fundamental principles of extension teaching to the needs of farm youth, 4-H clubs were organized and conducted to aid boys and girls between the ages of 10 and 20 to become more efficient farmers and better home makers. Each succeeding year the importance of enlisting farm boys and girls as agencies for bringing about the introduction of improved practices has steadily increased. The 4-H clubs represented in variety of interest practically every farm and home activity. Through the use of improved seed and better cultural methods, the club boys increased the yields of their crops; they learned how to cull poultry, how to manage and feed their dairy and beef cattle, pigs, and sheep; and in many other ways they demonstrated to their personal satisfaction and to the satisfaction of others that greater profits may be obtained by practicing the best production methods.

The club girls improved their rooms, made their own clothing, planted shrubbery about the house, canned fruits and vegetables, grew home gardens, and planned balanced meals under the direction of their county extension agents and adult local leaders. The club members attended short courses, exhibited their products at fairs and expositions, started savings accounts with the money earned through club activities, and conducted public demonstrations to show others some of the helpful methods of farming and home making they had learned.

Coöperative extension work was begun in the Territory of Alaska in coöperation with the Alaska Agricultural College and School of Mines on July 1, 1930, when \$10,000 appropriated by Congress became available. Charles E. Bunnell was appointed director of extension work in Alaska and two assistant directors, one for agriculture and the other for home economics, were appointed.

Funds provided for coöperative extension work during the fiscal year ending June 30, 1931, from all sources total approximately \$26,123,000, an increase of about \$1,865,000 over the previous year. Approximately \$995,000 of this increase were in Federal funds, and \$870,000 in State and county funds. Additional Federal funds amounting to \$1,000,000 were made available by the Second Deficiency Act of July 3, 1930. This appropriation was for additional coöperative agricultural extension work, including the employment of specialists in economics and marketing, to be allotted and paid by the Secretary of Agriculture to the several States and the Territory of Hawaii in such amounts as he may deem necessary to accomplish such purposes.

Of the total funds available for extension purposes, \$10,247,000, or 39.2 per cent, were contributed by the Federal Government, \$7,243,000,

or 27.7 per cent, were from State appropriations to the agricultural colleges and other State agencies, and \$8,633,000, or 33.1 per cent, came from county appropriations for extension work. About 95.8 per cent of all funds allotted for cooperative extension work during the year came from public sources.

From Dec. 1, 1929, to Nov. 30, 1930, the number of extension workers was increased by 301 persons. Of these, 73 were new county agricultural agents, 27 were assistant county agricultural agents, and 2 were negro agricultural agents. County home demonstration agents increased by 74 and assistant county home demonstration agents by 2. The number of subject-matter specialists was increased by 122, a number of these being extension economists.

Of the 6100 persons engaged in extension work in the United States at the end of the year, 2721 were in county agricultural agent work, 1394 in county home demonstration work, 343 in work with 4-H clubs, and 332 in negro extension work. There were 50 extension directors, 30 assistant directors, and 1230 subject-matter specialists.

Statistics of extension accomplishment for 1930 were not available at the end of the year. However, a brief synopsis of the statistical results of 1929 is presented, which will give some understanding of the volume of work carried on. In 1929, agents reported more than 5,170,000 instances in which farm men, women, and boys and girls accepted and put into use the improved practices taught. This was an increase of 510,000 over the preceding year. Extension workers supervised 930,000 adult demonstrations as compared with 851,500 in 1928. County agricultural agents made 1,546,700 personal visits to 793,700 farms; wrote and sent to the press 423,600 news articles; held more than 800,000 field meetings; distributed 6,345,500 publications; and gave advice to farmers who made 3,403,000 calls at the agents' offices. Home demonstration agents made 377,900 visits to help farm women and also received 540,400 visits from farm women who called at the office for information. Reports show that 756,100 farm boys and girls were enrolled in 4-H club work, or about 92,000 more than in 1928. These club members represented 52,180 groups, known as 4-H clubs. Of the number enrolled, 507,500, or 67 per cent, satisfactorily completed their farm and home club activities. These boys and girls carried on 995,300 demonstrations in improved practices. In helping farming people to better their methods of farming and home making, the agents were assisted by 273,518 unpaid local leaders, of whom more than 200,000 worked with adults and about 70,000 with club members. All of these local leaders obtained their knowledge of extension work through the training given by the extension agents.

A total of 2000 farmers' institutes were conducted in 11 States in 1929. Instruction at these institutes was given by 729 lecturers at 9029 sessions attended by 1,266,500 persons.

The demand for silent educational motion pictures on farm and home subjects produced by the U. S. Department of Agriculture for the use of extension workers continued to exceed the supply of films available in spite of the fact that the competition afforded by the introduction of sound films has resulted in a definite drop in demand for silent commercial films. Twenty-two new films were produced. The Department made 3368 film shipments during the year. It was estimated that the films were viewed by more than 7,000,000

persons. Exhibits prepared by the U. S. Department of Agriculture were shown at 78 fairs and expositions in the United States. Large groups of exhibits were also prepared for display at the International Fur Trade Exhibition and Congress at Leipzig, Germany, and at the Fourth World's Poultry Congress at London, England.

GREAT BRITAIN. The National Association of Young Farmers' Clubs, which was organized in January, 1929, under the auspices of the National Council of Social Service, reported that about 20 new clubs were formed in 1929, making a total of approximately 100 clubs with a membership of 2000 boys and girls. The objectives of these clubs are to instill in the minds of young people under 21 years of age a desire to learn about natural things; to provide training in stock raising and in other branches of agriculture; and to teach the principles of public speaking and of the management of affairs. The clubs are managed as far as possible by the members, who elect a chairman, a secretary, and a treasurer from their number. The club leader is an adult and directs the work with the aid of an advisory committee composed of men and women acquainted with the branches of agriculture in which the club members are concerned. The business side of stock raising is emphasized and the economic results of the members' work are shown by an annual sale of stock or produce. Club work was started in Northern Ireland during 1930 and an organization secretary was appointed who began work early in January. In March, 1930, there were 6 clubs in Northern Ireland. The Farmers' Union, the Ministry of Agriculture, the Ulster Agricultural Organization Society, and the Royal Ulster Agricultural Society cooperated in the movement.

AUSTRALIA. In Queensland the Department of Public Instruction organized the boys' and girls' club movement in 1925 with the formation of pig clubs. They became known as home project clubs and are intended for boys and girls in school, especially in the rural districts, and for those who wish to fit themselves for an agricultural calling after leaving school, as the majority do at the age of 14. Theoretical instruction in the various projects was given by the teachers, while the practical work was done by the members on the home farm. Specialists visited the club members at their homes and gave expert advice in crop raising and stock breeding. The teachers explained the language of the experts and helped the members with record keeping, the conduct of experimental work, and the application of labor-saving devices, while the parents furnished means for carrying out the projects and gave advice based on practical experience. Through the home project clubs, the boys and girls were taught how to raise pigs, calves, and poultry; how to grow flowers, vegetables, maize, peanuts, and fruits; how to pack and judge their products; and how to sew, preserve their fruits and vegetables, and cook well-balanced meals. Country women in Australia were brought into closer contact, sympathy, and understanding with one another through associations which have been organized in New South Wales, Queensland, Western Australia, South Australia, and Victoria. In 1929, 300 branches were in existence. The associations were very successful in inducing farm women to take a more active part.

INDIA. In 1929 the Madras Agricultural Department used a traveling motor exhibition as a

means of instructing peasants. The vans were taken from village to village and stops of from one to four days were made, depending upon the size of the place. The exhibits carried in the vans covered every phase of the work of the agricultural department. Each exhibit was placed in a small show case with a glass front fitted into its own section and could be changed as desired, according to the locality visited and the nature of the exhibition. The caravan or van in which the assistants traveled went ahead and selected a suitable site, made necessary arrangements, and advertised the coming of the exhibition van. Plowing and other demonstrations were conducted and lantern slides were projected to illustrate lectures given before farmers of the community in the evening.

SWEDEN. During 1929 the Ministry of Agriculture took preliminary steps to assume full responsibility for club work inaugurated by the International Education Board for the purpose of making it a permanent part of the educational training of rural young people. The administration and guidance of the work were placed in the hands of the Board of the Jordbrukare Ungdomens Forbund, the association of farm youth, after being augmented by a representative of the Ministry of Agriculture and a representative of the agricultural societies. In 1929 the government made a preliminary grant to club work of 100,000 kroner or about \$26,954, to be paid in five annual installments beginning in 1930. Since boys' and girls' club demonstrations were begun by the International Education Board in one county in 1925, the work has spread to 12 counties. The number of members has also increased from 118 in 1925 to 3098 in 1929.

DENMARK. Training for women was provided through a national organization called "The Danish Housewives' Societies." Most of the subjects which concern the home of practical economic, social, or ethical importance were covered, such as home management, knowledge of commodities and how to purchase them, methods of handling various articles of food, food substitutes, physiology of nutrition, nutritive value of dairy products, use of electricity, household chemistry, sewing, modernizing the kitchen, care of children, personal hygiene, community education, and similar subjects. A total of 8573 young people were engaged in club work in 1928-29 under the leadership of 81 men and 20 women.

SOVIET UNION (RUSSIA). To meet the constantly increasing need for agricultural instruction and assistance in the Soviet villages, extension workers known as agronomes have been appointed as fast as possible in all parts of the Union. The federal commissariat or department of agriculture requires by law that the extension work of every volost (district corresponding roughly to a county, but composed of villages with more or less homogeneous conditions) shall be in charge of an agronomer, or county agent. He is assisted by local and district agronomes, instructors, and specialists in the various branches of agriculture peculiar to each district. Districts having a large number of farms are divided in sub-districts, each in charge of a local agronomer, who works with the district agronomer as leader. There are also regional and provincial experts. In 1928, there were in the Soviet Union 3334 volost agronomes, 2264 assistants and specialists, and 1898 regional or provincial experts. The volost agronomer, or county agent, supervises

all the work of agricultural instruction in his district. He and his assistants give agricultural instruction in the schools to young peasants. He is in charge of the district experiment station and carries on extension activities with the adult peasants. Since 1922 the government has also co-operated with peasant farmers in conducting demonstration farms. It first was necessary to promise remittance of taxes to secure peasant volunteers, but after a few years the attitude of the peasants changed, and now they allow their farms to be used for the conduct of demonstrations which are visited from time to time by the agronomer and peasants to watch the progress of the work and note results.

Agricultural extension work was also carried on in Argentina, Austria, Belgium, Brazil, British Guiana, Canada, China, Cyprus, Czechoslovakia, Ecuador, Estonia, Finland, France, Germany, Guatemala, Hungary, Italy, Jamaica, Mexico, Netherlands, New Zealand, Norway, Paraguay, Poland, Scotland, Spain, Switzerland, and Uruguay.

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AGRICULTURAL RESEARCH. See AGRICULTURAL EXPERIMENT STATIONS.

AGRICULTURE. The problems of agriculture loomed large among the affairs of the United States in 1930. Foremost of these were the worst drought ever recorded and a slump in agricultural prices and incomes which reflected the combined influence of continued overproduction in some important farm products and of the world-wide business depression. The effects of the drought and depression were felt in practically every home in the United States, and Federal and State agencies united in efforts to ameliorate conditions and hasten the return of prosperity. Farmers had their usual problems, of taxation, credit, labor, production costs, and marketing—these seemed relatively small when compared to the depression and drought—yet in many cases they were intensified thereby, serving to increase the burden.

THE 1930 DROUGHT. A drought, considered the worst in the history of the United States, prevailed during much of the crop-growing season in 1930 and greatly reduced farm production. In duration, in extent of area covered, in deficiency of precipitation, and in severity, the 1930 drought exceeded the droughts of 1881, 1894, 1901, 1911, 1916, and 1924. About 30 States, including all those in the great central area extending from Virginia to Montana and from Pennsylvania to Texas, were hard hit.

Practically all nonirrigated crops growing late in the season were affected by drought, particularly the feed crops; hay and pastureage suffered greatly. Wheat, oats, or barley, taking the country as a whole, yielded rather more than average, and irrigated crops, as sugar beets, and some fruits largely grown outside the drought area, also produced well. In many localities farm-

ers had little to sell and were obliged to practice strict economy in their livestock feeding. Wells failed, water for stock was scarce, and in some parts of the country, thousands of farm families were to suffer privation. Moreover, the cut in farm production coincided with a sharp decline in the demand for farm commodities and the farm-commodity price level. This consequence of the world-wide economic depression, bore heavily upon farmers both within and outside the drought areas.

President Hoover, on August 14, called a conference of governors of drought-stricken States, and as a result of its conclusions, he appointed a national committee representing the various Federal agencies concerned, under the chairmanship of the Secretary of Agriculture. The governors in turn appointed state committees representative of the farmers, bankers, business men, and the Red Cross, and subsidiary committees were established in most of the acutely affected counties. Railway rates were reduced on feed and livestock in and out of the drought areas, and over 50,000 cars of such products were transported under the reduced rates. The Red Cross established a preliminary fund of \$5,000,000 for distress relief purposes and established agencies for its administration in each county. The Federal Farm Loan Board extended its credit facilities, and the Federal Farm Board gave financial assistance to all affected coöperatives. To aid in providing employment in the drought-stricken States, the Federal-aid road authorizations for the fiscal year 1932 were made available for contracts for construction. The drought relief bill approved Dec. 20, 1930, authorized the appropriation of \$45,000,000 for the Secretary of Agriculture to make loans to farmers in drought or storm-stricken areas for the purchase of seed of suitable crops, fertilizer, feed for work-stock, and fuel and oil for tractors used in crop production.

AGRICULTURAL DEPRESSION. The year began without the prospect of increased agricultural surpluses and there was a reasonable expectation that prices of agricultural products in general would be higher than in the previous season and that agricultural income would continue to improve, but all such expectations had to be abandoned with the break in the business situation and the subsequent marked decline in prices. The prices of agricultural products fell not because of an increase in supply, but because consumers were either unable to buy as much as usual or were unwilling to buy for future needs, except at lower prices. The effect of this reversal in the business situation on agriculture was seen most clearly in the prices of cotton, butter, and meat animals in which the price decline clearly resulted from a decline in the demand, since there were no great changes in supplies.

The decline in general price levels in other countries was brought about in the same manner as in the United States. Business depressions reduced the demand for raw materials for manufacture, such as cotton and wool; unemployment reduced the power of consumers to purchase food-stuffs and clothing—these conditions affected the international market for agricultural products. Many countries endeavored to strengthen the domestic markets for their own products by increased tariff duties and other restrictions upon imports. Countries that export agricultural prod-

ucts were forced to sell at low prices, which naturally curtailed their power to buy industrial products.

Production adjustments and a more rapid development of a national land utilization policy were two of the remedies for the current agricultural depression, which Secretary of Agriculture Arthur M. Hyde, advocated in his annual report to the President. He also emphasized the necessity of organizing agriculture into effective coöperative groups for collective action, of changing the existing tax system to lighten the farmers' tax burden, and of improving rural credit conditions. In urging acreage adjustments, the Secretary declared that the answer to overproduction was less production. By this time, he held, it was evident that the supply and demand conditions cannot be set aside by legislation, that the dumping of surpluses abroad is not feasible, that the indefinite storing of surpluses tends to prevent, rather than to cause, a rise of prices, that tariff duties are not effective on commodities produced largely for export, and that subsidies would increase rather than restrain production.

Urging the voluntary curtailment of production, the Secretary said that the problem of readjustment varies with regions and with individual farms. This fact justifies a flexible adjustment policy, but not a refusal to make adjustments. He declared that it does not follow, because some farmers can produce at a lower cost than others, that the low cost farmers should do nothing to prevent overproduction. Moreover, wise acreage adjustments, he added, can help to decrease the unit cost as well as the volume of production. This effect is produced by the elimination of the higher cost acres, and the concentration of the remaining cost acres, on the productive land.

THE AGRICULTURAL SITUATION. The year 1930, as viewed by the U. S. Department of Agriculture, was one of rather bewildering developments. The great drought resulted in the smallest crops of corn, hay, and pasture in many years, and a major industrial depression curtailed the market for cotton, meat, milk, and many other products. A precipitous, world-wide decline in prices of general commodities put further pressure especially upon raw materials, including farm products. An accumulated supply added to the distressed market condition of wheat. Agricultural production as a whole declined in 1930—total crop production was about 5 per cent less and with a December value about 28 per cent less than in 1929, and the total slaughter of meat under Federal inspection in the first 10 months (10,750,000,000 lbs.) was about 4 per cent less than in 1929 and returned about 8 per cent less money.

Returns from the production of 1930 were expected to be lower than for any season since 1921, being estimated at about \$9,950,000,000, or 16 per cent below the \$11,851,000,000 for 1929. The reduction in farm expenditures, from 1929, was small compared with the reduction in gross income. From 1924 to 1929 inclusive, the aggregate income was fairly stable, but in 1930, all sections suffered because of the world-wide industrial depression, and in the drought-stricken area, the gross income was estimated at about 25 per cent less than in 1929. The decided change from moderate improvement in 1929 to severe depression in 1930 was attributed largely to price

movements since the summer of 1929. The index of prices received by farmers in August, 1929, averaged 143 per cent of prewar prices, declined to 108 in August, 1930, and to 106 per cent in October, 1930. The disparity between the price level at which the farmer sells and that at which he must buy appeared to be the widest since 1921.

Farm taxes continued to rise during the year. With lower land values and the usual increases in taxes, the rate probably was about \$1.50 per \$100 of the full value of farm real estate, compared with \$1.46 in 1929, and \$1.22 in 1924. Direct taxes paid by farmers, now amount to more than \$900,000,000 annually, of which about 84 per cent is paid through the general property tax, according to a Department of Agriculture study reported in 1930. The farmer's acute tax problem results from a rapidly increased public expenditure met by a taxation system that bears heaviest on real estate and tangible personal property. A diminution in the farmer's equity in his real estate, through increase in mortgage indebtedness and decline in real estate values, had made the burden heavier in recent years. Remedies proposed included more effective control of expenditures, and revision of the prevailing system of taxation, to derive more revenue from sources other than general property. The American Farm Bureau Federation and other organizations emphasized the need for economy and urged careful study as a basis for revision of the State systems of taxation.

The values of farm real estate continued downward. Averaged for the entire United States, the acre value for all farm lands with improvements decreased about 1 per cent during the year ended Mar. 31, 1930, about the same as in the previous year. Declines of these two years were the smallest reported since the break following the peak of land values reached in 1920. Forced transfers of farm realty, approximated 20.8 farms per 1000, compared with 19.5 per 1000 in the year before, whereas the rate of voluntary sales and trades was 23.7 farms per 1000, similar to the previous year. The total farm-mortgage debt of the United States, which in 1930 represented about 22 per cent of the value of all farms, compared with only 10 per cent in 1910, continued practically unchanged during the two years since 1928, when the estimate was \$9,468,526,000, compared with \$7,857,700,000 in 1920, and \$3,599,000,000 in 1910. Evidently since 1928, the long upward trend in amount of farm-mortgage loans had ceased.

The borrowing-power of the farmers was greatly reduced in 1930. Lowered prices of farm commodities interfered with the liquidation of loans, and reduced the supply of new credit in country banks. The decline of farm-land values affected the credit status of farmers and forced many to reduce their mortgages. In drought-affected areas credit facilities were strained, while the demand for credit increased.

Farm credit remained costly in many parts of the country in spite of improvements brought about by the Federal Reserve Act of 1913, the Farm Loan Act of 1916, and the Agricultural Credits Act of 1923. In the little more than seven years of their existence, the 12 Federal Intermediate Credit Banks discounted farmers' notes totaling \$335,195,351, and renewed loans aggregating \$165,039,974, a total of \$500,835,325, up to Aug. 31, 1930. The banks also had loaned more than

90 coöperative marketing associations \$548,376,256, including renewals of original commitments. Under the Agricultural Marketing Act of 1929, the Federal Farm Board provided funds for loans to coöperative associations for marketing, for the acquisition of plant and equipment, and for other purposes supplementing credit furnished by other agencies. Agriculture was served much better with credit facilities than it was 10 or 15 years previously.

Tariff protection, as Secretary of Agriculture Hyde pointed out in his report, was of increasing importance to agriculture in the United States because agriculture was depending less on foreign markets and more on home markets, because competition in farm products in world markets had increased enormously, and because of the tariff's value in helping balance production against market demand. The advantages of the tariff were also indicated by President Hoover who stated in his message to Congress, December 2, "The price levels of our major agricultural commodities are, in fact, higher than those in other principal producing countries, due to the combined result of the tariff and the operations of the Farm Board."

The Tariff Act of 1930, effective June 18, an answer to the growing sentiment that a protective tariff must become more and more an integral part of the national agricultural policy, provided for a substantial increase in the rates of duty on many farm products, and also for the continuance on the free list of many articles used by farmers.

The total volume of exports of agricultural commodities during the year ended June 30, 1930, was reported to be the smallest since 1910. The decline from a value of \$1,847,000,000 in 1928-29 to \$1,495,000,000, or 19 per cent less, in 1929-30 was held largely due to lower prices and increased competition from larger world crops. Smaller shipments of cotton at reduced prices were reported as the dominant factor in causing the decline in values, but other groups also decreased substantially in value. Exports of meat and tobacco, however, rose in both volume and value. Reduced prices of many products, especially sugar and coffee, and, in some cases, a curtailed demand were the principal causes in the decline in values of agricultural imports from \$1,943,000,000 in the year ended June 30, 1929, to \$1,696,000,000 in 1929-30.

The movements of population in the United States from the farms to the cities, and vice versa, decreased somewhat in recent years although still very large. Surveys by the Department of Agriculture show the movement to towns and cities to comprise 1,876,000 persons in 1929, a general decline since 1926, whereas 1,257,000 went to the farms from the cities. Considering the ebb and flow of population and the birth and death rates, the net loss of farm population for 1929 was estimated to be 269,000 persons. Births on farms were 23 per 1000 and deaths 10 per 1000. Conclusions from a survey by the American Research Foundation were that "The drift of population from the farm to the city need cause the United States no concern over agriculture's future, since fewer farmers are now actually doing more work and providing greater crops." The farm population of the United States as of Jan. 1, 1930, was estimated at 27,222,000, compared with 30,200,000 on Jan. 1, 1922, and with a total of 30,076,960 on Jan. 1, 1910.

CROP PRODUCTION IN 1930. The area of all crops harvested in 1930 was estimated at 366,507,000 acres, or 0.5 per cent more than the acreage harvested in 1929. Yields on the harvested acreage averaged 5.4 per cent below those secured in 1929, and 8.9 per cent below average yields in the preceding decade, being particularly low in an area extending from Maryland southwest into Texas where the drought began early. Yields were also low in Montana and in nearly the whole area north of the Ohio and Missouri rivers except in Wisconsin, Minnesota, and eastern North Dakota. Yields were best in New England, in a few southeastern States, in most of Nebraska and Colorado and in most of the area west of the Rocky Mountains. In proportion to the population, the harvest showed nearly the usual production of food crops, about average production of cotton, tobacco, flaxseed, and broomcorn, and a greatly reduced production of feed for livestock.

The value of the 1930 crops was estimated to be \$6,274,824,000, only about 72.3 per cent of the \$8,675,420,000 valuation of the 1929 crops. The decline in value of the crops was caused chiefly by the widespread decline in prices, but was accentuated by the decrease in production that resulted from the drought. This decline in prices affected nearly all crops and all parts of the country, especially crops produced for export and sold on a world-wide market.

Wheat production amounted to 850,965,000 bushels from 59,153,000 acres, compared with 809,176,000 bushels from 61,464,000 acres in 1929, or 5.2 per cent more on 3.8 per cent less acreage. Based on the farm price reported December 1, 60.8 cents per bushel, the total value of the 1929 crop was \$517,407,000 against 104.2 cents and \$843,030,000 in 1929. The harvested acreages were, for winter wheat 38,608,000, durum wheat 4,643,000, other spring wheat 15,902,000 acres; and the total production of winter wheat 604,337,000 bushels, durum 55,665,000 bushels, and other spring wheat 190,963,000 bushels. The relative amount of winter wheat reflected continued gradual expansion of wheat acreage in the Great Plains area, relatively low production of durum on reduced acreage, and production slightly below average for the other spring wheats.

The world wheat crop in countries outside the U. S. S. R. (Russia) and China, was estimated at 3,784,000,000 bushels compared with 3,495,000,000 in 1929. The Canadian crop amounted to 395,854,000 bushels, more than 91 million above the previous year. The U. S. S. R. (Russia) was estimated to have produced 1,157,400,000 bushels of wheat. The 1930 production as reported by 41 countries totaled 3,649,656,000 bushels, an increase of 9 per cent over 1929. See **WHEAT**.

The corn crop in 1930 was the smallest since 1901, low yields being due greatly to drought which was exceptionally severe in the southern third of the Corn Belt and of moderate extent over the remainder. Production for all purposes was estimated at 2,081,048,000 bushels, 20.3 per cent below the 1929 crop and 22.9 per cent below the average production of the five years 1924-1928. The acreage totaled 100,829,000, 3 per cent more than in 1929, and the acre yield averaged 20.6 bushels against 26.7 bushels in the previous year. The production of corn for grain was estimated to be 1,743,795,000 bushels, for silage 28,956,000 tons, and for hogging, grazing, and forage 11,362,000 acres. Corn production in 17 countries which in 1929 raised nearly 79 per cent of the

estimated world total, exclusive of U. S. S. R. (Russia), amounted to 2,778,793,000 bushels, 18.7 per cent less than in 1929. Nine European countries reported a total of 528,165,000 bushels, more than 20 per cent below the 1929 harvest. See **CORN**.

The oats crop of 1930 was estimated to be 1,402,026,000 bushels compared with 1,228,369,000 bushels in 1929, and 2.3 per cent above the average of the five years 1924-1928. The area harvested for grain totaled 41,598,000 acres, 4 per cent over the previous year, and the yield per acre averaged 33.7 bushels, 3 bushels more than in 1929. In most States the crop was too far along to be injured seriously by the drought. The 30 countries which in 1929 raised more than 91 per cent of the world total, exclusive of U. S. S. R. (Russia) and China, produced 3,380,835,000 bushels, 2.2 per cent less than in 1929. The total crop in 23 European countries amounted to 1,487,845,000 bushels, more than 21 per cent below that of the year before. See **OATS**.

The estimated total production of barley, 325,893,000 bushels, raised on 12,437,000 acres averaging 26.2 bushels per acre, was the largest on record except that of 1928 and was 35.6 per cent above the average of the five years 1924-1928. Like oats, barley was largely harvested before the drought became severe. The 1930 production of barley in 35 countries which in 1929 produced more than 82 per cent of the estimated world total, exclusive of U. S. S. R. (Russia) and China, was 1,354,003,000 bushels, almost 5 per cent less than in 1929. The crop in 10 European countries totaled 669,712,000 bushels, nearly 12 per cent below that of the previous year. See **BARLEY**.

Rye production in 1930 was estimated to be 50,234,000 bushels raised on 3,722,000 acres, an increase of 8,323,000 bushels and 391,000 acres over 1929, a year of low production for this crop, and 1.2 per cent below average production in the last decade. Rye was below average in quality, due in large measure to very hot July weather. The 1930 rye crop in 23 European countries totaled 919,245,000 bushels, compared with 944,804,000 bushels in 1929. Drought was disastrous to buckwheat, 658,000 acres, the smallest acreage harvested in 30 years, producing 8,975,000 bushels, compared with 729,000 acres and 11,474,000 bushels in 1929. The total rice crop of 41,367,000 bushels, harvested from an 11 per cent larger acreage, was about 900,000 bushels more than last year, the increase being fully accounted for by the 1,000,000 bushels increase in production of Japanese varieties in California. See **RYE**.

Substitution of flax for wheat in spring wheat States was largely responsible for the 29 per cent increase over 1929 in the seed flax acreage, yet the large 1930 crop of 23,682,000 bushels at \$1.40 per bushel did not return growers as much as the 17,049,000 bushels at \$2.84 in 1929. Kafir, milo, feterita and other grain sorghums produced an estimated equivalent of 86,622,000 bushels, 14.1 per cent less than in 1929. An increase of 4.5 per cent in acreage was offset by low acre yields due to drought in Oklahoma, Texas, and New Mexico. Production of sorghum (sorgo) sirup amounted to 24,132,000 gallons; sugar-cane sirup, 19,087,000 gallons; and maple sugar and sirup, equivalent to 34,404,000 pounds of sugar. The sugar made from the sugar beet crop of 1930 was estimated at 1,185,000 tons versus 1,018,000 tons in 1929, while from the increased acreage of sugar cane came 208,000 tons of sugar, 8000 more than in the previous year.

The 1930 hay crop was estimated at a total of 94,767,000 tons, of which tame hay made up 82,656,000 tons and native or wild grasses the remainder, as compared with a total of 113,658,000 tons in 1929. Reduced acreage due to loss of new seedlings, winter injury, and plowing up of meadows because of the large carryover of hay, and low acre yields resulting from thin stands and drought caused the short hay crop. The production of alfalfa hay, 28,587,000 tons, was only 4 per cent below that of 1929. The alfalfa acreage was located largely outside of the 1930 drought area and was affected only slightly compared with other hay crops. Increased yields of alfalfa and timothy seed were reported, while the production of seed of red, alsike and Japan clover was only slightly over one-half as large as in 1929.

The potato crop was estimated at 361,090,000 bushels, but slightly larger than in 1929, whereas yields per acre averaged slightly less and the farm valuation of the crop dropped to \$326,457,000 in 1930 from nearly \$470,000,000 in 1929.

Canada reported a production of 75,437,000 bushels. The world's potato crop was only moderate in size, an average production being made in Europe, where the potato crop is of significance mainly in its effect on the world price of breadstuffs. Estimates of 17 countries, which have produced in recent years about 75 to 80 per cent of the European crop outside of the U. S. S. R. (Russia), were a total of 3,775,000,000 bushels as compared with 4 billion bushels last year. The U. S. S. R. (Russia) reported an area of 13,171,000 acres compared with 14,688,000 acres from which 1,758,168,000 bushels were harvested in 1929, with indications that the 1930 crop would be of average size. See POTATOES.

Production of tobacco in 1930 amounted to 1,510,308,000 pounds, about 1 per cent less than in 1929, although from an acreage 3.5 per cent larger. Increased production came from flue-cured tobacco, estimated to comprise 790,950,000 pounds of the total, and from cigar tobacco, all types 176,814,000 pounds, whereas fire cured types of Virginia, Kentucky, and Tennessee, severely affected by drought, and totaling 158,559,000 pounds. Burley 305,566,000 pounds and Maryland with 18,190,000 pounds, all produced less than in the previous year. Farm prices reported December 1 averaged 14.4 cents a pound, compared with 18.5 cents in 1929. See TOBACCO.

Cotton production in the United States was estimated Dec. 1, 1930, at 14,243,000 bales, 585,000 fewer than in 1929, and the crop was grown on 45,218,000 acres, 575,000 less than in the previous year. Severe drought in many sections of the Cotton Belt from Alabama west, especially in Arkansas, Oklahoma, and Texas, helped curtail production, although boll weevil damage also was reduced by the hot, dry weather. The South Atlantic States had ample rainfall in most sections and production and acre yields were above average. Exports of cotton during the cotton year ended July 31, 1930, totaled 6,689,796 bales, compared with 8,043,588 in the previous year, with France as the only major consuming country increasing its imports. Producers received an average of 9.5 cents per pound for cotton lint on Dec. 1, 1930, compared to 16.4 cents in 1929. The downward movement of prices partly reflected reduced world consumption of American cotton, which was replaced to a considerable extent by that grown in other countries. See COTTON, and articles on other individual crops.

FEDERAL FARM BOARD. The board, during the 18 months since it was constituted (July 15, 1929) in accordance with the Agricultural Marketing Act of 1929, took significant steps toward achievement of the ultimate goal of the policy of Congress—the placing of agriculture on a basis of economic equality with the other industries. The experience of its first year, one of worldwide business crisis and recession and worldwide agricultural depression, showed the immensity and complexity of the problems, but it also indicated definitely that farmer organization, of all the remedies suggested, offers the surest hope for permanent financial betterment of those engaged in agriculture.

Recognizing the importance of organization, the board centred its efforts on assisting existing cooperative groups to organize national or central cooperative sales agencies for the unified and advantageous marketing of different commodities such as grain, cotton, wool, livestock, and other farm products. The national cooperative agencies organized included the Farmers' National Grain Corporation, National Wool Marketing Corporation, American Cotton Cooperative Association, National Livestock Marketing Association, National Bean Marketing Association, National Pecan Marketing Association, and National Sugar Beet Growers' Association. The board also was working with cooperative groups handling dairy products, tobacco, apples, rice, and fruits and vegetables, looking to the development of a central cooperative sales programme for those commodities. Cooperatives handling apples, beans, citrus fruits, cotton, dairy products, figs, grain, grass seed, honey, livestock, poultry and eggs, grapes and raisins, rice, sour cherries, tobacco, wheat, and wool and mohair, received financial assistance in their operations from the board.

Measures for surplus prevention and control, including stabilization operations, constituted an important phase of the activities of the board and its associated cooperative groups. Working with large cooperative groups, and later through the Farmers' National Grain Corporation and the Grain Stabilization Corporation, the board by its various actions contributed materially to support the prices of wheat in the crop year 1929-30 and to prevent substantial price declines which otherwise would have occurred.

Wheat prices were being held fairly stable, above export parity, while the world market prices declined sharply. However, declines in prices of wheat and other farm products, while retarded, were not permanently prevented. While some criticism was aroused by the action taken, the board believed that, in the circumstances as they developed, it would have been properly subject to severe condemnation had it failed to use its power in attempting, by every reasonable means, to cope with the emergencies that arose. The experience revealed some of the hazards and difficulties involved in stabilization procedures. The situation faced in the early summer of 1930 did not appear to warrant further action of the same sort at the outset of the crop year 1930-31.

Investigation of wheat developments in recent years and of the world wheat outlook by the board, cooperating with the U. S. Department of Agriculture, made clear that world wheat production had been outrunning wheat consumption and that, for five or six years, carry-overs had been piling up, both in the United States and

PRODUCTION BY COUNTRIES IN 1929 AND 1930 OF WHEAT, RYE, OATS, BARLEY, AND MAIZE (CORN) IN BUSHELS *
 [International Institute of Agriculture and U. S. Department of Agriculture]

| Country | Wheat | | | Rye | | | Oats | | | Barley | | | Maize (corn) | | |
|-----------------------|---------------|-------------|-------------|-------------|---------------|---------------|-------------|-------------|---------------|---------------|---------------|---------------|---------------|---------------|---------------|
| | 1930 | 1929 | 1928 | 1930 | 1929 | 1928 | 1930 | 1929 | 1928 | 1930 | 1929 | 1928 | 1930 | 1929 | 1928 |
| United States | 850,965,000 | 809,176,000 | 50,234,000 | 41,911,000 | 1,402,026,000 | 1,228,869,000 | 325,893,000 | 302,892,000 | 2,081,048,000 | 2,614,132,000 | 2,081,048,000 | 2,614,132,000 | 2,081,048,000 | 2,614,132,000 | 2,081,048,000 |
| Canada | 395,954,000 | 304,520,000 | 22,287,000 | 13,180,000 | 455,378,000 | 300,516,000 | 187,963,000 | 102,313,000 | 4,801,000 | 5,183,000 | 4,801,000 | 5,183,000 | 4,801,000 | 5,183,000 | 4,801,000 |
| Mexico | 11,274,000 | 11,333,000 | 4,401,000 | 7,666,000 | 68,294,000 | 65,172,000 | 16,132,000 | 16,818,000 | 232,000,000 | 232,000,000 | 232,000,000 | 232,000,000 | 232,000,000 | 232,000,000 | 232,000,000 |
| Argentina | 187,434,000 | 307,360,000 | 4,401,000 | 7,666,000 | 68,294,000 | 65,172,000 | 16,132,000 | 16,818,000 | 232,000,000 | 232,000,000 | 232,000,000 | 232,000,000 | 232,000,000 | 232,000,000 | 232,000,000 |
| Chile | 37,052,000 | 29,879,000 | 142,000 | 20,097,000 | 20,683,000 | 31,074,000 | 11,313,000 | 12,374,000 | 4,417,000 | 4,417,000 | 4,417,000 | 4,417,000 | 4,417,000 | 4,417,000 | 4,417,000 |
| Austria | 11,383,000 | 11,559,000 | 20,613,000 | 20,097,000 | 20,683,000 | 31,074,000 | 11,313,000 | 12,374,000 | 4,417,000 | 4,417,000 | 4,417,000 | 4,417,000 | 4,417,000 | 4,417,000 | 4,417,000 |
| Hungary | 73,384,000 | 74,985,000 | 26,429,000 | 31,424,000 | 28,292,000 | 24,597,000 | 31,353,000 | 28,292,000 | 52,328,000 | 70,632,000 | 52,328,000 | 70,632,000 | 52,328,000 | 70,632,000 | 52,328,000 |
| Czechoslovakia | 53,077,000 | 52,902,000 | 68,047,000 | 72,186,000 | 85,437,000 | 102,927,000 | 56,475,000 | 64,074,000 | 8,142,000 | 9,113,000 | 8,142,000 | 9,113,000 | 8,142,000 | 9,113,000 | 8,142,000 |
| Belgium | 13,547,000 | 13,225,000 | 19,757,000 | 22,162,000 | 33,947,000 | 51,488,000 | 3,291,000 | 2,834,000 | 36,996,000 | 36,996,000 | 36,996,000 | 36,996,000 | 36,996,000 | 36,996,000 | 36,996,000 |
| Bulgaria | 58,272,000 | 33,775,000 | 18,630,000 | 7,337,000 | 9,961,000 | 71,276,000 | 5,109,000 | 5,109,000 | 34,062,000 | 34,062,000 | 34,062,000 | 34,062,000 | 34,062,000 | 34,062,000 | 34,062,000 |
| Denmark | 11,722,000 | 10,411,000 | 10,871,000 | 10,871,000 | 10,871,000 | 10,871,000 | 5,710,000 | 5,687,000 | 108,506,000 | 108,506,000 | 108,506,000 | 108,506,000 | 108,506,000 | 108,506,000 | 108,506,000 |
| Estonia | 1,263,000 | 1,260,000 | 8,136,000 | 5,736,000 | 10,871,000 | 10,871,000 | 5,710,000 | 5,687,000 | 108,506,000 | 108,506,000 | 108,506,000 | 108,506,000 | 108,506,000 | 108,506,000 | 108,506,000 |
| Finland | 1,189,000 | 1,095,000 | 14,104,000 | 12,909,000 | 41,458,000 | 38,732,000 | 6,223,000 | 6,279,000 | 19,646,000 | 19,646,000 | 19,646,000 | 19,646,000 | 19,646,000 | 19,646,000 | 19,646,000 |
| France | 231,118,000 | 319,861,000 | 29,255,000 | 89,433,000 | 302,749,000 | 395,755,000 | 45,338,000 | 59,025,000 | 146,093,000 | 146,093,000 | 146,093,000 | 146,093,000 | 146,093,000 | 146,093,000 | 146,093,000 |
| Germany | 131,379,000 | 123,062,000 | 303,445,000 | 321,050,000 | 377,008,000 | 7,000,000 | 7,000,000 | 4,724,000 | 108,506,000 | 108,506,000 | 108,506,000 | 108,506,000 | 108,506,000 | 108,506,000 | 108,506,000 |
| Greece | 12,900,000 | 1,295,000 | 6,121,000 | 6,909,000 | 36,846,000 | 48,261,000 | 11,165,000 | 12,068,000 | 108,506,000 | 108,506,000 | 108,506,000 | 108,506,000 | 108,506,000 | 108,506,000 | 108,506,000 |
| Italy | 210,513,000 | 260,123,000 | 6,121,000 | 6,909,000 | 36,846,000 | 48,261,000 | 11,165,000 | 12,068,000 | 108,506,000 | 108,506,000 | 108,506,000 | 108,506,000 | 108,506,000 | 108,506,000 | 108,506,000 |
| Latvia | 3,676,000 | 2,336,000 | 13,851,000 | 9,503,000 | 23,433,000 | 23,433,000 | 8,143,000 | 9,548,000 | 19,646,000 | 19,646,000 | 19,646,000 | 19,646,000 | 19,646,000 | 19,646,000 | 19,646,000 |
| Lithuania | 10,603,000 | 9,329,000 | 24,842,000 | 22,031,000 | 26,470,000 | 30,235,000 | 10,079,000 | 12,286,000 | 19,646,000 | 19,646,000 | 19,646,000 | 19,646,000 | 19,646,000 | 19,646,000 | 19,646,000 |
| Luxembourg | 455,000 | 375,000 | 415,000 | 416,000 | 2,749,000 | 3,617,000 | 179,000 | 431,000 | 19,646,000 | 19,646,000 | 19,646,000 | 19,646,000 | 19,646,000 | 19,646,000 | 19,646,000 |
| Netherlands | 4,971,000 | 5,467,000 | 12,385,000 | 18,300,000 | 17,327,000 | 23,777,000 | 3,477,000 | 5,010,000 | 19,646,000 | 19,646,000 | 19,646,000 | 19,646,000 | 19,646,000 | 19,646,000 | 19,646,000 |
| Norway | 776,000 | 750,000 | 587,000 | 538,000 | 14,047,000 | 12,146,000 | 5,039,000 | 4,533,000 | 19,646,000 | 19,646,000 | 19,646,000 | 19,646,000 | 19,646,000 | 19,646,000 | 19,646,000 |
| Poland | 70,179,000 | 65,861,000 | 268,493,000 | 275,964,000 | 150,189,000 | 203,451,000 | 63,384,000 | 76,235,000 | 19,646,000 | 19,646,000 | 19,646,000 | 19,646,000 | 19,646,000 | 19,646,000 | 19,646,000 |
| Portugal | 13,143,000 | 10,814,000 | 4,983,000 | 4,886,000 | 7,723,000 | 9,571,000 | 2,651,000 | 1,958,000 | 19,646,000 | 19,646,000 | 19,646,000 | 19,646,000 | 19,646,000 | 19,646,000 | 19,646,000 |
| Rumania | 124,634,000 | 99,752,000 | 19,822,000 | 13,266,000 | 71,088,000 | 93,647,000 | 103,094,000 | 125,871,000 | 155,485,000 | 155,485,000 | 155,485,000 | 155,485,000 | 155,485,000 | 155,485,000 | 155,485,000 |
| U. S. R. | 1,157,400,000 | 702,851,000 | 20,725,000 | 796,018,000 | 52,740,000 | 45,812,000 | 100,563,000 | 97,342,000 | 27,327,000 | 27,327,000 | 27,327,000 | 27,327,000 | 27,327,000 | 27,327,000 | 27,327,000 |
| Spain | 145,093,000 | 154,244,000 | 20,725,000 | 22,935,000 | 88,239,000 | 2,894,000 | 514,000 | 11,485,000 | 155,485,000 | 155,485,000 | 155,485,000 | 155,485,000 | 155,485,000 | 155,485,000 | 155,485,000 |
| Sweden | 22,130,000 | 19,032,000 | 1,514,000 | 1,614,000 | 2,532,000 | 2,894,000 | 514,000 | 11,485,000 | 155,485,000 | 155,485,000 | 155,485,000 | 155,485,000 | 155,485,000 | 155,485,000 | 155,485,000 |
| Switzerland | 5,937,000 | 5,787,000 | 1,514,000 | 1,614,000 | 2,532,000 | 2,894,000 | 514,000 | 11,485,000 | 155,485,000 | 155,485,000 | 155,485,000 | 155,485,000 | 155,485,000 | 155,485,000 | 155,485,000 |
| United Kingdom | 89,885,000 | 49,615,000 | 708,000 | 708,000 | 91,420,000 | 159,390,000 | 33,833,000 | 51,287,000 | 137,888,000 | 137,888,000 | 137,888,000 | 137,888,000 | 137,888,000 | 137,888,000 | 137,888,000 |
| Yugoslavia | 89,004,000 | 94,998,000 | 9,562,000 | 8,268,000 | 16,638,000 | 24,166,000 | 19,231,000 | 13,918,000 | 155,485,000 | 155,485,000 | 155,485,000 | 155,485,000 | 155,485,000 | 155,485,000 | 155,485,000 |
| British India | 386,512,000 | 320,731,000 | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... |
| Korea | 8,878,000 | 8,320,000 | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... |
| Japan | 29,538,000 | 30,496,000 | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... |
| Syria and Lebanon | 17,992,000 | 16,288,000 | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... |
| Algeria | 29,431,000 | 33,306,000 | 48,000 | 48,000 | 13,503,000 | 14,786,000 | 37,663,000 | 23,866,000 | 215,000 | 215,000 | 215,000 | 215,000 | 215,000 | 215,000 | 215,000 |
| Egypt | 19,416,000 | 45,228,000 | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... |
| Morocco (French) | 19,476,000 | 31,764,000 | 17,000 | 31,000 | 2,520,000 | 3,413,000 | 26,835,000 | 47,318,000 | 5,173,000 | 5,173,000 | 5,173,000 | 5,173,000 | 5,173,000 | 5,173,000 | 5,173,000 |
| Tunis | 9,663,000 | 12,309,000 | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... |
| Australia | 126,477,000 | 159,879,000 | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... |
| New Zealand | 7,240,000 | 8,833,000 | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... |
| Union of South Africa | 11,140,000 | 6,693,000 | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... |

* The production given countries of the Southern Hemisphere is for the crop years 1929-30 and 1928-29.

in the world at large. It also appeared that the trend of acreage and production in various wheat-producing countries, and of wheat consumption as well, were such as to threaten continued depression of wheat prices. Faced with this situation, the board could see no hope for arresting such a movement, or preventing its serious consequences to American wheat farmers, by co-operative marketing as such, by stabilization measures of the type already employed, or through adopting any of the proposed measures designed to dispose of the surplus abroad at prices below domestic levels. In the board's opinion, "The obvious and economic remedy for the overproduction of wheat, to which our own wheat growers are contributing, is curtailment of production, with a view of reducing and, if possible, eventually eliminating our export surplus so that the tariff might become effective on American prices." The board and Federal and State agricultural services urged limitation or reduction in the acreage planted to wheat and to cotton.

The general position of the board as to stabilizing measures in wheat, applied also to cotton, although circumstances differed in certain respects. The failure of growers to bring about substantial curtailment in the cotton production of 1930 apparently contributed heavily to defeat the purpose of the cotton stabilization measures. A minor stabilization operation, with butter, met with considerable success.

Of the \$500,000,000 authorized by Congress for the board's revolving fund, \$250,000,000 was available, and on June 30, 1930, 206 applications for loans had been received, of which about 150 were either granted or awaiting final disposition. In all, loans requested totaled over \$466,000,000, of which the board committed itself to loan \$165,146,555 to cooperative associations, \$90,000,000 to the Grain Stabilization Corporation, and \$15,000,000 to the Cotton Stabilization Corporation. Of nearly \$192,000,000 disbursed up to June 30, 1930, more than \$43,000,000 had been repaid and became again available for additional loans. The interest rates charged on actual advances up to June 30, 1930, ranged from 1½ to 3¼ per cent, or averaging about 2.9 per cent per annum. An additional \$150,000,000 to carry out the provisions of the Agricultural Marketing Act was provided in a bill approved Dec. 22, 1930. Loans made by the board were supplemental to such credit facilities as were already available to the cooperative associations. When once the producers and their cooperatives within a commodity group unified their marketing operations into a single organization, either regional or national, the board was pursuing a policy of extending loans only to those cooperatives affiliated with the regional or national set-up.

The cooperative relations maintained by the board with Federal and State agricultural research educational agencies, Federal credit and banking institutions, and the general farm organizations, were very effective in developing the programme and in obtaining concrete results. Substantial progress was made toward the most effective utilization and development of existing resources to provide adequate foreign agricultural information. Advisory commodity committees to cooperate with the board in developing suitable programmes for the improvement of industry conditions relating to their particular commodities, were selected by the cooperatives handling dairy products, wool and mohair, wheat,

cotton, coarse grains, livestock, and sugar beets, and sugar cane. In November and December, 1930, the board was taking steps to extend to Porto Rico, the benefits of the Agricultural Marketing Act.

Consult also *First Annual Report of the Federal Farm Board for the year ending June 30, 1930*; *Farmers Build Their Marketing Machinery*, Federal Farm Board Bul. 3 (1930); *Outlook for American Cotton*, Federal Farm Board Bul. 4 (1930).

WORLD AGRICULTURE. England and Wales. Conditions in agriculture were described by farmers as the worst since 1879. Low yields from most of the major crops, unsatisfactory prices due to importation of foodstuffs in large volume, bad weather, increasing numbers of farmers going out of business, more arable land going to grass, and more farm laborers going to swell the ranks of unemployed in the towns—all combined to draw attention to the state of depression in agriculture.

Official returns collected from farms June 4, showed a smaller acreage under grain, a large increase in sugar beets, fewer cattle and swine, and a considerable increase in the number of sheep, which reflected the change from grain land to grass. The changes in production led to a smaller number of agricultural workers, 741,000, compared with 770,300 in 1929. To remedy conditions, the government proposed to establish a marketing board, to encourage small holdings and to set up demonstration farms, leaving the question of import boards for future consideration.

Hungary. Hungary according to a survey by the Department of agriculture, is a corn-growing country and a potential producer of pork and pork products that may compete with the United States, in south central Europe at least. By 1930 lard from the United States had penetrated into Austria, Czechoslovakia, and western Yugoslavia, all of which border on Hungary. Up to 1926, Hungary could not compete with fats and bacon from the United States except on markets where the consumers favored the Hungarian product. But when the political and economic situation in Europe becomes more stable, Hungary will undoubtedly offer American pork and pork products sharp competition in central Europe. On the wheat and flour markets, Hungary was competing with the United States in Austria and Czechoslovakia and other countries of Central Europe.

European Agricultural Conferences. National and international control of grain exports from Bulgaria, Hungary, Poland, Rumania, and Yugoslavia were proposed at a conference held November 10-13, at Belgrade. Recommendations were for the establishment by Mar. 31, 1931, of rational export control boards where they did not already exist and for a central control board for the countries indicated to be established by July 31, 1931. The conference at Belgrade was the sixth gathering since July, 1930, with Rumania and Yugoslavia as the nucleus around which the ideas of regulating European agricultural exports were concentrated. Delegates from as many as nine countries considered proposals for alleviating their more or less common agricultural distress. Recommendations included not only the "preference for preference" idea but also drastic realignment of existing trade agreements, even to the extent of eliminating the most-

avored-nation agreement in commercial treaties.

See *JUGOSLAVIA* under *History*.

Rumania. Efforts were being made by the government to improve the condition of the peasants, who were described as bankrupt and despairing. Low prices for agricultural produce, high interest rates, and heavy taxes combined to make it impossible for the average farmer of two or three hectares to make a living, and this was aggravated further by the dumping of cheap Russian wheat. Of the remedies proposed, King Carol counted most on reduced taxation and cheaper agricultural credit.

U. S. S. R. (Russia). Collectivization of agriculture in Russia was claimed to be fairly successful. Up to March, 1930, 40 per cent of the grain-producing areas had been collectivized. A successful drive for spring sowing was followed by favorable climatic conditions and the acre yields of the crops harvested on the collectivized farms were from 15 to 50 per cent greater than from the small holdings replaced. However, the area sown in the autumn of 1930 showed that the individual peasant or farmer still produced the large bulk of wheat of Russia. See *RUSSIA* under *History*.

China. The autumn harvest promised substantial relief to the famine conditions in most of the northwest region of China, although there were districts, especially in Shensi Province, where severe conditions continued due to failure of summer rains, according to a report to the Department of Agriculture. In Kansu, the favorable harvest promised nearly complete relief from famine. In Shensi, where famine conditions were acute during the past two years, wheat was scarce and prices were double and treble normal prices. The wheat crop, harvested in June, was estimated at only 20 per cent of normal. Autumn crops were reported good in most of the counties in the Wei Valley and the larger area under summer crops partly offset the small wheat acreage. West of Singan and in the foothills, there were areas so severely affected by drought that food production was less than in either of the two years previous. Engineers on road building projects, introduced as a famine relief measure, described severe famine conditions in western Shensi. It was estimated that deaths and emigration had reduced the population of Shensi by 3,000,000 people, which reflected the severity of the famine, reported as worse than that of 1921. Rainfall was unequally distributed in southern Shansi and local droughts have caused much damage, but excellent crops were reported in some regions and as a whole the province probably was much better off than in 1929. Wheat prices in southern Shansi were one-third less than during 1929. On the Great Plain, food supplies probably were the best in years. Reports indicated an excellent rice crop in both central and south China.

Inter-American Conference on Agriculture, Forestry, and Animal Industry. The Inter-American Conference on Agriculture, Forestry, and Animal Industry which met in Washington, D. C., Sept. 8 to 20, 1930, was attended by 54 official delegates and 170 consultative delegates appointed by the American nations to promote systematic research in agriculture, forestry, and animal industry, and to establish agencies for this work. An elaborate programme for agricultural coöperation throughout the western hemisphere was drafted. As the plans formulated become effective, it will be possible to deal with the

problems arising in the three fields on a continent-wide, rather than a country-wide, scale.

To further the desired ends, the countries of the Pan American Union were asked to hold, in the five years elapsing before the second inter-American conference, national conferences to plan surveys of conditions in agriculture, forestry, and animal industry, to consider and apply the regulations of the national conference, and to define the problems that could be solved through inter-American coöperation. The interchange of research workers in the experiment stations of the various countries and a survey of the problems in which the several countries had common interest, were planned.

Recommendations were that the diversion of agricultural coöperation of the Pan American Union be reorganized on broader lines to serve as the centre of coördination of results of research throughout the Americas; that a central Pan-American Experiment Station and an inter-American livestock board be created, and that the governments of the Americas consider the appointment of agricultural attachés at the embassies and legations. The conference also recommended that an inter-American agricultural bank be established; that tariffs be modified to facilitate exchange of insecticides, fungicides, and apparatus for combating plant and animal diseases and pests; that the results of research in each of the member countries be summarized and distributed annually; that statistical services be strengthened and improved; and that an inter-American association for the advancement of science be formed.

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was organized in four sections which dealt with (1) hygiene, comfort, reduction of hand labor, and economy in rural districts, (2) modern improvements in rural districts, (3) improvements in the intellectual, moral, artistic and recreational well-being of the rural districts, and (4) the ruralization of the country. The annual conference of the American Country Life Association for 1930, held at Madison, Wis., Oct. 8-10 in cooperation with the University of Wisconsin and other institutions, agencies, and organizations, had for its theme rural standards of living.

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favoured-nation agreement in commercial treaties.

See *JUGOSLAVIA* under *History*.

Rumania. Efforts were being made by the government to improve the condition of the peasants, who were described as bankrupt and despairing. Low prices for agricultural produce, high interest rates, and heavy taxes combined to make it impossible for the average farmer of two or three hectares to make a living, and this was aggravated further by the dumping of cheap Russian wheat. Of the remedies proposed, King Carol counted most on reduced taxation and cheaper agricultural credit.

U. S. S. R. (Russia). Collectivization of agriculture in Russia was claimed to be fairly successful. Up to March, 1930, 40 per cent of the grain-producing areas had been collectivized. A successful drive for spring sowing was followed by favorable climatic conditions and the acre yields of the crops harvested on the collectivized farms were from 15 to 50 per cent greater than from the small holdings replaced. However, the area sown in the autumn of 1930 showed that the individual peasant or farmer still produced the large bulk of wheat of Russia. See *RUSSIA* under *History*.

China. The autumn harvest promised substantial relief to the famine conditions in most of the northwest region of China, although there were districts, especially in Shensi Province, where severe conditions continued due to failure of summer rains, according to a report to the Department of Agriculture. In Kansu, the favorable harvest promised nearly complete relief from famine. In Shensi, where famine conditions were acute during the past two years, wheat was scarce and prices were double and treble normal prices. The wheat crop, harvested in June, was estimated at only 20 per cent of normal. Autumn crops were reported good in most of the counties in the Wei Valley and the larger area under summer crops partly offset the small wheat acreage. West of Singan and in the foothills, there were areas so severely affected by drought that food production was less than in either of the two years previous. Engineers on road building projects, introduced as a famine relief measure, described severe famine conditions in western Shensi. It was estimated that deaths and emigration had reduced the population of Shensi by 3,000,000 people, which reflected the severity of the famine, reported as worse than that of 1921. Rainfall was unequally distributed in southern Shensi and local droughts have caused much damage, but excellent crops were reported in some regions and as a whole the province probably was much better off than in 1929. Wheat prices in southern Shensi were one-third less than during 1929. On the Great Plain, food supplies probably were the best in years. Reports indicated an excellent rice crop in both central and south China.

Inter-American Conference on Agriculture, Forestry, and Animal Industry. The Inter-American Conference on Agriculture, Forestry, and Animal Industry which met in Washington, D. C., Sept. 8 to 20, 1930, was attended by 54 official delegates and 170 consultative delegates appointed by the American nations to promote systematic research in agriculture, forestry, and animal industry, and to establish agencies for this work. An elaborate programme for agricultural coöperation throughout the western hemisphere was drafted. As the plans formulated become effective, it will be possible to deal with the

problems arising in the three fields on a continent-wide, rather than a country-wide, scale.

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Hawkins as chief of the Technological Division of the Plant Quarantine and Control Administration and of Dr. D. F. Fisher to succeed him as leader of the fruit and vegetable handling, transportation and storage work of the Office of Horticultural Crops and Diseases, and the retirement of Dr. Cooper Curtice of the Bureau of Animal Industry who was prominent in the work of cattle tick eradication.

EXPENDITURES. During the fiscal year ended June 30, 1930, the Department of Agriculture expended a total of \$177,961,928 distributed by activities as follows: research \$20,065,363, extension \$10,320,607, eradication or control of crop and animal pests \$17,132,943, service work \$29,070,684, regulatory work \$11,021,607 and road construction \$90,350,724. Over 50 per cent of the expenditures were for road construction.

APPROPRIATIONS. The appropriations for the fiscal year 1930 amounted to \$157,455,030, including \$92,408,727 for payment to the States for the agricultural experiment stations, extension service, forest protection and distribution of forest-planting stock, and road construction. The total income from activities of the Department amounted to \$15,365,029, which was paid into the Treasury.

The new central part of the main administration building was completed and occupied during the year and construction was begun of a portion of the extensible building to the rear of the main building.

AGRONOMY. See BOTANY.

AHMED MIRZA, ah-mēd mēr-zā. Deposed Shah of Persia, died in Paris, Feb. 27, 1930. Born in 1898, the seventh of the Kadjar royal line, he succeeded his father as Shah when the latter was deposed, July 10, 1909. Ruling with the aid of a regency until 1914, he was crowned in that year. Never having exercised much power, he went in 1923 to live in Paris. On his refusal to return to Persia, he was deposed by the Medjliss, the National Assembly, in 1925, and Riza Khan, the Prime Minister, elected hereditary Shah. Ahmed Mirza's efforts to reassert his claims in November, 1925, were unsuccessful.

AIRCRAFT CARRIERS. See NAVAL PROGRESS.

AIRPORTS. See AERONAUTICS; ARCHITECTURE; PORTS AND HARBORS.

AIRSHIPS, AIRPLANES. See AERONAUTICS; NAVAL PROGRESS.

AKRON, THE UNIVERSITY OF. A coeducational institution of higher learning in Akron, Ohio; founded in 1870 as Buchtel College and taken over by the city and renamed in 1914. The enrollment for the summer session of 1930 was 586 students and for the autumn day session, 1164 students, distributed as follows: College of liberal arts, 427; home economics school, 19, teachers college, 307; college of engineering and commerce, 411; 1471 students were enrolled in the autumn evening session. There were 92 faculty members. The amount of endowment was \$70,000 and the income for the year, including tax levy from the city, \$450,388. There were approximately 32,000 volumes in the library. President, George Frederick Zook, Ph.D.

ALABAMA. POPULATION. According to the Fifteenth Census, the population of the State on Apr. 1, 1930, was 2,646,248. The population on Jan. 1, 1920, was 2,348,174, according to the census of that year. The capital is Montgomery.

AGRICULTURE. The following table gives the acreage, production, and value of the principal crops in 1929 and 1930:

| Crop | Year | Acreage | Prod. Bu. | Value |
|----------------|------|-----------|---------------|------------|
| Cotton ... | 1930 | 3,801,000 | 1,495,000 • | \$ |
| | 1929 | 3,589,000 | 1,342,000 • | |
| Corn | 1930 | 2,810,000 | 29,505,000 | 28,325,000 |
| | 1929 | 2,676,000 | 37,464,000 | 36,715,000 |
| Hay | 1930 | 607,000 | 452,000 • | 6,797,000 |
| | 1929 | 608,000 | 467,000 • | 7,531,000 |
| Sweet potatoes | 1930 | 74,000 | 6,290,000 | 5,346,000 |
| | 1929 | 74,000 | 7,622,000 | 6,860,000 |
| Peanuts . | 1930 | 387,000 | 232,200,000 • | 6,502,000 |
| | 1929 | 408,000 | 224,400,000 • | 6,732,000 |
| Potatoes . | 1930 | 36,000 | 2,875,000 | 4,169,000 |
| | 1929 | 28,000 | 2,409,000 | 3,493,000 |
| Oats | 1930 | 109,000 | 1,908,000 | 1,221,000 |
| | 1929 | 119,000 | 2,320,000 | 1,763,000 |

• Bales. • Tons. • Pounds.

Farms in the State numbered 257,328 in 1930, as against 237,631 in 1925 and 256,099 in 1920.

MINERAL PRODUCTION. The coal mines of the State, normally producing the greater part, by value, of its mineral total, were more active in 1929 than in 1928, but the value of their total production fell. There were mined, in 1929, 17,943,923 short tons of coal, as against 17,021,362 in 1928; but the value of coal mined diminished, for 1929, to \$37,309,000, from \$39,601,000 for 1928. Coke was produced to the quantity of 4,753,967 short tons in 1929 and of 4,327,324 short tons in 1928; and to the value of \$12,659,148 in 1929 and of \$13,260,178 in 1928. These totals were entirely from by-product ovens. The iron mines of the State shipped 6,637,299 long tons of iron ore in 1929, thus making a gain over the shipments of 6,159,863 tons for 1928; the ore shipped attained a value of \$12,575,113 for 1929; for 1928, of \$11,599,176. Pig iron was more actively produced in 1929 than in 1928, but not in such quantity as to equal the production of 1927. The blast furnaces shipped 2,697,814 long tons in 1929; in 1928, 2,525,812. The value of the years' shipments was, for 1929, \$43,674,910; for 1928, \$42,194,935. The cement mills shipped 5,228,947 barrels of cement in 1929, as against 6,696,684 in 1928. The value of cement shipped was, for 1929, \$5,911,031; for 1928, \$8,233,872. The value of the year's clay products was \$4,072,802 for 1928; for 1927, \$4,823,670. Stone production of 1,261,190 short tons in 1928, in value \$2,197,831, was above the 1,238,750 short tons, in value \$1,797,375, of 1927. Lime was produced to the quantity of 200,000 short tons (estimated) in 1929, as against 192,364 in 1928; in value, \$1,400,000 (estimated) for 1929 and \$1,407,232 for 1928. The total value of the State's mineral products, with allowance for duplication, was \$69,807,334 for 1928; \$78,640,669 for 1927.

TRANSPORTATION. The total number of miles of railroad line under operation on Jan. 1, 1930, was 5257.55. No additional construction in 1930 was reported.

EDUCATION. The movement to reduce illiteracy in advance of the taking of the Federal Census of 1930 was actively carried on in the State. During the period 1929-30, according to State Superintendent of Education A. F. Harman, writing in the *Journal* of the National Education Association, more than 52,000 illiterates were taught in what were called opportunity schools. The State completed in 1930 a programme for the construction of buildings to the total cost of over \$5,000,000, expended in the course of 4 years, for its higher educational institutions. The school popu-

lation of the State in 1930 was estimated to number 875,576. There were enrolled 622,988 pupils in the public schools. Of these, 500,653 were in elementary and 122,335 in high schools. Expenditure for the public schools in 1930 totaled \$22,654,507. The yearly salaries of all teachers averaged \$761; those of elementary teachers alone, \$628 for the entire group, \$754 for white teachers and \$340 for colored; those of high-school teachers, \$1101 for the entire group, \$1165 for the whites, and \$586 for the colored.

POLITICAL AND OTHER EVENTS. The Federal Court of Claims dismissed on March 12 the petition of the State of Alabama to recover taxes assessed by the State on the hydro-electric power produced in the Federal Government's power plant at Muscle Shoals and sold to private purchasers. Thus was checked the State's contention that it was entitled to returns on the exploitation of the Tennessee River, having given up its rights there only on the understanding that the development would be for National purposes. Natural gas was brought into Alabama from the Louisiana fields by a long-distance pipe line and was supplied on contract to a number of the chief cities' gas systems by the Alabama Natural Gas Co. There was an outbreak of inter-racial killings in the summer, chiefly near Emelle, where two whites and four negroes were killed in a disturbance that started on July 4. At Birmingham the city undertook a \$3,000,000 improvement for the drainage of storm water.

The action of the State Democratic organization in excluding Senator J. T. Heflin on account of his opposition to the Smith presidential ticket in 1928 was sustained by the State Supreme Court. The Court on April 17 dismissed a petition on Heflin's behalf to prevent the use of public funds to hold on August 12 the Democratic primary elections, from which Heflin had been shut out as a candidate to succeed himself in the United States Senate. The primary was duly held, and John H. Bankhead of Jasper won the Democratic Senatorial nomination, that for Governor going to Judge B. M. Miller of Camden. The supporters of Heflin, styling themselves Jeffersonian Democrats, held a convention at Montgomery and nominated him for Senator and likewise candidates for the other chief offices, on September 1.

ELECTIONS. J. H. Bankhead, the regular Democratic nominee for Senator, was elected, receiving 150,822 votes (unofficial) as against 97,798 votes for Senator J. T. Heflin, who ran as an independent. Judge B. M. Miller, Democrat, was elected Governor by 149,983 votes, over the independent candidate, Locke, who received 91,502. A Democratic Legislature and delegation of 10 Congressmen were elected.

OFFICERS. Governor, Bibb Graves; Lieutenant-Governor, W. C. Davis; Secretary of State, John M. Brandon; Treasurer, W. B. Allgood; Auditor, Sidney H. Blan; State Superintendent of Education, A. F. Harman; Attorney-General, Charles C. McCall; Commissioner of Agriculture and Industries, Seth P. Storrs.

JUDICIARY. Supreme Court: Chief Justice, John C. Anderson; Associate Justices, William H. Thomas, A. D. Sayre, A. B. Foster, Lucien D. Gardner, Virgil Bouldin, and Joel B. Brown.

ALABAMA, UNIVERSITY OF. A coeducational State institution for higher learning at University, Ala.; founded in 1831. For the autumn term of 1930 the enrollment was 3603, distributed as follows: Arts and science, 1728; engineering,

480; law, 52; medicine, 103; graduate, 95; education, 412; and commerce, 706. The summer school registration was 1993. The faculty for 1930-31 numbered 177. The productive funds of the University amounted to \$2,065,227, and the income for the year was \$1,332,131. The library contained about 75,000 volumes, of which 20,000 were government documents. A new woman's gymnasium was completed during the year at a cost of \$125,000, as was also a student union building costing \$250,000. President, George H. Denny, Ph.D., LL.D.

ALASKA. A Territory of the United States, the most extensive of the noncontiguous territories and possessions under the American flag. It forms a peninsula at the northwestern extremity of the North American Continent. Its total area is 586,400 square miles. The capital is Juneau. The population, according to the Federal Census of 1930, was 59,278; in 1920 the population was 55,036.

REINDEER HUSBANDRY. While agriculture in the usual sense had developed only in a local and largely experimental way the raising of reindeer was reported in 1930 as on a profitable and growing basis. From a stock of 1280 Asiatic reindeer that had been imported into the territory by 1901 the number of these animals in the Alaskan herds had risen above 600,000 as estimated in 1930. The herds were scattered along the western coastal area in locations as far north as Point Barrow. They were largely the possession of natives, chiefly Eskimo, who derived from them both food and furs for clothing. Many of the more desirable ranges had become stocked to their capacity. Secretary of the Interior Wilbur appointed on November 20, to render advice with regard to range boundaries, capacity and rules, a committee consisting of Senator Kendrick of Wyoming, Representative Scott Leavitt of Montana and United States Assistant Attorney-General Charles P. Sisson. Preliminary to this action, a round of the reindeer herding region was made in the summer by an agent of the Department of the Interior, E. W. Sawyer, who reported on his return that grass and moss proper for the subsistence of the reindeer abounded in considerable inland areas, and that some of the Eskimo were already abandoning their ancient homes along the coast to transfer their herds to such inland feeding grounds. It was anticipated that by the furthering of this movement the reindeer industry could be considerably augmented. The existing herds, it was further estimated, could yield for slaughter without diminution of their total number about 300,000 beasts a year; some tens of thousands of carcasses were being shipped yearly to the States, chiefly from the Seward Peninsula, and it was proposed to encourage the building of packing houses in Alaska for the more advantageous handling of the flesh.

FISHERIES. Owing chiefly to a decrease from the exceptional salmon catch of 1928, the fisheries of the territory yielded somewhat less in value of total product for 1929. This total product was \$50,795,819, as against \$54,545,588 for 1928. This total represented the manufactured output; e.g. canned fish, as distinguished from fresh-caught fish. The value of the catch to the fishermen was estimated, for 1929, at \$16,582,000. The salmon catch led in bulk, totaling 442,601,784 pounds, the herring catch totaled 153,105,752 pounds; 37,456,998 pounds of halibut were caught, as against 31,667,000 caught in 1928.

The halibut fishery occupied in 1929, 1253 persons, and its production was valued at \$4,422,605 for that year. An increase of the annual catch of codfish was reported for 1929. The whale fisheries of that year gave employment to 233 persons, and its product totaled \$502,081. The pack of Alaska salmon for 1930 was reckoned from early reports from the divers stations to approximate 5,000,000 cases.

The fishing industry was reported as giving employment in 1929 to 29,283 persons, as against 31,086 employed in 1928. It was conducted in 262 establishments, of which 158 canned fish, 103 cured fish, 23 manufactured by-products and 42 handled fresh or frozen products; some establishments were apparently listed in more than one of the foregoing groups. Products of the salmon industry attained for 1929 the value of \$42,524,845, and formed much the chief part of the aggregate for all fisheries. The herring industry yielded 66,577,749 pounds of products, in value \$2,794,084; whale, clam, and shrimp products followed in order of value.

Sealskins. The totals above given for fisheries did not include the yield of marine furs. Chief among these were the skins of fur seals of the Pribilof Islands. The take from these islands was 40,068 skins. Their fur-seal herds (all ages and classes) were estimated at 971,527 individuals, as of August 10, 1929; the year's natural increase was reckoned at 100,014. There had been deposited in the United States Treasury, since 1918, \$4,477,910 of net revenue from sales of skins of fur seals.

MINERAL PRODUCTION. Considerable increases in the yield both of gold and of copper, the two chief components of the yearly mineral product as reckoned by value, occasioned a rise of \$2,005,000 in its yearly total, to \$16,066,000 for 1929, from \$14,061,000 for 1928. By value the production of gold was \$7,761,000 for 1929 and \$6,845,000 for 1928; of copper, \$7,130,000 for 1929 as against \$5,965,000 for 1928; of silver, \$252,000 for 1929 and \$266,000 for 1928; of lead, \$166,000 for 1929 and \$118,000 for 1928; of coal, \$528,000 for 1929 and \$602,000 for 1928. A remainder of somewhat over \$200,000 for either year was made up of the production of tin, petroleum, platinum, marble, gypsum, and lesser items.

The increase of over \$1,100,000 in the value of the yearly yield of copper was effected entirely by better prices obtained in 1929. As to quantity the output of that year was reported as nearly 911,000 pounds below that of 1928. Almost all the copper produced in either year came from two mines in the Copper River region and a third on Latouche Island in Prince William Sound, all properties of the Kennecott Copper Corporation.

The higher value of the gold production of 1929, on the contrary, reflected an actual increase in activity. This was aided by an abundant rainfall, providing plenty of water for sluicing in the placer workings. Of the year's gold product, 47 per cent, or \$3,644,000 came from lode mines and 53 per cent, or \$4,177,000, from placers. Of the lode output, 95 per cent came from southeastern Alaska, the site of enterprises working immense tonnages of low-grade ores with the advantage of access to deep-water routes. The placer output exceeded that of 1928 by almost \$750,000. Camps of the Yukon basin were the foremost contributors to its total, those of the Seward Peninsula coming second. Dredges furnished 70 per cent of the year's placer production. Those active in 1929

numbered 30, of which 17 operated in the Yukon Valley and 12 in the Seward Peninsula. The dredges handled 8,706,000 cubic yards of gravel from which the gold recovery averaged 33.67 cents a cubic yard. They thus mined \$2,932,000 of gold, or, on the average, nearly \$100,000 apiece for the year. The lead production was incidental to the mining of gold ores in southeastern Alaska, in which lead occurred.

Coal Mining. A diminished production of coal in the territory followed, in 1929, upon the exceptional total of 1928. There were mined in 1929 some 100,566 tons, in value \$528,000, as against 125,289 tons, in value \$662,000, for 1928. There recurred a large annual importation of coal, to the extent of 32,762 tons from the United States and 24,172 from British Columbia and other foreign sources.

The Alaskan branch of the U. S. Geological Survey estimated the production of minerals from mines in Alaska to have a value of \$13,602,000 in 1930 as against \$16,066,000 in 1929, bringing the total value of the mineral output of Alaska since 1880 to approximately \$629,000,000.

The figures for 1930, which are preliminary estimates and subject to a revision, are given in the accompanying tabulation, together with the revised figures for 1929.

VALUE OF MINERAL OUTPUT OF ALASKA IN
1930 AND 1929

| | 1930 | 1929 |
|--|--------------|--------------|
| Gold | \$ 8,394,000 | \$ 7,761,000 |
| Copper | 4,100,000 | 7,130,000 |
| Silver | 158,000 | 252,000 |
| Coal | 609,000 | 528,000 |
| Other minerals* (lead, petroleum, marble, tin, platinum, etc.) | 341,000 | 395,000 |
| Total | \$13,602,000 | \$16,066,000 |

Alaska suffered in 1930 from the industrial conditions prevalent in the United States and elsewhere, and this was reflected in the decreased value of the mineral output. Prices were abnormally low for mineral commodities other than gold, as compared with 1929, so that there was more than \$2,000,000 of decrease due to this single cause. Low prices also had an even greater effect in deterring development of mines where the ores carried principally the base metals, but this was considered a temporary condition and did not indicate a permanent decline for the mining industry of Alaska. In fact, the increased production of gold in 1930, in the face of the serious depression, was considered an encouraging feature, as it afforded assurance of still further growth with an improvement of conditions, and with capital and effort available for productive employment. Not only were the people of Alaska developing in education, but transportation facilities were improving, and mining enterprises were being conducted on a much more efficient and rational basis.

During the year the United States Geological Survey published Bulletin 815-B on the geological and mineral resources of northwestern Alaska, by P. S. Smith and J. B. Mertie, Jr. It is an illustrated detail report of a series of investigations made in northwestern Alaska, including an area of about 35,000 square miles set apart by the President in 1923 as Naval Petroleum Reserve.

COMMUNICATIONS. The Alaska Road Commission, cooperating with the National Park Service

to render park areas in the Territory accessible by automobile, reported in 1930 that 43 miles of the highway, eventually to extend for 70 miles, in the Mount McKinley area, from the park entrance to Mount Eielson, was completed. The intention was to render the extensive and picturesque parks of Alaska accessible to tourists as soon as might be practicable.

There were in 1930 about 70 prepared aviation fields in actual service and about 30 regular commercial planes were using points on the Alaska Railroad as supply bases from which they handled commerce with regions hundreds of miles in every direction. Aviation was encouraged by the government.

EDUCATION. From the Office of Education in the Federal Department of the Interior was transferred in 1930 to the Governor of Alaska the function of training natives with regard to the reindeer industry. The office at the same time retained its authority for the education, support, and medical relief of natives of the aboriginal races. For this work it had a grant of \$580,400 for native education and support in the fiscal year 1930 and of \$171,800 for medical relief. The office of its chief of the Alaska Division was moved to Juneau, from Seattle. Under this agency were maintained in the fiscal year 93 schools with 195 teachers and 3899 enrolled pupils. At Eklutna, Kakanak, and White Mountain were maintained three native industrial schools. Preparations for establishing a fourth, on Shoemaker Bay, near Wrangell, were started. A home for orphans and other needy children of pre-school age was set up in one of the old buildings of Fort Gibbon at Tanana.

The Territory's own contribution to education went to the support of the Territorial schools and to maintaining the Alaska Agricultural College and School of Mines. The funds came out of the biennial appropriation of \$1,074,300 made for educational purposes by the Territorial Legislature in 1929. The schools maintained by the Territory numbered 15 high and 89 elementary schools. They employed 253 teachers and had 5066 enrolled pupils in 1930. Their cost to the Territory for that year was \$594,062, according to the official report.

POLITICAL AND OTHER EVENTS. The Federal policy of gradually transferring to the Territory much of the administrative responsibility for its affairs made some progress. The inter-departmental commission composed of resident representatives of the departments of the Interior, Commerce, and Agriculture, appointed by the President, undertook a study of the transfer of departmental activities to Alaska, with a view to reporting thereon. One of the subjects of Federal administrative planning was the development of lumbering for pulpwood in the National forests of Alaska. It was estimated that these could yield, without depletion, 1,000,000,000 board feet of pulpwood a year. For lack of a definite arrangement for their exploitation they continued to lie idle in 1930. An international highway from Seattle to Fairbanks was urged as needful to the development of the Territory.

ALBANI, ol'ba-ni, EMMA (MARIE LOUISE EMMA CECILE LAJEUNESE). A Canadian dramatic soprano, died in London Apr. 3, 1930. She was born in Chambly, near Montreal, Canada, Nov. 1, 1852, and made her first public appearance in Albany, N. Y., at the age of 12. After studying in Paris under Duprez and Benoist, and in

Milan under Lamperti, she made her debut in Messina in 1870 in *La Sonnambula*. Her immediate success led to engagements at the Pagola in Florence, at Covent Garden in London, and at the Italian Opera in Paris. She also appeared in Berlin, St. Petersburg (now Leningrad), and cities of the United States, Canada, Australia, and South Africa, gaining renown as "The Canadian Nightingale" in such operas as the *Flying Dutchman*, *Faust*, *Lucia di Lammermoor*, *Hamlet*, *Mignon*, *Rigoletto*, *La Traviata*, *Tannhäuser*, *Lohengrin*, *Die Meistersinger*, and *Tristan and Isolde*. In 1878 she was married to Ernest Gye, impresario of the Royal Italian Opera at Covent Garden. During her later career she became equally famous as an oratorio singer, retiring from the concert stage in 1912. In 1925 she was created a Dame of the British Empire. She also was awarded the Orders of Merit of Denmark and Germany, two Jubilee medals, and the Victoria badge, and was appointed court singer to the Emperor of Germany. She published her memoirs in 1911 under the title, *Forty Years of Song*. Her stage name, Albani, was derived from that of an old Italian family.

ALBANIA, al-bā'nīā. A Balkan kingdom on the east coast of the Adriatic, situated between Yugoslavia on the north and Greece on the south. Capital, Tirana, with 30,800 inhabitants in 1930; reigning King in 1930, Zog I, proclaimed by the National Assembly Sept. 1, 1928.

The area is approximately 11,632 square miles and the population (census of 1927), 833,018, of whom 563,729 were Mohammedan, 181,051 Greek Catholic, and 88,739 Roman Catholic. A 1930 census showed 1,003,000 inhabitants. The Ghegs in the North and the Tosks in the South are the principal race groups. The other towns are Coriza (population 22,700 in 1930) and Scutari (29,000). Durazzo (5100) and Valona (6300) are the leading ports. In 1929, there were 33,531 pupils in the schools, besides 900 students studying in foreign countries.

Albania is almost exclusively an agricultural country, the chief products and exports being cheese, fruits, olives, grains, eggs, skins, wool, tobacco, livestock, and timber. Cotton and wool textiles and cigarettes are manufactured for domestic consumption. The forest and mineral resources are considerable, but largely undeveloped due to lack of transportation facilities. Imports in 1929 were estimated at 38,500,000 gold francs (\$7,430,500) and exports at 14,500,000 gold francs (\$2,798,500), representing an increase of 10 per cent in imports and a decrease of 3 per cent in exports, as compared with 1928. The principal imports were cotton and cotton goods, wheat and corn, sugar, benzine and kerosene, and iron manufactures. The bulk of the trade is with Italy.

For the fiscal year ended Mar. 31, 1930, the estimated receipts were 31,678,200 gold francs (\$6,113,890) and expenditures were 31,997,925 gold francs (\$6,175,000). In 1928-29 receipts and expenditures balanced at approximately 28,200,000 gold francs (\$5,461,900). The foreign debt consists mainly of a loan of 50,000,000 gold francs obtained from Italy in 1925 to be used exclusively for public works. The loan is guaranteed by the Albanian Customs and receipts from Government monopolies. The unit of currency is the gold franc, with a par value of \$0.193. There are 1038 miles of motor and cart roads. A railway from Durazzo to Tirana was under construction

in 1930, and the chief towns are linked by four Italian-operated air routes.

Under the Constitution of 1928, the King administers the government, assisted by a council of ministers appointed by him and a parliament of one chamber, the members of which are elected indirectly for four years. Prime Minister and Minister of Interior in 1930, Kosta Kotta. A defensive alliance between Italy and Albania was signed at Tirana Nov. 22, 1927.

HISTORY. The coalition Cabinet headed by Premier Kosta Kotta, appointed by King Zog Jan. 18, 1929, resigned on Mar. 5, 1930, due to dissatisfaction with the agreement concluded with Italy whereby the National Bank of Italy was to assume supervision of Albania's coinage system. A new Cabinet, formed the following day, was headed by Pandeli J. Evangheli, president of the Chamber, with Djfer Vila, the **Albanian Minister** to Yugoslavia, as Foreign Minister. The arrangement for Italian control of Albania's coinage served to illustrate the manner in which Italy's hegemony in the Balkan kingdom was being consolidated. Plans for the colonization of 40,000 Italians near Coriza (Koritzza) and for the establishment in Albania of the base for Italian Near Eastern air services were reported during the year. Italian influence was further emphasized by the elaborate reception accorded the new Italian Minister to Albania, the Marchesse of Sorania, upon his arrival in Durazzo August 7. There were rumors that King Zog contemplated marriage with an Italian princess.

Pointing out that Albania laws prohibit the importation of foreign labor and the purchase of land by foreigners, a correspondent of the *London Times Weekly* of Sept. 11, 1930, declared that Italian colonization of Albania was a myth. Agrarian laws passed during 1930 reduced the property of each landlord to 40 hectares (about 99 acres); of the remainder, one-third was to be expropriated by the Government at 20 gold francs per hectare for redistribution to peasants and two-thirds were to remain in possession of the landlord, provided he shared the expenses of development, cultivation, and irrigation with the tenant. Provision was also made for the formation of an Agricultural Bank, with a capital of 5,000,000 gold francs, guaranteed by additional taxes on alcohol, patents, rents, and other sources. Another law provided for the establishment of an Albanian militia of 10 battalions, which all males must join on reaching the age of 17. A violent earthquake in the Valona region on Nov. 21, 1930, killed 30 persons and destroyed numerous houses. A new American legation building at Tirana was formally opened on Nov. 27, 1930.

For a recent authoritative history, consult J. Swire, *Albania, the Rise of a Kingdom* (London, 1929). See **ITALY**, **FRANCE**, **JUGOSLAVIA**, and the other Balkan states under *History*.

ALBERTA, al-bŭr-tă. The westernmost of Canada's Prairie Provinces, bounded by Saskatchewan on the east, British Columbia on the west, and the United States on the south. Area, 255,285 square miles; population at the census of 1926, 607,584; estimated June 1, 1930, at 660,000. Chief towns, with their populations in 1926, are Calgary, 65,513; Edmonton (the capital), 65,163; Lethbridge, 10,893; and Medicine Hat, 9536. In 1928, births numbered 15,508; deaths, 5655; marriages, 5776. Enrollment in provincial and private schools in 1928 was 159,086.

Agriculture is the chief occupation of the

Province, although valuable deposits of coal, natural gas, and petroleum are being exploited. The estimated gross agricultural revenue in 1928 was \$264,028,000. In 1929 the return from 12,432,595 acres under field crops was \$166,481,000 (\$220,786,000 from 11,727,830 acres in 1928). The total area cultivated in 1929 was 16,334,422 acres. Production of the chief crops (1929) was: Wheat, 90,534,000 bushels; oats, 41,963,000 bushels; barley, 12,514,000 bushels; rye, 2,372,000 bushels; mixed grains, 358,000 bushels; flaxseed, 63,000 bushels; potatoes, 1,022,000 cwt.; hay and clover, 384,000 tons. Dairy production in 1929 reached \$20,750,000. Fur production in 1928-29 was valued at \$2,473,191. In mineral production, Alberta in 1929 ranked fourth among the Canadian Provinces, with a total value of \$34,652,128. Coal production (1928) was 7,336,330 tons, valued at \$23,532,414; natural gas, \$3,754,466; petroleum, \$1,764,172.

Executive power rests nominally with a lieutenant-governor appointed by the Dominion government, but actually the Executive Council or Cabinet of the Legislature is in control. Of the 60 members of the Legislature in 1929, 43 were United Farmers, 7 Liberals, 6 Laborites, and 4 Conservatives. Alberta is represented in the Dominion Parliament at Ottawa by 6 members in the Senate and 16 in the House of Commons. For the fiscal year 1929-30, ordinary provincial revenues totaled \$15,111,083 and ordinary expenditures \$14,528,913, according to preliminary figures. The gross bonded indebtedness Mar. 31, 1929, was \$90,532,443, of which \$33,315,531 represented self-sustaining assets. Highway and bridge construction and maintenance appropriations for the year 1930-31 totaled \$5,250,000. Lieutenant-Governor in 1930, Dr. W. Egbert; Prime Minister, John E. Brownlee. In the Dominion general election of July 28, 1930, the Province returned 9 United Farmers, 4 Conservatives, and 3 Liberals to the House of Commons at Ottawa. See **CANADA**.

ALCOHOL, **INDUSTRIAL**. See **CHEMISTRY**, **INDUSTRIAL**.

ALCOHOLISM. See **PROHIBITION**.

ALDEN, ISABELLA MACDONALD. An American author (who wrote under the pseudonym of "Pansy"), died in Palo Alto, Calif., Aug. 5, 1930. She was born in Rochester, N. Y., Nov. 3, 1841, and in 1866 was married to the Rev. Gustavus R. Alden. In addition to much fiction for older readers, she was the author of about 75 juvenile books, including the *Chautauqua*, *Ester Reid*, and *Life of Christ* series. She edited the juvenile periodical *Pansy* from 1873 to 1896, and for many years was a contributor to the *Herald* and *Presbyter* and the *Christian Endeavor World*. Her works were translated into many foreign languages.

ALEXANDER, GEORGE. An American clergyman, died in New York City, Dec. 12, 1930. He was born in West Chariton, N. Y., Oct. 12, 1843, and was graduated from Union College in 1866 and from the Princeton Theological Seminary in 1870. On ordination to the Presbyterian ministry, he served successively as pastor of the East Avenue Church, Schenectady, N. Y. (1870-83), University Place Church, New York City (1884-1918), and at the First Presbyterian Church, New York City (1919-30), when the University Place Church and the Madison Square Church were joined to it. While in Schenectady he also acted as professor of rhetoric and logic at Union College from 1877 to 1883, and later served as

president of that institution from 1907 to 1909. He was president of the New York College of Dentistry (1897-1925), of the Presbyterian Board of Foreign Missions (1903-24), and of the Council of Reformed Churches in America Holding the Presbyterian System (1915-16). At the time of his death he was president of the council of New York University, which office he had held since 1909. Union College honored him with the D.D. degree in 1884 and the LL.D. degree in 1916, and made him honorary chancellor in 1923.

ALFALFA. The 1930 crop of alfalfa hay in the United States was estimated by the U. S. Department of Agriculture at 28,587,000 tons as compared with the 1929 production of 29,745,000 tons. The crop of alfalfa seed was estimated at 920,200 bushels, or 127,500 bushels more than was secured in 1929 and the area harvested at 316,200 acres, an increase of 10,800 acres above the acreage of the preceding year. Increased production of seed was reported from Kansas, Montana, Idaho, Wyoming, Arizona, and California due to favorable dry weather when the crop was maturing. All other important States produced less than in 1929. In quality the crop was better than the preceding one and stood 1.4 per cent above the 5-year average of 89 per cent. The average yield per acre in 1930 was 3.10 bushels and in 1929, 2.64 bushels. The highest average yield, 5.4 bushels per acre, was recorded for Idaho followed by Arizona with 4.8 bushels and California and Oklahoma each with 4 bushels.

The imports of alfalfa seed for the fiscal year ended June 30, 1930, amounted to only 337,000 pounds as compared with 1,146,400 pounds for the preceding fiscal year. The 1930 imports consisted of 302,100 pounds from Argentina, 32,600 pounds from France and 2300 pounds from Canada. Sixty seedsmen handling 85 per cent of the alfalfa seed in the west central and northern producing district enrolled voluntarily in the alfalfa seed-verification service of the U. S. Department of Agriculture and were known as verified-origin seed dealers. Each dealer selling such seed attaches to the bag a certificate of verification issued by the Department. Explorers of the Department of Agriculture introduced during the year from Turkestan and other parts of Asia and from the principal alfalfa-growing districts of northern Africa numerous lots of alfalfa seed, including many samples of seed of wild alfalfa growing in the mountains, for the purpose of securing material that might prove immune or sufficiently resistant to bacterial wilt, a disease which during past years has become serious in the Middle Western States, especially in humid climates and on irrigated lands.

Alfalfa, a deep-rooted crop, although suffering less from the drought than many of the shallower-rooted hay crops, did not make a normal growth and in certain sections the yields of hay were reduced materially by the dry season. A survey made by the Department of Agriculture to locate, available hay at advantageous points from which farmers in drought areas might obtain supplies resulted in the location of an alfalfa hay surplus mainly in Kansas, Nebraska, New Mexico, and Arizona, the leading surplus alfalfa States of the Mississippi Valley and the southwest. More than two-thirds of the alfalfa acreage of the United States occurs in the 17 Western States. On the Kansas City hay market during the year ended June 30, 1930, the price range was from \$8 to \$37 per ton. For the month of January

the average price per ton of U. S. No. 1 Extra Leafy was \$30, U. S. No. 1, \$24; U. S. No. 2 Leafy, \$21.50; U. S. No. 2, \$19.50; and U. S. No. 3, \$15.50. During this month the special grades, "Extra Leafy," sold from \$3 to \$7 and "Leafy" from \$2 to \$3 per ton above the straight numerical grades.

ALGERIA. A colony of France in northern Africa, comprising the two great divisions of Northern Algeria and Southern Algeria. Northern Algeria has an area of 80,117 square miles and a population (census of 1926) of 5,521,271; Southern Algeria, an area of 767,435 square miles and a population of 542,225. Of the total area of 847,552 square miles, all but about 222,206 square miles are desert. The European population was 833,359, including 549,146 French, 108,495 naturalized French, 135,032 Spaniards, and 28,594 Italians. The native population is almost entirely Moslem. The chief towns, with their populations in 1926, were Algiers, the capital, 226,218; Oran, 150,301; Constantine, 93,733; and Bona, 51,895. The total estimated population in 1929 was 6,255,000.

In 1928, there were 1234 primary and infant schools, both public and private, with 115,445 pupils, besides 563 elementary Moslem schools, with 48,102 pupils, and 17 secondary schools, with 8745 students. The university at Algiers had 1854 students.

PRODUCTION. Algeria is primarily an agricultural country, although fertile farm land is mainly restricted to the coastal valleys and plains. Much of the area is desert, or grazing and forest land. Wheat, barley, oats, corn, potatoes, grapes, olives, tobacco, cotton, and dates are the chief crops. Others include flax, silk, and various vegetables and fruits. State forests in 1928 covered 5,548,147 acres, much of it brushwood. Fisheries are important, engaging 1066 boats and 4266 persons in 1928, when the production totaled 19,525,733 kilos. Mineral output in metric tons (1929) was: Iron ore, 2,051,000; iron pyrites, 16,866,000; zinc ore, 33,197,000; lead ore, 16,241,000; coal, 15,680,000; phosphates, 748,000. Copper, petroleum, mercury, and antimony are mined also.

COMMERCE. Imports increased 16 per cent in value in 1929, while exports declined by 5 per cent. Imports totaled 5,850,000,000 francs (about \$229,318,000) and exports 4,036,600,000 francs (about \$158,234,000), as compared with imports of 5,049,900,000 francs (about \$197,956,000) and exports of 4,233,800,000 francs (about \$165,964,000) in 1928. Cotton fabrics, machinery, automobiles, petroleum products, sugar, chemicals, and metal manufactures were leading imports, while exports were chiefly wine, wheat, barley, fruits, olive oil, minerals, and animal products. About 77 per cent of the imports in 1929 came from France and 72 per cent of the exports were destined for the mother country.

FINANCE. In the ordinary budget for 1930, revenues were estimated at 988,078,027 francs and expenditures at 987,784,355 francs, as compared with an estimated revenue in 1929 of 831,033,165 francs and an estimated expenditure of 830,559,759 francs. The extraordinary budget for 1930 balanced at 455,171,901 francs and the separate Post Office budget was estimated to balance at 135,981,962 francs. The military and naval expenditures are excluded from the estimates. Including these, total expenditures exceed revenues by about 75,000,000 francs annually. On Jan. 1,

1930, the public debt was 926,000,000 French francs (about \$36,299,000). Expenditures for public works in 1929 totaled \$12,000,000, as against \$6,000,000 in 1928.

COMMUNICATIONS. There were 3074 miles of railway line open for traffic on Jan. 1, 1929. Railway receipts for the previous year totaled 325,508,960 francs. In 1927, there were 21 national highways, totaling 3323 miles, and 9215 miles of departmental roads. An air mail line connects Algiers with Marseilles. Vessels entering the ports in 1928 numbered 4585 of 7,758,459 tons.

GOVERNMENT. The central executive authority of the local government is the Governor-General who directs all the services with the exception of the non-Mussulman departments of public instruction, justice, worship, and the treasury, which are each under a separate ministry. The Governor-General, with the Minister of the Interior, prepares the budget which is voted by the so-called financial delegations and by the Superior Council. The colony sends to the home Parliament one Senator and two Deputies from each of the three departments. The Parliament at Paris has the sole right to legislate for Algeria. Governor-General in 1930, Pierre L. Bordes, appointed in November, 1927.

HISTORY. The centennial of the French conquest and colonization of Algeria was celebrated in May, 1930. President Doumergue of France paid an official visit to Algiers in connection with the celebration. Strong feeling against France's tariff policy was manifested, particularly by Algerian wine growers, during the President's visit. French goods enter Algeria duty free but duties are imposed on wine and other colonial products entering France. See FRANCE under *History*.

ALLEGHENY COLLEGE. A coeducational institution of higher learning in Meadville, Pa., nonsectarian in policy but under the patronage of the Methodist Episcopal Church; founded in 1815. The enrollment for the autumn of 1930 was 603, and for the summer session 1150. The faculty numbered 42 members. The productive funds of the college amounted to \$1,400,000, and the income for the year 1929-30 was \$443,116. The Reis Library contained 78,500 volumes. Acting President, C. F. Ross, Litt.D.

ALLEN, MAJ.-GEN. HENRY TUREMAN, U. S. A., Ret. An American soldier, died in Buena Vista Spring, Pa., Aug. 30, 1930. He was born in Sharpsburg, Ky., Apr. 13, 1859. On graduation from the U. S. Military Academy in 1882, he was commissioned in the Second Cavalry. He was engaged in exploration in Alaska during 1885-86 and was an instructor at the Military Academy during 1888-90. After serving as a military attaché in Russia (1890-95) and Germany (1897-98), he took part in the campaign in Cuba and the Philippines during the Spanish-American War. In 1901 he was Governor of the Island of Leyte. He also organized and was the first chief of the Philippine Constabulary. In 1916 he was with the Mexican expedition, and the following year organized a cavalry brigade at Fort Riley, Kan. When the United States entered the World War he was promoted to major-general in the National army, being assigned to the command of the Ninetieth Division with which he went to France and serving in the Toul section and the St. Mihiel and Meuse-Argonne offensives. In 1919 General Allen was assigned to command of the

American forces of occupation in Germany. Later, he became chairman of the national executive committee to raise funds to feed the undernourished children of Germany. He was appointed major-general of the regular army in 1921 and was retired in 1923. He received the Distinguished Service Medal and decorations from France, Belgium, Montenegro, Panama, and Italy. Lincoln Memorial University (1915) and Georgetown University (1922) bestowed on him the degree of LL.D. He wrote: *Reconnaissance of Copper, Tanana, and Kuyukuk Rivers* (1886); *The Military System of Sweden* (1895); *My Rhineland Journal* (1923); and *The Rhineland Occupation* (1926).

ALLIANCE FRANÇAISE, FÉDÉRATION DE L'. An association of clubs and groups formed for the purpose of encouraging and furthering the study and cultivation of the French language, literature, art, and history in the United States and Canada. It was established in 1902 and in 1930 comprised more than 250 local branches, including French Alliances, affiliated societies, and French clubs in universities, colleges, and schools. Eight new groups were added to the federation during 1930. Each year the Alliance Française brings from France one or more lecturers who are prepared to speak before all the affiliated societies and clubs wishing to hear them. It also organizes lecture tours for distinguished French travelers and for French lecturers who live in America, assists in organizing courses in the French language and literature in coöperation with the leading universities, and encourages its groups to engage in dramatic performances and debates in French.

During the season 1929-30 there were three official lecturers from Europe: Marcel Bouteron; Gaston Rageot; and Henri de Ziegler. M. Bouteron was the librarian of the Institut de France and a well known authority on Balzac; M. Rageot was president of the Société des Gens de Lettres; and M. De Ziegler was professor of literature at the University of Geneva, Switzerland, and a writer of note. The federation's Assemblée Générale, attended by representatives of the various groups, was held at the Hotel Plaza, New York City, Apr. 26, 1930. The official periodicals of the organization are *L'Echo de la Fédération* and *Bulletin Officiel*. The officers in 1930 were: President, Frank D. Pavey; general vice president, William Nelson Cromwell; president of the executive committee, Albert Blum; treasurer, James N. B. Hill; and general secretary, Félix Weil. Headquarters are at 32 Nassau Street, New York City.

ALSACE-LORRAINE, al'zäs'lör'än'. The provinces taken from France by Germany after the Franco-Prussian War of 1870-71 and restored to France after the Armistice of Nov. 11, 1918; constituting at present the three French departments of Bas-Rhin, Haut-Rhin, and Moselle. Total area, 5605 square miles; total population in 1926, 1,795,100. The area and population are distributed among the three departments as follows: Bas-Rhin (formerly Lower Alsace), 1848 square miles and 670,985 inhabitants; Haut-Rhin (formerly Upper Alsace), 1354 square miles and 490,654 inhabitants; Moselle (formerly Lorraine), 2403 square miles and 633,461 inhabitants. Alsace-Lorraine contains the only petroleum fields of commercial importance in France, but supplies only about 10 per cent of the total domestic consumption. Iron ore and potash are mined in comparatively large quantities. See FRANCE.

ALTHING. MILLENNIAL CELEBRATION. See ICELAND under *History* and *CELEBRATIONS*.

ALUMINUM. The aluminum industry during 1930 not only maintained its position satisfactorily, notwithstanding world-wide industrial conditions, but new and important uses for the metal were recorded, as well as expansion of previous applications. The Aluminum Company of America was estimated to have produced somewhat more than half of the total world's production, while the Aluminum Cartel, which included British, French, German, and Swiss interests and controlled plants in other countries, was responsible for somewhat less than half. According to the U. S. Bureau of Mines in 1929, 225,000,000 lbs. of primary aluminum valued at \$51,864,000 were produced in the United States, which was the greatest amount ever recorded. Into this production there entered 365,777 long tons of bauxite valued at \$2,265,038 produced in the United States, and 380,812 long tons valued at \$1,753,840 imported for consumption. In this year there were exported 135,551 long tons of bauxite valued at \$3,926,283, including bauxite concentrates. In 1930 the imports of bauxite totaled 415,058 long tons, valued at \$2,008,372, with exports of 415,038 tons valued at \$2,008,372.

In 1930 a significant development was the reduction in the domestic producers' sale price for 98 to 99 per cent aluminum from 24.3 cents in the first five months of the year to 23.3 cents in June, this figure ruling for the remainder of the year. The Tariff Act of 1930 reduced the rate on crude aluminum from 5 cents to 4 cents a pound. On October 16 the European Cartel reduced its prices correspondingly.

The continued use of aluminum in strong alloys for railway purposes, overhead cranes, connecting rods for locomotives, and tank cars for transportation of chemicals, was a feature of the year, while an interesting development was the use in Portland cement of aluminum powder, to which lime and a small quantity of soda was added to produce a building material for fire-proof construction. The resulting product was a strong and light porous concrete with unusual insulating properties.

In Europe the aluminum industry had benefited for several years through the high prices for copper, and while there was some reaction with the fall in price of that metal, its use, particularly in electrical machinery, continued. During the year 1930 there was imported into the United States aluminum in the form of metal, scrap and alloy—24,498,544 pounds valued at \$4,437,134 as against 48,415,921 pounds valued at \$8,973,233 in 1929. Wares and utensils imported in 1930 were valued at \$54,408 as against \$71,046 in 1929, and other manufactures at \$519,284, as against \$872,908. Total imports were valued in 1930 at \$7,033,904 as against \$11,679,751 in 1929. The exports of aluminum in the form of ingots and scrap for 1930—were 607,608 pounds valued at \$84,278, as against 613,366 pounds valued at \$117,345 in 1929. Plates, sheets, bars, strips, and rods exported in 1930 were 16,721,903 lbs. valued at \$3,831,304; in 1929, 16,418,751 lbs. valued at \$4,032,194. Tables, kitchen, and hospital utensils were exported in 1930 to the value of \$560,389; in 1929, \$708,467. Other manufactures exported, in 1930, \$2,047,056, in 1929, 2,374,703. Total exports, 1930, \$10,898,750; 1929, \$11,897,368.

AMERICA. See *ANTHROPOLOGY*.

AMERICAN ASSOCIATIONS AND SOCIETIES. For various scientific and other organizations whose official titles begin with the word American, see under the important descriptive word of the title.

AMERICAN CHEMICAL SOCIETY. See *CHEMISTRY, INDUSTRIAL*.

AMERICAN FEDERATION OF LABOR. See *LABOR, AMERICAN FEDERATION OF*; *UNEMPLOYMENT*.

AMERICAN LEGION. An organization of World War veterans chartered by Congress in 1919. Its purpose is "to uphold and defend the Constitution of the United States; to maintain law and order; to foster and perpetuate a 100 per cent Americanism; to preserve the memories and incidents of association in the Great War; to inculcate a sense of individual obligation to the community, State, and nation; to combat the autocracy of both the classes and the masses; to make right the master of might; to promote peace and good will on earth; to safeguard and transmit to posterity the principles of justice, freedom, and democracy; to consecrate and sanctify the comradeship of the members by devotion to mutual helpfulness."

The Legion's twelfth national convention was held in Boston, Mass., Oct. 6-9, 1930. There was an accredited delegate attendance of 1250, representing every State, the District of Columbia, five territorial and seven foreign Legion departments. In the annual parade, which took eight hours to pass the reviewing stand, more than 70,000 persons marched. The principal address was delivered by President Hoover, in which he called upon the members to fulfill their duties of citizenship with respect for law and order and the preservation of peace and good will toward other nations. The distinguished speakers and guests at the convention included: Ex-President Coolidge; Gen. John J. Pershing; Gen. Frank T. Hines, Administrator of Veterans' Affairs; Rear Admiral William S. Benson, U. S. N., Ret.; Maj.-Gen. Sir William Hickie of Ireland; Gen. Henri Gouraud of France; William Green, president of the American Federation of Labor; Leut.-Col. L. R. LaFleche, president of the Canadian Legion; Fred W. Abbott, retiring president of Fidac, the inter-allied veterans' organization; and Col. John Brown, president of the British Legion.

The principal accomplishments of the Legion during 1930, according to the report submitted to the convention by O. L. Bodenhamer, the retiring national commander, were the obtaining by the national rehabilitation committee of cash recoveries for World War veterans during the fiscal year ending June 30, 1930, amounting to \$5,013,761 in disability compensation, insurance, retirement pay, adjusted compensation, and other types of claims handled before Veterans' Bureau agencies and the successful sponsoring of the enactment of a measure in Congress to provide \$15,950,000 for the building of hospitals. Other activities included a successful American Legion junior baseball programme in which upwards of 400,000 boys throughout the United States participated; enactment of a resolution by Congress providing for the appointment of a commission to study the Legion's universal service proposal; advancement of the Legion's child welfare programme; community service and Americanism projects carried on by thousands of Legion posts, emphasizing particularly Boy Scout work, pro-

motion of education, study of the Constitution of the United States, establishment of playgrounds, and many other activities; and amendments obtained to the World War Veterans' Act, including nearly all the major requests of the eleventh national convention.

The official publication of the national organization is the *American Legion Monthly*. The membership of the Legion in September, 1930, was 878,304, the largest in the history of the organization. The American Legion Auxiliary, composed of mothers, wives, daughters, and sisters of Legion members, had a membership of 368,049. The officers elected for the year 1930-31 were: Ralph T. O'Neil of Topeka, Kans., national commander; Dr. Neal D. Williams, Excelsior Springs, Mo., Dr. James A. Duff, Martinsburg, W. Va., Harry B. Henderson, Jr., Cheyenne, Wyo., Burt S. Hyland, Rutland, Vt., and Roland B. Howell, Thibodaux, La., national vice commanders; and the Rev. Joseph N. Barnett, Oshkosh, Wis., national chaplain. The following national officers were continued in office: James F. Barton, Fort Dodge, Iowa, national adjutant; Bowman Elder, Indianapolis, Ind., national treasurer; Scott W. Lucas, Havana, Ill., national judge advocate; and Eben Putnam, Wellesley Farms, Mass., national historian. National headquarters are in the World War Memorial Building, Indianapolis, Ind.

AMERICAN REVOLUTION, ANNIVERSARY CELEBRATIONS. See CELEBRATIONS.

AMHERST COLLEGE. An institution for the higher education of men in Amherst, Mass.; founded in 1821. For the autumn term of 1930 approximately 694 students were enrolled. The active faculty, exclusive of administrative officers, emeritus professors, and those on leave, numbered 71. The productive assets of the college amounted to \$7,841,266, and the income for the year was \$733,079. The library contained 167,000 volumes. President, Arthur Stanley Pease, Ph.D.

AMIRA, KARL VON. A German law historian and author, died in Munich, June 28, 1930. He was born in Aschaffenburg, Mar. 8, 1848, and studied law at the University of Munich. In 1875 he became professor of Germanic jurisprudence at the University of Freiburg, and in 1893 accepted the same chair at the University of Munich. His outstanding works on ancient and modern German law are: *Das altnorweg Vollstreckungsverfahren* (1874); *Über Zweck und Mittel der german Rechtsgeschichte* (1876); and *Nordgerman Obligationenrecht* (1882-95).

AMMONIA. See FERTILIZERS.

AMPHIBIA. See ZOÖLOGY.

ANÆMIA, PERNICIOUS. See MEDICINE, PROGRESS OF.

ANÆSTHESIA. See SURGERY, PROGRESS OF.

ANALYSIS, CHEMICAL. See CHEMISTRY.

ANALYTICAL CHEMISTRY. See CHEMISTRY.

ANDERSON, THE RT. REV. CHARLES PALMERSTON. Presiding Bishop of the Protestant Episcopal Church and Bishop of the Diocese of Chicago, died in Chicago, Ill., Jan. 30, 1930. He was born in Kemptville, Ont., Canada, Sept. 8, 1864, and was educated at Trinity College School in Port Hope, Ont., and at Trinity College in Toronto. After his ordination as deacon in 1887 and as priest in 1888, he was in charge, for three years, of a mission for lumbermen in Beachburg, Ont. In 1891 he was called as rector of Grace Church, Oak Park, Ill., where his ability as an

organizer was demonstrated. He was consecrated Bishop Coadjutor of the Diocese of Chicago in 1900 and succeeded to the bishopric upon the death of the Rt. Rev. William Edward McLaren in 1905. He served as chairman of the Commission on the World Conference on Faith and Order, which culminated in 1927 in the Lausanne Conference. In November, 1929, he was elected Presiding Bishop to fill the unexpired term of the Rt. Rev. John Gardner Murray. He received the D.D. degree from Trinity College, Toronto, in 1900 and the S.T.D. degree from Western Theological Seminary in Chicago in 1905. He was the author of *Letters to Laymen* (1913); *The Religion of Our Lord* (1923); *Religion and Morality* (1924); and *The Kingdom of God* (1926).

ANDORRA, ãn-dõr'rá. A tiny state in the Pyrenees, under the joint suzerainty of the French President and the Spanish Bishop of Urgel. Area, 191 square miles; population, 5231; capital, Andorra-la-Vieja (population, 600). The Andorrans, who speak Catalan, are governed by an elected council of 24 members, acting through a First Syndic. The two civil judges are appointed by France and the Bishop of Urgel, respectively.

ANDRÉE änd'rä, SALOMON AUGUST. A Swedish scientist and explorer whose remains, together with those of his companions, Nils Strindberg and Knut Fränkel, were found on White Island near Fridtjof Nansen (formerly Franz Josef) Land Aug. 6, 1930, by a party of Norwegian explorers, headed by Dr. Gunnar Horn, 33 years after their attempt to reach the North Pole by balloon. Andrée was born in Grenna, Sweden, Oct. 18, 1854, and studied at the technical college in Stockholm. He was a member of the Swedish meteorological expedition in 1882-83, and between 1892 and 1895 made several balloon journeys. He finally decided to reach the North Pole in the balloon *Ornen*, partly directed by sails and guide-ropes. The party started from Dane's Island, northwestern Spitzbergen, on July 11, 1897. According to the diary which was discovered in their last camp, they were forced down on July 14 at 83° N. and 30° E., after the gondola of the balloon had been partly destroyed by fire. On July 22 they commenced a sledge journey across the ice in a north-eastward direction, but were obliged to abandon that plan on August 4 somewhere about 82° 17' N. and 29° 43' E. on account of westward drifting ice floes. They then turned south so as to make their way back to Spitzbergen, but when they reached shallower sea off North East Land on September 12 the ice drift unfortunately altered its course. After deciding to spend the winter on an ice floe, they erected a shelter, but on October 2 the ice floe split and most of their equipment and supplies were lost. They finally succeeded in reaching White Island where, after a valiant struggle, they evidently died from exhaustion and cold.

ANDRÉE EXPEDITION. See POLAR RESEARCH.

ANGINA. See MEDICINE, PROGRESS OF.

ANGOLA, an-go'la, or PORTUGUESE WEST AFRICA. A Portuguese colony on the west coast of Africa, situated between the Belgian Congo and Southwest Africa. Area, 486,071 square miles; population (1926), 2,481,956 natives and about 40,000 Europeans. Capital, New Lisbon (Nova Lisboa); formerly known as Huambo; other important towns, São Paulo de Loanda, Kabinda, Ambriz, Novo Redondo, Benguella, Lobita, Mossamedes, and Port Alexander.

The interior plateau lands are fertile and well watered. Lobito, considered the best natural port on the west coast of Africa, has replaced Benguela as the shipping point for southern Angola. Harbor improvements were under way in 1930.

In the same year there were 68 elementary schools for Europeans and 28 industrial and 20 agricultural schools for natives, with a total enrollment of about 5000. The principal products are coffee, rubber, wax, sugar, vegetable oils, coconuts, ivory, oxen, and fish. Mineral products include malachite, copper, iron, petroleum, and salt, and gold also has been found. In 1928 the imports were valued at 269,822,799 escudos and the exports at 272,372,699 escudos (average exchange rate of escudo in 1928, \$0.0446). The chief imports of the province are textiles and the chief exports are coffee, maize, diamonds, sugar, wax, and dried fish. The bulk of both the export and import trades is with the mother country. Budget receipts in 1928-29 were 163,612,680 angolares; expenditures, 181,457,931 angolares (1 angolar equaled about \$0.0625). In 1930, 1436 miles of railway were open to traffic. The Benguela Railway from Lobito Bay reached the Kantanga mining district in the Belgian Congo in August, 1930, opening up a rich mining and agricultural area. There were also 18,000 miles of roads and 5790 miles of telegraph lines. The government is in the hands of a high commissioner vested with large powers, and with headquarters at Loanda. High Commissioner in 1930, Filomeno Camara.

A statement charging that there existed in Angola "a visible development by the Portuguese government of a system of forced labor for private profit," was issued in London Sept. 4, 1930, by two Englishmen, Henry W. Nevinnson and W. A. Cadbury, both of whom exposed inhuman conditions of labor in Angola 20 years earlier. See PORTUGAL under *History*.

ANIMAL DISEASES. See VETERINARY MEDICINE.

ANIMAL PSYCHOLOGY. See PSYCHOLOGY.

ANNAM, ăn-năm'. An Asiatic protectorate of France, forming a part of French Indo-China (see FRENCH INDO-CHINA). Annam's present status was established by the treaty of Feb. 23, 1886. Area, about 39,758 square miles; population in 1929, 5,399,674, including 3220 Europeans (exclusive of military forces). Capital, Hué, with a population of 41,275 in 1927; largest town, Binh-Dinh, with a population of 528,137. The principal port is Tourane. The products include rice, cotton, corn, and other cereals, the mulberry, the areca nut, cinnamon, tobacco, sugar, betel, manioc, and bamboo. The forest products include coffee, dye, medicinal plants, caoutchouc, and cardamoms. Raw silk also is produced. Of the minerals, copper, zinc, coal, hematite, iron, gold, and salt are worked to some extent. In 1927 exports were valued at 88,325,930 francs and imports at 84,049,402 francs. In 1929 there were 905 preparatory, elementary, and secondary schools with a total of 54,483 pupils. The nominal head of the government is the King, but actual power is vested in the French Resident Superior. King in 1930, Bao-Dai, who succeeded to the throne Nov. 6, 1925. During his minority, the government is in the hands of the Regency Council. A Chamber of representatives of the people was established in 1926.

ANNIVERSARIES. See CELEBRATIONS.

ANTARCTIC EXPLORATIONS. See POLAR RESEARCH.

ANTHROPOLOGY. The year 1930 was relatively infertile in developments. Publication of results was brisk, especially in the United States, but the material was disappointingly insignificant. Chaotic political conditions in South America precluded investigations in that field, and continued economic depression curtailed activities of European anthropologists. It is also noteworthy that relatively little has come out of the African and Oceanic fields.

The most important single contribution was the discovery of new remains of Peking man (*Sinanthropus*) together with the publication of an adequate preliminary account of this fossil human type. Approximately as ancient as the Ape-man of Java (*Pithecanthropus*), it affords better insight into the earlier stages of man's evolution, because of its far greater completeness.

The appearance of the *Encyclopædia of the Social Sciences* (New York) may be taken as a formal expression of the attempt at reintegration of the social sciences which had grown since the World War. The only appreciable effects of this have been the influence of sociology and psychiatry on law, of psychology on sociological theory, and of anthropology on sociology. On the whole, sociology, having more ramifying contacts, has consciously absorbed most. Anthropology seems to have been little affected by the other disciplines and it is doubtful that this encyclopædia will result in any change. The anthropological articles contain little novelty. A long article on anthropology (v. 2, 73) by its foremost living exponent, F. Boas, provides a wholly adequate survey of the field for the non-anthropologist. While, on the whole presenting the current views of the American school, which derives from Boas, it contains a new formulation on religion. A distinction is made between "two widely distributed concepts of power, the one anthropomorphic and clearly conceptualized, the other vague and defined with difficulty. . . . Anthropomorphism is the expression of a lack of differentiation between the self and its sense experience. Fundamentally distinct from anthropomorphism is the conceptualization of power as an attribute of objects. . . . Both types of reaction to the outer world occur continually side by side and independently. They flow together in so far as the quality of power is ascribed to the anthropomorphized concepts."

It is of fundamental importance to anthropology to know whether similar elements of culture found among peoples in different regions were independently developed or derived from a common source. In the one case there is a type of psychic uniformity implied quite different from the other. The problem has given rise to a mass of dialectic based largely on a prejudicial favoring of one explanation. The sober discussion of *Modifications in Indian Culture through Inventions and Loans* (Göteborg) by E. Nordenskiöld traverses first known cases of introduced elements before proceeding to the more inferential. It may be noted that Nordenskiöld gives little credence to the view that elements of South Sea cultures are to be found in South America.

Social Anthropology (New York) by C. Wissler and *Culture and Progress* (New York) by W. D. Wallis include the whole range of anthropological topics, but offer nothing fundamentally new. A work published in Calcutta, *Cultural Anthropol-*

ogy, by N. K. Bose is of peculiar interest as showing the influence of modern American anthropologists rather than British.

A new journal *Oceania* (Sydney) made its appearance. Under the editorship of A. R. Radcliffe-Brown it will serve not only for the presentation of data from Australia and adjacent Oceania, but is avowedly an organ of the school of functionalism which he sponsors. Another new journal, *Wiener Beiträge zur Kulturgeschichte und Linguistik*, also appeared under the editorship of W. Koppers.

The first meeting of the American Association of Physical Anthropologists was held during the year (April) at the University of Virginia.

PHYSICAL ANTHROPOLOGY. The placing of man's evolution among the primates was still the subject of controversy between H. F. Osborn and W. K. Gregory. Despite clamorous newspaper accounts that Osborn had "repudiated Darwinism," the facts are otherwise. He maintained, in disagreement with Gregory and the majority of investigators, that man had never "passed into the highly specialized aoreal adaptations attained by the Miocene apes" and was further inclined to see the separation of man and the anthropoid apes in the Eocene period, rather than the Miocene. Against his contention that man had never passed through a brachiating stage (in which movement was through the trees by suspension by the arms), Gregory showed that man is demonstrably nearer to the brachiating gorilla and chimpanzee than to the primitive Eocene quadrupeds (*Science*, June 27, 645).

Recent finds were therefore highly significant for decision between the rival theories, although until their position is adjudged by competent authorities we cannot say what the decision will be. Of these, Peking man (*Sinanthropus*) is by far the most significant, both by reason of the quantity of his remains and their clear dating to the Lower Pleistocene. The first discovery of homoid remains at Chou Kou Tien (near Peking) was in 1926 and 1928. In December, 1929, W. C. Pei discovered the greater part of a well preserved adult cranium in the cave deposits. The announcement in July of the discovery of another skull brings the total to date to parts of four skulls with the teeth of at least six other individuals. This provides far richer material for study than *Pithecanthropus* or *Eoanthropus*, the first of which at least is of the same antiquity as Peking man (*Nature*, Aug. 9, 210; Sept. 27, 491). "The skull of *Sinanthropus* would seem to be of approximately similar length to that of *Pithecanthropus* and like the latter form is provided with massive brow ridges, a feature to be correlated with a powerful jaw mechanism. However, *Sinanthropus* characteristically differs from the Java type in the following important features: relatively well developed frontal eminences, well localized parietal eminences and greater height of skull vault, all these characters pointing to a relatively greater brain capacity in *Sinanthropus*" (Mac Curdy, *Proc. Amer. Phil. Soc.*, 69, 183). No artifacts have yet been encountered with these remains.

All *Skeletal Remains of Early Man* save the most recent were surveyed by A. Hrdlicka (*Smithson. Misc. Coll.*, 83). It may be noted that he is unwilling to accept *Eoanthropus* (Pitdown man) and Rhodesian man as early because of their geological uncertainty. It is suggested that the Peking remains (*Sinanthropus*) are Neander-

thaloid. The discussion of *Recent Discoveries of Fossil Man* (*Nature*, June 21, 935) by A. Keith calls attention to new finds of Neanderthal man near Rome, Weimer, and the Crimea. The general distribution of this type he cites as "from Weimar in the north to Malta in the south, from Jersey in the west to the Crimea and Palestine in the east. There were local breeds or races. In point of time, some of the remains go back to an early phase in the last interglacial period; others are attributed to the first phase of the last glaciation."

Findings of new fossil ape forms are also significant for closing gaps in our knowledge of man's family tree. Fragments of a skull and jaw found by W. Freudenberg near Heidelberg in Pleistocene deposits appear to belong to a new form of large ape (*Hemianthropus osborni*) distinct from any now known. It is characterized by a brain larger than that of *Pithecanthropus* and a somewhat gorilline face. Somewhat aside is a baboon-like ape found at Senez (southern France) and described by C. Depéret. The fossil *Australopithecus* of south Africa hailed by some as a precursor of man and by others set aside as a chimpanzee "is not a chimpanzee, but a new and separate type of anthropoid ape" in the opinion of A. S. Romer (*Science*, Mar. 7; Apr. 4; May 9).

An objection to the current interest in segregating various "racial strains" in a population was entered by F. Wood Jones (*Man*, April) on the ground that a segregated group may show homogeneity only because of an inevitable correlation between certain measurements of body parts. The caution is excellent, but, knowing the perverseness of physical anthropologists, it is doubtful that it will make any change in the direction of their investigations.

Attempts at establishing physiological and mental differences between races have, on the whole, proved abortive, yet some distinctions have been made. Recently F. Clements showed that the incidence of color-blindness among Indians was 1.0 per cent, among negroes 3.7 per cent, in contrast to approximately 8 per cent established for whites (*Science*, v. 72, 203).

The publication of *Craniology of the North Pacific Coast* (Leyden) by B. Oettking terminates the descriptive work of the Jesup Expedition of thirty years ago under F. Boas.

PREHISTORY. *Recent Progress in the Field of Old World Prehistory* (G. G. Mac Curdy, *Proc. Amer. Phil. Soc.*, 69, 175) takes the form, in part, of pushing back the earliest recognizable culture (Chellean) from the third Interglacial period, where conservative opinion placed it, into the first Interglacial. This extends man's cultural antiquity by perhaps half a million years, assuming twice that length of time for the Pleistocene period as a whole. Studies of *Paleolithic Man and the Nile-Faiyum Divide* (Chicago) by Sanford and Arkell now show that four river terraces of Upper Egypt hold as many Paleolithic cultures: Chellean, Acheulean, Early Mousterian, and Mousterian. "These have been traced over some hundreds of miles on both sides of the Nile and in adjoining deserts between Assuan and Assiut. . . . Desert conditions were apparently established in Upper Egypt as early as Sebilian [Upper Paleolithic] times, and at a later date as one proceeds northward, north of the latitude of the Faiyum, they may not have become absolute until post-Neolithic times."

Excavations in progress in the Mughareh el

Wad cavern (Palestine) have already revealed "a more complete series of cultural levels than any other site thus far discovered in Palestine." The several layers contain successively remains of Mousterian period, Aurignacian, Capsian "showing probable relation of [north] African culture," Mesolithic (revealing hafting for microlithic tools, hitherto unknown prior to the Neolithic), and mixed remains from Bronze age to Arabic. An investigation of *The Palaeolithic of Southern Kurdistan* (Bull. Amer. School Prehist. Research, no. 6) by D. A. E. Garrod revealed a cavern containing implements of Upper Aurignacian culture, specifically like those of Grimaldi. The common sequence in Europe is Magdalenian following Aurignacian, but here, as at Grimaldi itself, the place of Magdalenian is taken by another culture, Tardenoisian. A second cavern contained Mousterian remains like those of Palestinian caves.

The discussion of *New Stone Age Pottery from Hsi-Yin Tsun, Shansi, China* (Mem. Amer. Anth. Assn., 37) by Ssu Yung Liang is significant, not only because it is the first attempt to analyze statistically the remains of any stratified site in the Far East, but for a projected chronology of similar sites in Asia. The earliest is Lang-son (Tonkin) of perhaps 3000-2500 B.C.; Hsi-yin is roughly contemporaneous (circa 2000 B.C.) with Mongolian-Manchurian finds, Todoroki (Japan), and Anau I-II (Turkestan); Ihusaki and Tsukomo (Japan) equate with Luang Prabang (north Indo-China) and Anau III. Two basic types of Neolithic pottery are known in the Far East: string-impressed ware in north China, Manchuria, and Mongolia; plain ware, centring in southeast Asia.

A general statement on the distribution of *Stone Age Sites in Japan* (Formes, Paris, v. 4, 9) by J. Nakaya reveals that while more than 10,000 prehistoric sites are known in the country, none are of paleolithic age. Neolithic stations lie principally in the east and north, Bronze age sites in the west. The latter, affected by China, reached their climax in the first-second century A.D.; the former disappeared in the north in the sixth-seventh century A.D.

One of the two or three apparently authentic finds of early man in America, possibly of Pleistocene age, was the recently discovered Gypsum Cave, south Nevada. M. R. Harrington found artifacts with and below layers of dung and hair of the extinct ground-sloth. Since this sloth (*Nothotherium*) is usually considered one of the typical animals of the Pleistocene, the evidence for man's presence in America during the Ice Age seems indubitable (*Science*, June 6, 1935). At the same time, paleontologists are beginning to question whether such animals were not persistent into the geologically Recent period.

OLD WORLD ETHNOGRAPHY. Both publication and activity in this field was at low ebb during the year. Two general surveys of Africa in English appeared. W. D. Hamblin's *Ethnology of Africa* (Chicago) has the limitations of a museum handbook. C. G. Seligman's *Races of Africa* (London) shows better balance, although not of fundamental importance. Seligman views the Negrillos of central Africa as an ancient, "infantile" race, and holds that, although the other pygmy group, the Bushmen of southwest Africa, moved southward from the same general sector, the two groups are not directly related. Stress is laid on continued "Hamitic" or "Caucasian" infiltration from the north into Negro Africa proper. R. S. Rattray

added to his account of the Ashanti on the Gold Coast, *Akan-Ashanti Folk-Tales* (Oxford).

G. Caton-Thompson's report on the Zimbabwe ruins (Rhodesia) makes it certain that these mysterious structures are at most a thousand years old. Excavations near the Acropolis revealed medieval Portuguese, Arab, and Chinese articles at its very foundations (*Jour. African Soc.* 29, 132). The discovery of an iron-smelting furnace in Mumbwa Cave (southern Rhodesia) by Gatti and Cipriani (*Nature*, Aug. 30, 1935) offers the first evidence for the antiquity of iron-smelting in Africa. A foot below the furnace was found a Mousterian culture level; about and above were implements of "middle and late stone age" types. R. Dart believes the furnace as old as the "later phase" of the Paleolithic, but the evidence, while indicating great age, is inconclusive.

The intricate *Social Organization of Australian Tribes* (Oceania, 1, 34) was clarified by W. R. Radcliffe-Brown. At the basis of the whole lies the horde, a small localized land-holding group, membership in which is determined wholly by descent and that patrilineal. Such groups are practically exogamous. Almost everywhere they are organized for marriage in two, four, or eight sections; all variants of one scheme. Genealogical relationship regulates the behavior of an individual to every person with whom he has any social dealings whatever. These relationships are extended to other hordes and tribes and are stigmatized by kinship terms, hence it is impossible for a man to have dealings with any one not a kinsman. The kinship system, as it regulates the whole of social life, regulates marriage. The strong bond of the local group to its territory also provides the basis for the totemism that prevails over most of that continent.

Paralleling her study of adolescence in Samoa, M. Mead wrote on the relation of children to adults in *Growing up in New Guinea* (New York). The essential point seems to be that in Manus, Admiralty Islands, where she investigated, as against utter irresponsibility in childhood, the constraint of adult life is brought about by the necessities of a money-motivated existence.

An extended study of *Die Polynesischen Tabusitten* (Leipzig) was published by R. Lehmann. *Ethnographical Studies in Celebes* (The Hague) by W. Kaudern now includes a volume on games and dances.

NEW WORLD ETHNOGRAPHY. The year witnessed that all too rare phenomenon, the systematic survey of local areas, in two regions: southern California-Arizona and the southern plateau of British Columbia-Oregon. All of the extant Yuman tribes of the first region have now been studied; this year adding the Yuma, Kamia, Maricopa, and southeastern Yavapai. The northern area, the southern plateau, as yet shows only the beginning of systematic study, but the appearance of reports on the Salish tribes of the Canadian boundary, the Wishram of the Columbia, and the Klamath of southern Oregon, together with investigations now under way, promises within a few years a well-rounded survey of the area. Activity in the study of native languages over the whole continent continued unabated.

The southern plateau (northwest United States between the Cascades and the Rockies) was blocked in by the publication of the late J. Teit's *Salishan Tribes of the Western Plateaus* (45th Ann. Rept. Bur. Amer. Ethnol.). His fullest information is on the Cœur d'Alène of Idaho, with

supplementary accounts of the Okanagon and Flat-head groups west and east. All these were relatively simple cultures. Southward of this area, Spier and Sapir's *Wishram Ethnography* (Univ. Wash. Publ. Anth., 3, no. 3) pictures this culture of the middle Columbia River as a blend of typical coastal traits with those of the interior tribes, but with the weight favoring the former. Typical Northwest Coast culture seems to have spread much more down the Washington coast and far up the Columbia than to points geographically nearer but located inland. Of particular interest among the Wishram were the germs of a legalistic development; chiefs sitting as judges, fines assessed for torts, constructive adultery, and the like. The prehistoric culture of these people was presented in *Archæology of the Dalles-Deschutes Region* by Strong, Schenck, and Steward (Univ. Calif. Publ. Amer. Arch. Ethn., 29, 1). This earlier culture shows much the same blend of coastal and interior traits as were found among the historic peoples.

A general view of this interior culture was presented by L. Spier as background for *Klamath Ethnography* (same ser., v. 30). The Plateau culture was seen as extending to the border of northeast California. Typical Northwest Coast forms of social stratification, chiefly hegemony, bride purchase, and shamanistic practices were traced into California and eastward to the north Plains.

In agreement with Boas, who holds that the great development of the totem pole art of British Columbia, but not the origin, is recent, M. Barbeau shows that the *Totem Poles of the Gitskan*, a Tshimshian tribe of the Skeena River (Bull. Nat. Mus. Canada, 61) made their appearance in the last century. Carved house poles and portals were, however, earlier. It is suggested that the totem poles proper originated among the north Tsimshian of Nass River. On the little known Nootkan tribes of west Vancouver Island, V. A. Koppert's *Contributions to Clayoquot Ethnology* (Catholic Univ. Amer., Anthro. Ser., 1) appeared, dealing largely with material culture. F. Boas published further on the *Religion of the Kwakiutl* (New York) of the same region.

The inevitable question of the origin of the Eskimo was raised by A. Hrdlicka in his *Anthropological Survey of Alaska* (46th Ann. Rept. Bur. Amer. Ethn.). He favors an origin in the region of Bering Strait, since there the physical type of the Eskimo is the most generalized, approaching most closely the types of the Alaskan Indians and Siberian natives, whereas the specialized Eskimo type of the east Arctic is thought a later specialization. Earlier writers have interpreted the same observations in the contrary manner. Confusion will doubtless prevail for some time in the field of Arctic archaeology because of the difficulty of discovering remains. It is increasingly clear, however, that Eskimo culture once differed from the historic form, perhaps more in detail and weighting than in totality. Comparing the several known ancient forms, H. B. Collins holds that the newly-discovered artistic culture of Bering Sea is older than the Thule culture, the widespread ancient form of the east Arctic (Smithson. Misc. Coll., 81, no. 14).

While the aim of the ethnologist is to scrutinize the growth of native practices, these have usually been institutionalized so far in the past that it is impossible to achieve this except by inference.

Very rarely the growth is so recent, yet under aboriginal conditions, that it is possible. A. H. Gayton, tracing the spread of *The Ghost Dance of 1870 in South-Central California*, found that a receptive social and ceremonial background made for the rapid dissemination and adaptation of the new cult (Univ. Calif. Publ. Amer. Arch. Ethn., 28, no. 3). The same author stresses the political interaction of *Yokuts-Mono Chiefs and Shamans* (same ser., 24, no. 8) in the same region. Chiefs, whose positions were hereditary, had a paternal and judicial interest in the people. The mechanism of control lay, in the absence of formulated law, not only in customary leadership but through the coöperation of shamans. Fear of sorcery acting as a deterrent to crime kept the balance of peace in everyday life. Intrigues between chiefs and their shamans to mulct wealthy men, who failed to furnish their fair share of the expense of celebrations, had its socially desirable side in the compulsion to participate.

The culture of *The Valley Nisinan* of central California affiliates with other lower Sacramento tribes, rather than with the linguistically identical Maidu on the eastern highlands. It now seems clear that the great interior valley of California had two special forms of culture: the lower Sacramento and the Middle San Joaquin (A. L. Kroeber, same ser., 24, no. 4). A monograph on *Mattole, An Athabaskan Language* (Chicago) of north California, now nearly extinct, was prepared by F. K. Li. Little is known from stratigraphy of cultural changes in that State. A résumé of *Chumash Prehistory* by R. L. Olson shows that on the south coast there was some slight and gradual change in culture. No certain evidence of trans-Pacific influence was found (Univ. Calif. Publ. Amer. Arch. Ethn., 25, no. 1).

In connection with a description of *The Social Organization of the Tewa, New Mexico* (Mem. Amer. Anth. Assn., 36), E. C. Parsons offers a brief general discussion of all the Pueblos, which goes beyond her summary of 1924. Matrilineal clanship, house-ownership, and ceremonial proprietorship, vigorous in the western Pueblos, is inert or absent at the opposite end of the Pueblo range. In the east a tendency to dual organization takes the place of the multiple groups of the west. The eastern curing societies have been borrowed from the west. Most impressive is the evidence for the widely-known masked dances having arisen from an amalgamation of purely native rain-making and burlesque dancers with Catholic saint festivals. The amalgamation was made both in the eastern and western Pueblos, but the dances of the latter, developing, spread secondarily into the eastern sector.

A genetic connection between the Tanoan and Zuni languages (New Mexico) was posited by J. P. Harrington. Having previously suggested such a connection between Tanoan and Kiowa (Okla.), three of the four small, isolated tongues of the Southwest are now absorbed in larger linguistic families.

Interest in the archaeology of southwestern United States continued unabated, with many parties in the field. The primary interest has been for some years in securing chronological evidence. A. E. Douglass now offers an absolute chronology based on an examination of beams secured from the ruins. The rings of trees, seen in cross-section, show characteristic periods of drought and wet years. By piecing together segments of ring series from the ancient beams,

Douglass established a sequence going back to A.D. 700. The year each beam was cut being established, the date of the pueblo containing became known. A preliminary report (*Natl. Geog. Mag.*, 50, 737) dates many ruins of the northwestern sector. The great ruins of this region were occupied largely from the tenth to the fourteenth centuries A.D. The earliest noted, Pueblo Bonito, dates from A.D. 919-1130. The later half of the thirteenth century was found to be a period of extreme and continued drought.

Despite the use of this novel means of ascertaining chronological relations, the relationships of the many ruins must continue to be based on the types of pottery found in them. On the western frontier of the area, *An Archaeological Survey of Verde Valley* (Globe, Ariz.), under H. S. Gladwin, showed typical Pueblo pottery of northeast Arizona abutting on Yuman pottery to the west and Gila polychrome to the south. Southeastward of this in *Pueblo Sites in Southeastern Arizona*, Sauer and Brand found the meeting place of Gila types with Mimbres (of southwest New Mexico) and with the Chihuahuas pottery from the southeast (*Univ. Calif. Publ. Geog.*, 3, no. 7). A third attempt at correlations in southern Arizona was that of F. M. Hawley (*Amer. Anth.*, 32, 522) on the middle Gila River. The two local areas segregated, north and south of that river, had somewhat different developments. Red-on-buff pottery of the southern area was contemporaneous with the black-on-white and early glaze periods of the Little Colorado drainage in northern Arizona, late Gila polychrome with the later glazed types. The northern half of the area reflects markedly the Little Colorado development.

The first recorded instances of the practice of polyandry in North America were noted by A. Lesser among the Pawnee, with suggestions of the same among adjacent Comanche and Wichita (*Man*, June, 78). This is however not true polyandry, but the custom of according a man access to his brother's wife.

Mexico and Central America were not especially productive fields during the year. C. O. Sauer reported an archaeological zone in northwestern Mexico (Sonora-Nayarit) to belong to the central Mexican culture complex of the great Toltec period, and having no connections with the presumably contemporaneous Pueblo culture to the north (*Science*, Oct. 17, 403). R. Redfield brought out his full study of changing conditions in *Tepoztlan, a Mexican Village* (Chicago) of the central area, briefly noted several years ago.

A sense of proportion in the Central American field has begun to be restored. Investigators were wholly concerned with conjectural interpretations of the monumental ruins to the exclusion of what might be learned from Mayan survivors. Recent studies showed that significant fragments of the ancient civilization might still be found among living Indians; as by J. E. Thompson in the *Ethnology of the Mayas of British Honduras* (Chicago). The attention given the elaborate ruins of Middle America has also largely obscured the necessity for investigating the earlier simpler cultural remains. By *Excavations at Zacatenco* (*Anth. Papers Amer. Mus. Nat. Hist.*, 32, pt. 1) near Mexico City, G. C. Vaillant shows that this archaic culture exists in three superposed forms. The middle horizon is equated with the first of the four horizons discriminated by Kroeber in 1925.

There has never been doubt that native weaving

distributed from Arizona to northern Chile was derived from a single source, but the question of what was the earliest weaving technique diffused over this area and its regional modifications has never been met. On the basis of extensive collections from Peru, where the art reached its apogee, O'Neale and Kroeber have defined the successive developments in the *Textile Periods of Ancient Peru* (*Univ. Calif. Publ. Amer. Arch. Ethn.*, 28, no. 2). The textile art had already a highly skilled and elaborate form in the earliest datable remains, some 2000 years old. New processes were devised, but none persisted without change in the several local centres. Textile designs also changed, but had a tendency to follow variations of pottery designs. These known textile remains from Peru, however, do not directly answer the question as to the anciently diffused form.

An essentially sane treatment of the question of populational connections between the South Seas and America by W. Lehman (*Orientalistische Literaturzeitung*, 33, 322), after resuming the many discussions of this possibility, offers an answer in the negative. *Additional Studies of the Arts of the Guiana Indians*, especially of southern British Guiana, by W. E. Roth (*Bull. Bur. Amer. Ethnol.*, 91), show a surprising technological development in an otherwise simple culture. E. Nordenskiöld reports the discovery of the ancient Peruvian system of weights. He also issued a general survey of *L'Archeologie du Bassin de L'Amazone* (Paris).

EXPEDITIONS, PERSONALIA. The *Anthropos* group of Vienna reports the return of P. Schebesta from the Congo Pygmies. R. Thurnwald (Leipzig) has in progress ethnological investigations in Africa. The Museums für Völkerkunde in Leipzig and Hamburg sent C. Nimuendajú to Rio Tocantins (east central Brazil), while L. Frobenius returned from the Zambesi River. The Staatliches Forschungsinstitut für Völkerkunde (Leipzig) supported Wilhelm in Angola and Bushman territory and Struck and Bernatzik in Portuguese Guinea. Expeditions to northeastern Angola, under Baumann and Meinhard, and to China, under Lessing, were dispatched by the Staatliches Museum für Völkerkunde (Berlin). The Koloniaal Instituut (Amsterdam) reports the acquisition of funerary articles from Bali (E. Indies). P. Rivet (Paris) visited Mexico, Guatemala, and Salvador. M. Griaule (Institut d'Ethnologie, Paris) has undertaken to cross Africa from Dakar to Djibouti for collecting purposes.

W. Thalbitzer (Copenhagen) visited south Greenland for folklore and linguistic studies. P. Nörlund continued excavations in the Godthaab district of Greenland and T. Mathiasen in the Sukkertoppen district. The Naturhistoriske Riksmusset (Stockholm) had S. Hedin continuing investigations in China and Mongolia. G. Bolinder in Sierra Leone and Liberia, S. Bergman in the Kuril Islands, and G. Moberg completed his expedition across the Sahara to Dakar via Timbuctu. The Göteborg Museum (Sweden) acquired collections in its special field, South America, from Peru, Bolivia, Central America, and upper Amazonas.

In Poland C. Ehrenkreutz was appointed professor of ethnology at the University of Vilna.

The University of Cambridge had J. B. Charlesworth continue his ethnologic investigations of the Wasukuma of Tanganyika, with M. M. Hunter studying the attitude toward women among the Xosa of South Africa. An expedition left for archaeological work between Lakes Baringo and

Rudolf in east Africa. The University Museum (Oxford) also showed interest in Africa with H. Balfour on the west coast. R. G. Dingwall excavated an early neolithic cave site on the Gower Peninsula (England). C. D. Forde was appointed to the chair of geography and anthropology at the University College of Wales. Under the Australian National Research Council and the University of Sydney, A. P. Elkin commenced a study of the natives of southern Australia; G. Laves worked on languages of western Australia, where R. Piddington studied the Karadjeri. U. McConnel investigated the natives about Port Douglas, northern Queensland, and C. W. M. Hart those of Melville and Bathurst Islands, northern Australia.

In Mexico, the Dirección de Monumentos Prehispánicos dispatched R. J. C. Novelo to investigate the pyramid "El Tajín" (Vera Cruz): E. Noguera to the ruins of southern Yucatan, to a new archaeological zone "La Cebadilla," south of Tampico, and to Michoacán; E. J. Palacios to make a study of the stelae of Uxmal (Yucatan). C. Basauri made anthropometric and ethnographic studies of the Otomi in the region of Actopan, Hidalgo. The Bishop Museum (Honolulu) maintained several field parties. In Cook Islands P. H. Buck surveyed Rarotonga, Atiu, Mangaia, Manahiki, and Tongareva. Emory, Stimson, and Schapiro conducted researches in the Tuamotus, and Bennett, MacAllister, and Walker the archaeology of the Hawaiian group. For the National Museum of Canada, J. C. B. Grant made anthropometric studies of the Cree and breeds near Lesser Slave Lake; I. A. Lopatin made ethnological studies of the Kitimat of Douglas Channel, B. C., and J. T. MacPherson of the Indians about L. Abitibi (Ontario-Quebec). W. J. Wintemberg continued archaeological investigations in east Canada (Gulf of St. Lawrence, New Brunswick, and southwest Ontario). R. Lehmann-Nitsche retired from the Museo de la Plata (Argentina), where he was succeeded by M. A. Vignati.

The Peabody Museum (Harvard) had expeditions investigating prehistoric sites in Czechoslovakia and Mesopotamia (Nuzi). Ethnological collecting was done by O. Lattimore in Mongolia, Manchuria, and south Siberia, by A. Loveridge in Tanganyika, G. Schwab in French Cameroon. Archaeological expeditions centred in Panama and the Southwest. The latter were near the confluence of the Colorado and Green Rivers (under H. B. Roberts) and south of the Mimbres (C. B. Cosgrove). Anthropometric studies of criminals and of Indian-white-Negro crosses among the Cherokee and of Spanish-Negro crosses in Cuba were under way. L. D. Redway and H. O. Hencken were added to the staff.

For the U. S. National Museum, N. M. Judd made aerial photographs to establish the ancient canal system of the Salt-Gila Valleys (Arizona), while A. Hrdlicka excavated sites on the Kuskokwim River and H. B. Collins on St. Lawrence Island (Alaska); excavations were also made on Arawak sites in the Dominican Republic. For the Bureau of American Ethnology (Washington) archaeological investigations were made by M. W. Stirling on the west coast of Florida and in Texas, and by F. H. H. Roberts in western New Mexico. Ethnological work took J. N. B. Hewitt to the Iroquois of Grand River (Ontario), J. R. Swanton to investigate linguistic remnants in Louisiana (particularly Koasati), while T. Michelson continued linguistic studies of the Algonkian tribes. F. LaFleche retired from the

Bureau. The Carnegie Institution of Washington conducted researches on the relation of the Archaic culture of Middle America to typical Maya civilization under O. G. Ricketson, and pushed its programme for the study of the present Maya population.

The joint expedition of the Field Museum (Chicago) with Oxford University was continued at Kish (Mesopotamia). W. D. Hambly made collections in Angola and Nigeria. P. S. Martin began excavation in the Lowry ruin (southwest Colorado). For the American Museum (New York), R. L. Olson made an archaeological reconnaissance of coastal Peru and Ecuador, and C. L. Bernheimer and E. H. Morris one of northeast Arizona. M. C. Kahn made a trip to Dutch Guiana to study the Bush Negroes and G. C. Valliant excavated in early cultures at Ticoman in the Valley of Mexico. The Museum of the American Indian (New York) supported S. K. Lothrop in Chile, H. S. Dickey on the Orinoco in Venezuela, and F. A. Mitchell-Hedges in Honduras. R. A. Bartlett visited the east coast of Greenland and several individuals the tribes of south Canada. The University of Pennsylvania Museum conducted excavations in prehistoric levels at Ur (Iraq) and in Prince William's Sound (Alaska), West Virginia, and New Mexico. Ethnological and archaeological investigations were made by D. S. Davidson in southwest Australia and Tasmania.

At Columbia University, F. Boas and J. Averkieva studied the religious and economic life of the Kwakiutl (British Columbia) and G. Reichard the social life of the Navaho (New Mexico). Several Plains tribes were visited: Caddoans (A. Lesser and G. Weltfish), Omaha (R. Fortune), Dakota (E. C. Deloria), Nez Percé (A. Phinney). At the University of Pennsylvania, F. G. Speck made ethnological studies among Indian remnants in southern New England; A. I. Hallowell among Cree and Saulteaux of northern Canada; V. M. Petrucci among the Delaware (Okla.). The last named and V. J. Fewkes left this university. The University of Chicago sponsored linguistic research among the Grebo (Liberia) by G. Herzog, ethnologic work among Tarahumare (Mexico) by W. C. Bennett and Maricopa (Ariz.) by L. Spier. Redfield and Andrade made studies in Yucatan. The archaeological survey of Illinois, under F. C. Cole, was in progress. Other linguistic researches were on American tribes: Isleta (N. M.) and Yokuts (Calif.) by S. Newman, Upper Chinook (Wash.) by W. Dyk, and Chiricahua (Ariz.) by H. Hoijer. Studies in the field of linguistic psychology were made under the direction of E. Sapir. C. Gower was appointed at the University of Wisconsin. The University of California had several parties in the local field: C. Dubois and D. Demetracopoulou among the Wintu, I. Kelly among northwestern Paiute, G. Nomland among Mattole. R. Beals went to the Cahita group of Sonora-Sinaloa (Mexico). The University of Washington had E. Gunther among the Puget Sound groups, V. Ray, V. Walters, and L. Spier among Sanpoil and Okanagon (Wash.). R. Gilmore made a trip to the Arikara (North Dakota) for the University of Michigan Museum.

Hamburg was the host of the 24th International Congress of Americanists in September.

NECROLOGY. The death in England of Edward Clodd (q.v.) on March 16 marked the passing of one whose influence on popular acceptance of the principles of man's evolution in English-speaking countries was tremendous. His best known

work was his first, "The Childhood of the World" (1873). In America, Jesse Walter Fewkes (q.v.) died May 31, aged 78. For years leader of the Bureau of American Ethnology, his principal labors were with Southwestern archaeology and ethnology. Maurice G. Smith of the University of Oklahoma died October 22. The deaths of F. W. K. Miller on April 18 and A. von Lecoq on April 21 were announced in Berlin.

ANTIGUA. See LEEWARD ISLANDS.

ANTIOCH COLLEGE. A nonsectarian, co-educational institution in Yellow Springs, Ohio; founded by Horace Mann in 1853. The number of students enrolled for the autumn term of 1930 was 631, of whom 413 were men and 218 were women. The faculty had 87 members. The productive funds of the institution amounted to \$261,797, and the operating income for the year was \$455,526. The library contained approximately 33,000 volumes. The newly constructed buildings, including a science building costing approximately \$377,000, a gymnasium costing \$80,000, and a central heating and power plant costing \$145,000, were occupied during 1930. Approximately 540,000 was made available to establish research foundations in physics, chemistry, biology, and medicine. Antioch College is conducted on the belief that academic training alone does not fit the student for life, and is so organized that the student divides his time between liberal and professional studies at college and practical work in the professional, industrial, and commercial institutions of the central and eastern States. An extramural faculty supervises location of students in about 175 firms and institutions in 12 States during these working periods, which alternate with study periods in five-week intervals. President, Arthur E. Morgan, D.Sc.

ANTI-SALOON LEAGUE OF AMERICA.

A federation of churches and temperance organizations in the United States, united against the beverage liquor traffic. It was established in 1895 by a coalition of the Anti-Saloon Leagues of four States and the District of Columbia. At the end of 1930 it embraced 48 State or territorial leagues and had affiliation with 40 other national temperance organizations, as well as with the World League against Alcoholism (q.v.).

During the year the work of the league was conducted by over 1500 representatives. This work included a widespread educational campaign on the evils of the use of alcohol and the duty of observance of the law, carried on through the press, pamphlets, the pulpit, and the lecture platform. The legislative work of the league included support of the measures urged by President Hoover for the better enforcement of national constitutional prohibition. These included H. R. 8574, for the transfer from the Treasury Department to the Attorney General of certain functions in the enforcement of the National Prohibition Act, which passed both houses and became effective on July 1, 1930; H. R. 9985, defining minor offenses under the enforcement act and bringing them within the jurisdiction of United States commissioners, and H. R. 10341, amending the United States Criminal Code to define petty offenses, which was passed on Dec. 3, 1930.

The league issued statistics, based on official reports, demonstrating that consumption of intoxicants had dropped to a small fraction of its former total and giving the consequent economic,

social, moral, and physical benefits of prohibition to the people of the nation. The principal feature of its 1930 activities was the nation-wide organization of local groups of outstanding business men for the encouragement of enforcement authorities and the support and expression of popular opinion on prohibition. In addition to many thousands of leaflets and documents distributed, the league published *The American Issue* in Westerville, Ohio, with a monthly circulation of about 1,000,000 copies and with State editions in 24 States.

The officers of the league in 1930 were: President, Bishop Thomas Nicholson, Detroit, Mich.; secretary, S. E. Nicholson, 370 Seventh Avenue, New York City; honorary treasurer, Foster Copeland, Columbus, Ohio; treasurer, H. B. Sowers, Westerville, Ohio; general superintendent, F. Scott McBride, Washington, D. C.; director of the department of education, Ernest H. Cherrington, Washington, D. C.; attorney, Edward B. Dunford, Washington, D. C. National headquarters are in Washington, D. C. See PROHIBITION.

ANTI-SEMITISM. See JEWS.

ANTWERP. See EXPOSITIONS.

APARTMENTS. See ARCHITECTURE.

APE MAN. See ANTHROPOLOGY.

APPELL, PAUL EMILE. A French educator and former rector of the University of Paris, died in Paris Oct. 24, 1930. He was born in Strassburg Sept. 27, 1855, and attended the Strassburg and Nancy lycées, the Collège Saint-Arbogast in Strassburg, and the École Normale Supérieure. On receiving the D.Sc. degree from the latter institution in 1876 he became lecturer in mathematics at the University of Dijon. Five years later he was called to the École Normale Supérieure as professor of applied mechanics and head of the lecturing staff. In 1903 he became dean of the faculty of science, but resigned this post in 1920 to become rector of the University of Paris. During the World War he was active in relief work in Paris. He was a member of the Académie des Sciences of the Institut de France; past president of the Société Mathématique de France; and a member of the Conseil Supérieur de l'Instruction Publique, in which capacity he exercised a wide influence over the whole field of higher education in France. His works include: *Mémoires de mathématiques* (Traité de mécanique rationnelle; Statique, dynamique du point; Dynamique des systèmes; Mécanique analytique; and Équilibre et mouvement des milieux continus); *Figures d'équilibre d'une masse fluide en rotation uniforme*; *Théorie des fonctions algébriques et de leurs intégrales* (with E. Goursat); *Principes de la théorie des fonctions elliptiques et applications* (with E. Lacour); *Leçons de mécanique élémentaire* (with J. Chappuis); and *Education et enseignement*.

APPLES. See HORTICULTURE; ENTOMOLOGY, ECONOMIC.

AQUEDUCTS. Substantial progress was made toward the solution of the great aqueduct works for New York and for Los Angeles, noted in the 1929 YEAR BOOK, but actual construction had not begun. The Wanauke supply for North Jersey (supplying ten cities—parts of Elizabeth and Bayonne having been added to the original area) was put in service during the year, the aqueduct, so long a matter of dispute, having been completed. Work on the Boston supply from the Swift and Ware Rivers had gone forward, the master appointed by the Supreme Court to hear

testimony in the case having approved the diversion. Connecticut, however, was still dissatisfied and proposed to carry her objections to the Supreme Court.

NEW YORK. The Delaware River project, which will exceed the Catskill aqueduct in size, had been under detailed study, while the master appointed by the Supreme Court had been hearing testimony. It will be remembered that a tentative agreement between the States of New York, New Jersey, and Pennsylvania, was made official only by the legislative action in New York—New Jersey refused to accept the plan and took the case to the Supreme Court with Pennsylvania coming in as an interested spectator. Arguments on the case closed on Nov. 21, 1930. It was difficult to see how permission could be refused for this much-needed diversion from the Delaware, particularly considering the guarantees which New York City was willing to offer in the matter of maintaining minimum flows. In the meantime the city engineers, to guard against a possible water shortage, were understood to be considering the use of the old Croton Aqueduct built in 1842, which was abandoned about 1920.

LOS ANGELES. A special commission appointed to study the various proposals for this great work, reported, after reviewing some 56 different projects, that further studies were essential before a final decision could be made between four of these routes which appeared to be meritorious. All the gravity routes were eliminated in this study on the ground that grade tunnels would be very deep and probably very difficult to construct in the mixed volcanic ground that was certain to be encountered, that such works would be liable to damage due to the fact that any aqueduct coming into Los Angeles had to cross the great San Andreas and other faults, and that their cost would be prohibitive.

The detailed studies of the four pumping routes recommended included geological investigations, the questions of accessibility to transportation, right-of-way costs, construction costs, reliability of the supply, and the possibility of eliminating pumping lifts at a later date by tunnel construction. On November 10 it was announced that the decision had been reached to build on the so-called "Parker route." Under this plan a dam was to be built on the Colorado at Parker and some 640 sec. ft. of water (ultimately 1500) would be pumped a total of 1523 ft. The aqueduct will be 265½ miles long and it was said that this route involved shorter tunnels, at less depth and in more stable ground, than any other line.

While it became evident some ten years previously that the Owens Valley supply would ultimately become inadequate for the needs of Los Angeles, a decision on the new aqueduct was held up pending the final selection of the site for the Boulder Canyon or Hoover Dam project by the U. S. Reclamation Service. Preliminary surveys for the Los Angeles-Colorado aqueduct were made some five years before, but these delays necessitated a warning to the citizens of Los Angeles requesting that all efforts be made to conserve existing supplies pending the completion of the new works. A similar warning also was issued in San Francisco where the long needed Hetch Hetchy supply was still incomplete. See **WATER WORKS AND WATER PURIFICATION.**

ARABIA. A peninsula in southwestern Asia situated between the Red Sea and the Persian Gulf. The area is estimated at from 1,000,000 to

1,200,000 square miles, the higher figure including the Syrian Desert and the Sinaitic Peninsula. A mountain barrier, parallel to the Red Sea, runs the length of the western part of the peninsula from which the terrain slopes uniformly to the Persian Gulf, with the exception of the Oman district in the extreme southeastern section of Arabia, where a mountainous area with 10,000 foot peaks is found. Barren and sparsely watered, the peninsula nevertheless has numerous large oases. Estimates of the population range from 4,000,000 to 7,500,000, the inhabitants representing every stage of transition from the purely nomadic Bedouin tribes, occupying a large part of the interior, to the well-developed civic life of the large towns. Freed of Turkish control by the World War, the Arabs were at liberty to work out their own political destiny. After six years of internecine warfare, the Ibn Saud dynasty of Nejd emerged as the ruling power, controlling all the peninsula except several small states along the southern and eastern coastal fringe. During this period, the divisions of the country became defined as follows:

(1) **HEJAZ**, or **HEJAZ**. The Kingdom of the Hejaz, founded by King Hussein Ibn Ali in 1916 as the outgrowth of the World War, was conquered at the end of 1925 by Abdul Aziz Ibn Saud, Wahabi leader and Sultan of Nejd. Ibn Saud, on Jan. 8, 1926, was proclaimed King of Hejaz and Nejd. Hejaz occupies the western coast of Arabia between Trans-Jordan on the north and Asir on the south, the latter boundary touching the coast at about 20° north latitude. The estimated area is about 150,000 square miles, although the land frontiers have never been definitely defined, and the population, largely composed of nomads, is placed at from 800,000 to 1,000,000. The chief cities, with their estimated populations, are Mecca (85,000), the holy city of Islam; Medina (30,000), site of Mohammed's tomb; and Jeddah (25,000), the seaport for Mecca. Mecca is visited annually by about 100,000 Moslem pilgrims from abroad, who represent the chief source of revenue for the government. The standard gold currency is the pound sterling, which is equivalent to 10 rials in native currency.

Agriculture is confined to the mountain oases and valleys, which produce fruits, dates, and some cereals. Hides, wool, gum, and clarified butter are the leading Bedouin products. Some Arab horses are exported. The southern section of the railway from Amman, Trans-Jordan, to Medina, has been out of commission since 1925. The constitution of Aug. 31, 1926, vests supreme executive and legislative power in the King.

(2) **NEJD**. The Kingdom (formerly Sultanate) of Nejd occupies the highland of Central Arabia, with an indefinite area and a population estimated at 3,000,000. Riyadh, the capital, and Hufuf have populations of about 30,000 each. Dates, wheat, barley, fruits, hides, wool, horses, and camels are the chief products, few of which are exported.

(3) **ASIR**. A province on the west coast between the Hejaz and Yemen, formerly ruled by the Idrisi dynasty but since 1926 a protectorate of the Kingdom of Hejaz and Nejd. Estimated population, 1,000,000; capitals, Abha and Sabya.

(4) **YEMEN**. The Imamate of Yemen is an independent Arab state occupying the Red Sea coast between Asir and the British protectorate of Aden. The area is about 75,000 square miles and the population between 2,000,000 and 3,000,-

900. Sana', the capital, has about 25,000 inhabitants. Barley, wheat, millet, coffee, and hides are the principal products and exports. Ruling Imam in 1930, Yahya Mohammed Hamid ed-Din.

(5) **THE HADRAMAUT.** A region of fertile valleys to the east of Aden Protectorate, the greater part of which is ruled by the Sulta of Makalla. The territory is under loose British protection and control.

(6) **OMAN.** An independent state occupying the coastal fringe of southeastern Arabia; under the protection of Great Britain. Area, about 82,000 square miles; population, estimated at 500,000, chiefly Arabs but with a considerable Negro element along the coast. Muscat, the capital, has about 10,000 inhabitants, most of whom are Negroes or Baluchis. Exports, consisting of dates, dried limes, pomegranates, and dried fish, are exchanged principally with India. In 1927-28 imports were valued at £370,659 and exports at £148,285. Revenues totaled approximately 700,000 rupees (\$262,000) annually. The reigning Sultan in 1930 was Seyyid Taimur bin Feisal, who succeeded to the throne Oct. 5, 1913.

(7) **KUWAIT.** An Arab territory fringing the northwestern coast of the Persian Gulf, with an estimated population of 50,000. The Sheik, Ahmed ibn Jabir al Subah, is subsidized by the British government. Capital, Kuwait.

HISTORY. The dramatic end of a century-old feud between rival Arab dynasties was signalized by the meeting of King Abdul Aziz Ibn Saud of the Hejaz and of Nejd and King Feisal Ibn Hussein of Iraq on board the British warship *Lupin* in the Persian Gulf on February 24. The meeting was arranged by Sir Francis Humphreys, British High Commissioner to Iraq. A protocol of 19 clauses, providing for the settlement of disputes which for some years had disturbed relations of the two kingdoms, was signed. Among the main provisions of the treaty were the mutual recognition of the independence of Iraq and Nejd and exchange of ambassadors, the outlawing of tribal raiders, the extradition of fugitives from justice, establishment of a permanent frontier commission similar to that appointed under the tripartite treaty between Iraq, Turkey, and Great Britain, and settlement by arbitration of disputes over the interpretation of the treaty.

Ibn Saud also agreed favorably to consider Iraqi claims for reparation for border raids and accepted the Iraqi point of view in regard to the maintenance of police posts in the Southern Desert. The Wahabi king was also understood to have agreed to pardon rebels from the Nejd who had sought refuge in Iraq.

A British effort to compose the differences between the two families in 1924 failed and in the ensuing warfare the Wahabi leader defeated King Hussein of the Hejaz, and annexed that territory. He next launched destructive raids upon Iraq and Trans-Jordan, which were ruled by the second and third sons of the deposed King of the Hejaz. Through British intervention treaties were concluded defining the borders between the Nejd and the two adjoining Arab states, but the raids continued. It developed that the later raids were carried out by a group of turbulent Nejdite sheiks headed by Feisal ed-Dowish in defiance of Ibn Saud. The latter sent a number of punitive expeditions against the rebellious tribesmen and late in December, 1929, himself led a large force which decisively defeated them in Shaibauja. Feisal ed-Dowish, with a number of

defeated sheiks, escaped over the border into Koweit and Iraq. Feisal was reported to have been captured by the British forces in Iraq and turned over to Ibn Saud at the time of the conference in the Persian Gulf. He was taken to Riyadh for trial before a religious court. Despite these vigorous measures on the part of the Wahabi King, some desert tribes nominally subject to his authority continued at intervals their immemorial raids against other tribes in Iraq and Trans-Jordan.

Meanwhile the Government of the Hejaz and of Nejd showed increasing evidences of stability. Rapid progress was made in the establishment of permanent diplomatic relations with the leading states of the Near East and of Europe. The British agency and consulate was advanced to the rank of a legation, and in February, 1930, Sir Andrew Ryan was appointed the first British Minister to Jeddah, the capital. The French, Italian, Russian, Turkish, and Persian governments likewise took steps to raise their consular representatives in Jeddah to the rank of chargé d'affaires.

The fifth anniversary of the accession of King Ibn Saud to the throne of the Hejaz was celebrated at Mecca, January 8 to 11. The King was conducting his campaign against Feisal ed-Dowish, but his son, Prince Feisal, released all minor offenders from prison. He also fêted the Arab notables and the Europeans in Jeddah. Ending five years of exile in Cyprus, former King Hussein was allowed by the British to join his son, Amir Abdullah of Trans-Jordan.

British efforts to negotiate a settlement of difficulties with the Imam Yahya of Yemen had been fruitless, it was revealed on Dec. 23, 1929, during a debate in the House of Lords. The Imam failed to reply to an invitation to open negotiations. The number of Moslems making the annual pilgrimage to Mecca in 1930 was placed at 150,000, or 40,000 more than in 1929. A quarrel between King Ibn Saud and Egypt over the facilities and privileges accorded Egyptian pilgrims was settled by agreement in 1930. See Jews, under *Zionism*; PALESTINE; IRAQ; and TRANS-JORDAN.

ARACHNIDA. See ZOOLOGY.

ARANDISITE. See MINERALOGY.

ARBITRATION, COMMERCIAL. See INTERNATIONAL LAW.

ARBITRATION, INTERNATIONAL. The powers at London in the Naval Conference sought to find a solution for their difficulties in the principles of compulsory arbitration. France, Italy, and Great Britain signed the optional clause providing for the compulsory arbitration of legal disputes by the World Court. The most important international disputes, however, are "non-legal," and the Council of the League of Nations had no authority to impose a definite settlement of non-legal disputes. It could merely make a recommendation. A dispute may therefore drag on indefinitely until, anti-war pacts notwithstanding, it might finally flame up into actual war.

The League Assembly attempted in 1928 to remedy this weakness in international peace machinery by drawing up a General Act of Arbitration that provided (1) for the definite adjudication of legal disputes by the World Court; (2) for the conciliation of non-legal disputes by regional commissions. In case conciliation fails, final decision of dispute is to be vested in an arbitral tribunal. The General Act thus

provides for the arbitration of both legal and non-legal disputes.

The acceptance of the General Act by the Mediterranean powers provides a precise system for settling definitely all disputes in the Mediterranean. If a state, having accepted the Act, refuses to arbitrate or to live up to an arbitral award, it automatically becomes an aggressor. Article XIII of the Covenant states that "in the event of any failure" to carry out an arbitral award, "the Council shall propose what steps should be taken to give effect thereto." Presumably the Council would recommend the imposition of an economic boycott, or even military measures in accordance with Article XVI.

According to the Foreign Policy Association, opinions differed as to whether members of the League are obligated to accept a recommendation of the Council to impose an economic boycott against an aggressor state. In 1921 the Assembly passed a resolution to the effect that each member of the League judged for itself whether or not the Covenant had been violated or whether it was under an obligation to impose an economic boycott. There are some jurists who state that this resolution violates the Covenant. Moreover, in 1925 the Locarno powers informed Germany that in their opinion each member of the League was bound to cooperate in support of Article XVI "to an extent which is compatible with its military situation and takes its geographical position into account."

Various British spokesmen have declared that Great Britain will never become involved in war with the United States. This has been a notice to League members that the British government will not participate in a League blockade to which the United States is opposed. The acceptance by the United States of the principle of consultation means the general strengthening of the world's peace machinery. From the concrete standpoint, it means that the United States and other powers will consult together in the hope of finding a peaceful solution of dangerous international disputes.

If, in spite of this, as Raymond L. Buell points out, war breaks out, the consulting powers have a basis for determining which of two states is the aggressor. In case agreement is reached on this point, League members may proceed to apply an economic blockade against the aggressor. The United States would not be obligated to aid in the enforcement of such a blockade; but it would be expected not to insist upon the right of its nationals to trade with the aggressor. In case the United States disagrees as to the aggressor, it is probable either that no economic blockade would be applied, or that such a blockade would be applied without distinction to both parties. The latter alternative embodies a principle similar to that of the Porter resolution introduced into Congress in the winter of 1929-30 authorizing the President to impose an arms embargo upon all belligerents.

ARBITRATION OF THE "I'M ALONE" CASE. On Mar. 22, 1929, the U. S. Coast Guard vessel *Dewar* sank the schooner *I'm Alone*, of alleged British nationality and registered in Canada, off the coast of the United States. The case was made the subject of diplomatic correspondence between the United States and Canada and in a note of Apr. 17, 1929, addressed by the Secretary of State to the Minister of the Dominion of Canada; it was stated that if the Canadian Government, after a

careful examination of that note, still found itself unable to concur in the findings of facts and the conclusions of law set forth therein, the Government of the United States would agree to submit the matter to arbitration as provided for in the Convention between the United States and Great Britain of Jan. 23, 1924. In a note of Apr. 24, 1929, the Canadian Minister informed the Secretary of State that his Government accepted the proposal of the United States.

The United States designated the Honorable Willis Van Devanter, Associate Justice of the Supreme Court of the United States, as the American member on the Commission provided for in the Convention, and the Honorable George Wharton Pepper, former United States Senator from Pennsylvania, as agent to represent the Government of the United States before the Commission. The time and place of hearings was to be settled by agreement between the commissioners. The Canadian Government appointed Eugene Laffeur, K.C., of Montreal, as the Canadian member of the Commission, and John E. Read, Esquire, as Canadian agent, and W. N. Tilley, K.C., of Toronto, and Aime Geoffrion, K.C., of Montreal, as counsel. Mr. Laffeur subsequently died, and Right Honorable Lyman Poore Duff, P.C., Puisne Judge of the Supreme Court of Canada, was nominated by His Majesty, on the recommendation of the Government of Canada. Mr. Justice Duff was the Senior Puisne Judge of the Supreme Court of Canada and had served for 11 years as a member of the Judicial Committee of the Privy Council.

ARBITRATION TREATIES. According to the records of the U. S. State Department six treaties of arbitration generally known as the Root Treaties negotiated in 1908 and 1909 were in force and in effect. They were with Brazil, Ecuador, Haiti, Liberia (signed in 1926), Peru, and Uruguay. During 1928, 1929, and 1930, twenty-three (23) treaties were negotiated with these countries: Albania, Austria, Belgium, Bulgaria, Czechoslovakia, Denmark, Estonia, Ethiopia, Finland, France, Germany, Hungary, Iceland, Latvia, Lithuania, Luxemburg, Netherlands, Norway, Poland, Portugal, Rumania, Sweden, Yugoslavia. Four other treaties had been signed and were in process of ratification at the end of the year, namely with China, Egypt, Greece, and Italy.

Nineteen Bryan or conciliation treaties negotiated in 1913 and 1914 were in force: Bolivia, Brazil, Chile, China, Denmark and Iceland, Ecuador, France, Great Britain, Italy, Netherlands, Norway, Paraguay, Peru, Portugal, Russia, Spain, Sweden, Uruguay, Venezuela. Sixteen other conciliation treaties were signed in 1928, 1929, and 1930: Albania, Austria, Belgium, Bulgaria, Czechoslovakia, Estonia, Ethiopia, Finland, Germany, Hungary, Latvia, Lithuania, Luxemburg, Poland, Rumania, Yugoslavia. Two others had been signed with Egypt and Greece and were in process of ratification.

MIXED CLAIMS COMMISSION. On January 8, the White House at Washington announced the appointment of Roland W. Boyden of Boston as umpire of the Mixed Claims Commission, United States and Germany, to succeed the Hon. Edwin B. Parker, who died in 1929. The agreement of Aug. 10, 1922, between the United States and Germany provided that the two governments should select an umpire for the Mixed Claims Commission and the Department of State consequently inquired of the German Embassy whether

the selection of Mr. Boyden as successor to Judge Parker would meet, with the approval of its government. The German Ambassador, in informing the Department that he had brought the matter to the attention of his government, stated that the German Government would "welcome the nomination of that eminent jurist." Later Mr. Boyden was appointed by President Hoover to the Hague Arbitration Court.

GENERAL AND SPECIAL CLAIMS COMMISSION (UNITED STATES AND MEXICO). Dr. Horacio Alfaro of Panama was appointed Presiding Commissioner of both the General and the Special Claims Commissions, and the first named tribunal commenced its session in Mexico City in August. Up to the end of 1930 no date had been fixed for the resumption of hearings by the Special Claims Commission. The General Claims Commission was composed of Dr. Horacio F. Alfaro, Presiding Commissioner; Fred K. Nielsen, Commissioner appointed by the United States; and Señor Licenciado Genaro Fernandez MacGregor, Commissioner appointed by the United Mexican States. The Special Claims Commission was composed of Dr. Horacio F. Alfaro, Presiding Commissioner, Ernest B. Perry, Commissioner appointed by the United States; and Señor F. Gonzalez Roa, Commissioner appointed by the United Mexican States. James A. Langston, was the attorney and secretary of the Agency.

WAR CLAIMS SETTLEMENT. Hon. James W. Remick, of Concord, N. H., was appointed by the President and his nomination confirmed by the Senate, as War Claims Arbitrer, under the Settlement of War Claims Act of 1928, to succeed the late Judge Edwin B. Parker. Judge Remick took office Jan. 13, 1930. The Arbitrer finally disposed of all ship claims pending before him in June, 1930, and certified tentative awards therein to the Secretary of the Treasury for payment. The awards were tentative only in the sense of the statute in providing that awards shall be prorated, if need be, in order that the aggregate of all the awards (in ship claims, patent claims, and the radio-station claim) shall not exceed \$100,000,000 to German nationals. The first tentative awards in patent claims were entered by the Arbitrer on December 4. The remaining patent claims and the radio-station claim were being prepared by counsel for submission to the Arbitrer.

The following from the Report of the Secretary of the Treasury of the United States for the fiscal year ended June 30, 1930, pages, 70-71, may be of interest in this connection:

Under the settlement of war claims act of 1928, it is the duty of the war claims arbitrer, within certain limitations, to hear the claims of the German, Austrian, and Hungarian nationals and to determine the fair compensation to be paid by the United States for ships seized by it, a radio station sold to the United States, and patents sold or used by the United States.

On June 5, 1930, the arbitrer entered tentative awards for 94 merchant ships belonging to German nationals, together with certain property contained therein, in the aggregate amount of \$74,243,000, including simple interest thereon at 5 per cent per annum from July 2, 1921, to Dec. 31, 1928, and certified them to the Secretary of the Treasury for payment under dates of June 13 and 16, 1930. The Treasury immediately prepared regulations covering such payments and issued them, together with a form for making application for payment, to the claimants under date of June 23, 1930. The Secretary of the Treasury determined on the same date that, of the \$25,000,000 reserved from the appropriation of \$50,000,000 made in May, 1928, for payments on account of the tentative awards of the arbitrer, the sum of \$20,000,000 should be paid on account of the tentative awards entered by the arbitrer on account of ships and property contained therein. Each claimant, therefore, received 26.985152525 per cent of his tentative award. Substan-

tially all of the payments on this account were made on July 18, 1930. The arbitrer has not certified to the Secretary of the Treasury any awards on account of the claims other than the tentative awards covering ships and property contained therein.

As to the last sentence, this situation is changed by the awards entered Dec. 4, 1930, in certain patent claims:

Under the amendment of the settlement of war claims act referred to above, which authorized the appropriation of additional funds at any time to pay the awards of the arbitrer, but which are not to be available until such awards are certified to the Treasury for payment, there was appropriated in the second deficiency appropriation act of June 3, 1930, such additional amounts as may be necessary to pay the aggregate of the awards of the arbitrer, to be immediately available after the date on which such awards are certified for payment and within the limit of \$100,000,000 authorized for the claims of German nationals against the United States and the limit of \$1,000,000 for the claims of the Austrian and Hungarian nationals against the United States. The Treasury is therefore in a position to make immediately such additional payments on account of the final awards of the arbitrer as will equal 50 per cent of the total amount of the awards entered in favor of German nationals and to make payment in full of the awards entered in favor of the Austrian and Hungarian nationals as authorized by the settlement of war claims act, and thus save interest at the rate of 5 per cent per annum. The remaining 50 per cent of the appropriation made available for the awards of the arbitrer in favor of German nationals will be used, as authorized by the settlement of war claims act, to make payment of the awards of the Mixed Claims Commission in favor of American nationals. The balance due on account of the awards in favor of German nationals will be paid, as and when funds are available for that purpose, in accordance with the priorities established by the settlement of war claims act.

See also PORTUGAL, GERMANY, and GUATEMALA under *History*.

ARBITRATION, LABOR. See LABOR ARBITRATION AND CONCILIATION.

ARCHAEOLOGICAL INSTITUTE OF AMERICA. A society for the promotion of archaeological investigation and research, founded in Boston in 1879 and incorporated by Act of Congress in 1906. In 1930 it had 56 affiliated societies, or chapters, with a membership of 3460. It maintains a lecture system by which it sends to each society three to five prominent speakers who give illustrated lectures during the winter season. The Charles Eliot Norton Lecturer for 1930-31 was Dr. Robert S. Conway of Manchester, England, who spoke on Vergilian subjects. Through the work of its schools and of a number of important committees the institute for about half a century has made notable contributions toward the uncovering of the records of the past. These include the American School of Classical Studies at Athens, the School of Classical Studies of the American Academy in Rome, the American Schools of Oriental Research in Jerusalem and Bagdad, the School of American Research in Santa Fé, N. Mex., the American School of Prehistoric Research at Peabody Museum, Yale University, and the Committee on Mediaeval and Renaissance Studies.

The thirty-second general meeting of the institute was held at the State University of Iowa in Iowa City, Dec. 29-31, 1930. Among the important papers read on this occasion were: "The Escargotiers of Eastern Algeria," by George L. Collie of Beloit College; "The Reaper Design on Gnostic Amulets," by Campbell Bonner of the University of Michigan; "The Significance of the Deeper Excavations at Chetro Keti," by Edgar L. Hewett of the School of American Research; "The Venetic Goddess Rehtia," by Robert S. Conway of the University of Manchester; "The Twenty-sixth Lydian Inscription," by

George W. Elderkin of Princeton University; "The Excavations in the North Cemetery at Corinth in 1930," by T. Leslie Shear of Princeton University; "The 1930 Excavation at Tell Beit Mirsim," by Ovid R. Sellers of the Presbyterian Theological Seminary, Chicago; and "Recent Excavations in the Forum of Trajan," by Frank G. Moore of Columbia University.

The official organ of the society is the *American Journal of Archaeology*, a scientific quarterly, while *Art and Archaeology*, a non-technical monthly, is published by the institute's Washington society. In 1930, in connection with its study of the Mythology of All Races, the institute published *Eddic Mythology* by Canon John A. MacCulloch, which is vol. ii of a set of 13 volumes. The officers in 1930 were: President, Ralph Van Deman Magoffin of New York University; vice-presidents, G. H. Chase of Harvard University, H. R. Fairclough of Stanford University, H. N. Fowler of the Library of Congress, Frederick W. Hodge of the Museum of the American Indian, Charles Hallam Keep of New York City, G. J. Laing of the University of Chicago, D. M. Robinson of the Johns Hopkins University, Mrs. William T. Semple of Cincinnati, T. Leslie Shear of Princeton University, Percy S. Straus of New York City, Paul A. F. Walter of Santa Fé, Mrs. J. J. Whitehead, Jr., of Promfret, Conn.; general secretary, Albert Billheimer of New York University; treasurer, Arthur Daly of New York City; and recorder, Horace W. Wright of Lehigh University. See ARCHÆOLOGY.

ARCHÆOLOGY. The year was rich in archaeological activities and the results obtained in many cases were of the utmost importance in the reconstruction of our picture of the ancient past.

At Chilla (Morocco) the French turned up part of a dedication to L. Aurelius Verus, an adopted brother of Marcus Aurelius. They also recovered part of a fine female figure preserved from the waist downward. No coins or bronze objects of a precise date were found to assist in locating the finds exactly. At Cyrene the Italians discovered a perfect marble stele which carries the will of Ptolemy Euergetes in which he bequeaths his kingdom to Rome provided he dies without a legal heir. Ptolemy, it will be remembered, was succeeded by an illegitimate son, Apion, upon whose death ten years later the kingdom actually passed to the Romans. Northwest of the Owenat oasis in the Libyan desert the British found a remarkable circle of stones standing three feet in height and twenty-seven across arranged in a manner similar to the stones of the Stonehenge. The discovery was made in a desert 150 miles from the nearest water.

South of Assuan in the Valley of the Lion, in Egypt, were found some 16 cemeteries and 250 graves. One of the cemeteries dates from the eighteenth dynasty while another is Græco-Roman. For the most part the finds belong to the civilization represented at Meroe. Much prehistoric material in an intact state was recovered. The tombs of the Meroitic culture were of the middle of the third millennium.

One of the most important of the finds made this year in Egypt was that of the huge tomb of Ra-Ouer, the high-priest of Nekheb. It lies near the sphinx at Cairo. The tomb is in plan 400 by 100 feet and is two stories in height. In all there are 80 rooms and 30 labyrinths. Mute evidence of what had happened to the burial in antiquity

was the finding of a severed hand in a coffin in one chamber, and the handleless body of a person on the floor nearby. Apparently by a strange accident a heavy stone fell upon the robber just as he inserted his hand into the coffin to tear a necklace from the throat of the mummy and severed his hand allowing him to perish nearby. The necklace itself, composed of 40,000 gold beads and bits of lapis lazuli was found on the floor close to the coffin. The name of the dead was Kaim Nefret. In the tomb was recovered a most interesting coffin on which among other decorations was represented a chess board and men. This find is valuable since both Persia and China have laid claim to the discovery or rather invention of the game.

For the first time the lotus flower was found in its original form before grafting processes. Important inscriptions on the walls refer to Cheops and his pyramid. But the most interesting find perhaps was that of a stele bearing an inscription which records that when Pharaoh was one time walking through the precincts of the Holy City he inadvertently touched the person of his companion the high priest with the staff which he carried in his hand. So sacrilegious was this that the king at once humbled himself there with an apology, and to inform posterity of the incident had the episode recorded on this stele. The inscription thus throws much light on the importance and sacredness of the high priest in Egyptian religion. This fact also explains in part why Ra-Ouer's tomb exceeded in size those of some of the royalty.

The tomb of the father of the high priest was found undisturbed. In it was discovered the mummy of a woman who was in all probability the mother of the priest, Nefret. The father's name was Akht-Hotep and he is designated as foster parent of the Pharaoh and is called chief physician to the king, the king's treasurer, guardian of the king's granaries, guardian of the pyramid of Kufu, and high priest of the temple of Kufu. An elaborate system of false passages seems to have saved the burial from molestation in antiquity. Near to the pyramid was also found the temple tomb of Ra-Ouer in which reposed 11 life-sized statues of his double carved in the wall.

The Expedition of the University of Pennsylvania this year was occupied in clearing the great mastaba at Meidum. It is among the largest in Egypt. Examination revealed that originally it was constructed in three steps, each stage being enclosed with brick while the core was of rubble. At a later date the enclosing wall was raised and the vacant space filled in with rubble thus producing the true mastaba shape. On the eastern face was found a new offering niche which indicated that the tomb chamber was to be found at the northern end. While the name of the owner is unknown he seems to have been some one of some degree of sanctity since in the later eighteenth dynasty the outside wall was practically honeycombed with intruded burials. One of these proved to be a gayly painted coffin of a Cypriote who had lived at Meidum in the time of Thothmes III. A find of peculiar interest was that of a deep pit a short distance from the mastaba at the bottom of which were 12 burial chambers radiating from the wall of the pit. These were found to be crammed with coffins stacked to the ceiling. On the face of the mastaba was discovered a stairway entrance which led down to the bottom of the core of the structure. At the

inner face of the wall was a pit of over 6 feet in depth and across this a tunnel which, 15 feet from the opening, was closed by a wall of brick. Beyond this wall the passage ran on 12 feet and then stopped. Its obvious purpose was to mislead any one attempting to rob the tomb. Of special interest as showing the care with which the bodies were buried was the finding of the begemmed body of Sat-Her-em-Hat under which was discovered a pad of neatly folded linen $4\frac{1}{2}$ feet in width and 70 feet long. The burial was about 2000 B.C.

About 20 kilometers (12.43 miles) south of Luxor, near El-Gherèra the Italian Mission began work on the site of El Gebelen. This was the site of the city of Hathor where earlier excavations had revealed a great cemetery dating from the fourth dynasty to Christian times. Here many pre-dynastic grave were uncovered. The necropolis dates about 5000 B.C. In all about 200 burials were found. The form of the grave is circular or oval and the bodies lie with the hands placed over the eyes, wrapped in linen or skins. Only one or two vases were found with the individual burials.

In the Meremba settlement on the Nile the expedition of the Vienna Academy discovered anthropological material revealing that a people lived here about 5000 B.C. engaged in husbandry and hunting. Their food was the pig and the hippopotamus. They seem to have been most lightly clad and to have painted their faces around the eyes. Apparently to satisfy the appetite dead corn was scattered on the body at the time of burial.

Work was resumed this year at Tel el Amarna by the joint expedition of the British Museum and the Egyptian Exploration Fund. Perhaps the most interesting find was that of a jug which contained over a score of gold nuggets and large gold rings as well as many silver bars. Not the least interesting of the contents of the jug was a silver statuette of a god. The head was of gold. A large house of a Roman from Messene was also uncovered. In the house were a workroom and several storerooms. In one of these rooms was found a beautiful bronze knife and a pair of scales also of bronze.

On the Sinai Peninsula the joint expedition of Harvard University and the Catholic University of America found some interesting inscriptions in an unusual Sinitic script. These inscriptions appeared at the entrance to the turquoise mines located near the temple of Hathor. These inscriptions report the successful defense of a number of baskets of turquoises which robbers attempted to steal. The time was about 4000 B.C. The population of the place must have been mixed, since besides Hathor a Semitic goddess named Baalat was also worshipped. Ruins of extensive copper smelters were also uncovered in the oasis of Bir Nasbr about 15 miles from the temple of Hathor. The importance of the place is established by the fact that great heaps of slag lay spread out over 10 acres of ground.

At the site of Jericho in Palestine the Marsten expedition has uncovered the parapet walk on the Canaanite rampart of the town. Here a raised platform for the archers was revealed. There were found to be several superposed towns on the site. On the west side of the town has been laid bare a wall of the early bronze age. About 165 feet of wall 21 feet in height have been cleared. This wall was part of a city which dates long before the time of Joshua. At Petra has been found some fourth century black-glazed Attic ware and

in the same stratum some Hellenistic lamps, etc. Objects showing Ptolemaic, Parthian, and South Arabian influences were also recovered.

At Ras Shamra (Syria) the French carried on their second campaign. The excavations were carried on in the Royal Cemetery. Where the strata had been left undisturbed they discovered substructures of a complicated plan. They are of the second millennium. Many objects connecting with Egypt were found in the chambers. These included carved stela, large stone phalluses, engraved cylinders, etc. In two chambers were discovered some large jars like those found at Hagia Triada in Crete. In one place which appears to have been the Scribes' school was uncovered a quantity of inscribed tablets suggesting that here was a library. Some of them carried a new writing in what appears to be the earliest alphabetic form. Purely alphabetic, it has 28 letters like the Arabic as against the 22 of the Canaanite. The tablets seem to be lists, exercises, letters and rituals. The most important tablet shows a kind of epic poem to Taphon. Many other gods are mentioned. The find belongs to the end of the second millennium B.C. The most curious of the tablets is a bilingual lexicon which seems to be in Sumerian although in place of Babylonian forms which usually appear to explain the Sumerian is an unknown tongue. In May a great sanctuary was uncovered. It contained two great courts which were surrounded by very thick walls. In the middle of one of the courts was discovered an altar. Also in these courts were found parts of some very fine statues of gods in granite. Along with these were recovered fragments of Egyptian bas reliefs dating in the late 18th and early 19th dynasties.

At Tel Beit Mursim, 13 miles south of Hebron have been found the remains of ten cities built one on top of the other. Each layer was defined by a stratum of ashes in which many cult objects such as scarabs were found. From the finds here, light has been thrown on the dates of Abraham, the destruction of Sodom and Gomorrah, the exodus and the Israelite conquest of Canaan. The earliest city dates in the time of Abraham (2000 B.C.). It is believed that the signs of frequent burnings point to the unrest of the Hyksos period. In the later bronze age (1000-1200 B.C.) dates the city destroyed by Othniel. In the time of the Israelite and the Canaanite conquests there is evidence of disastrous warfare. The last city on the site was destroyed by Nebuchadnezzar.

At Jerusalem the American School of Prehistoric Research and the British School of Archaeology found some 5000 burials from the Aurignacian epoch of the old stone age.

At Kish in Mesopotamia proofs were found that the city was flooded about 3000 B.C. At Ur remains of a wall 20 feet high and 80 feet wide which once enclosed the city were traced for a distance of $2\frac{1}{2}$ miles. The base consists of a rampart of unbaked bricks on top of which was a wall of baked brick. It was erected about 2500 B.C. by Ur-Unger. The back of the wall was for the most part covered by the terrace upon which the town was built. At this time the city was practically surrounded by water with the Euphrates on the west and canals on the north and east. A canal seems to have passed through the town and to have terminated at its north end in a harbor protected by moles. Four temples have been discovered. Two are by Nebuchadnezzar and Nabonidus and two (earlier) bear the name of Rim-Sin of Larsa. This would be

about 2000 B.C. Of the two latter temples one was dedicated to the water god En-ke the other to Ningishgida. They were built 1990 and 1985 B.C.

The Germans were at work on the site of Erech where a small Innin sanctuary was found. Much information was obtained as to the relations of the cities of Ur and Erech.

On the island of Cos excavations brought to light a Hellenistic theatre and temple. No trace of a stage was found. Near the village of Cardemena on the same island another larger theatre and a smaller temple were unearthed.

At Knossus the outer part of the great palace was cleared showing a length of the wall with its great blocks of stone. Two more refuse pits filled with the finest fragments of the middle Minoan period have been uncovered. These remains were found over houses dating from the earlier age in which were found brightly painted floors and stairs.

In the sea near Chersonese divers discovered what were thought to be the ruins of old Chersonese mentioned by Strabo. The city was found enclosed in a semicircle of wall with towers some 18 feet in diameter. One larger tower is probably that of the western gate. A paved market place and many streets also were located.

On the site of ancient Bouthrotum the Italians found some important public buildings and a third-century theatre which was rebuilt in Roman times. Some excellent Greek and Roman sculptures were found in the theatre.

Professor Shear's campaign at Corinth resulted in the discovery of 235 graves in the north cemetery. The objects range from the Neolithic to Roman times. At a depth of 10-18 feet was found a large amount of neolithic fragments; next came the early Helladic (3000-2000), the middle Helladic (2000-1600) some 7 feet below the surface, late Helladic, geometric and the succeeding classic styles. In a child's grave about 500 B.C. was found a bronze cauldron in which was a perfect Corinthian helmet.

On the site of the Heraeum at Pera Chora near Corinth the British School found the ruins of the temple 2 feet above sea level. The building originally was 28 by 60 feet.

It is interesting to note that the British School working at Ithaka found an almost complete Corinthian plate and a late terra cotta ex voto bearing the words "A prayer to Odysseus." In this connection it is also interesting that the Greeks excavating on the same island had found what they thought were the famous springs mentioned in the *Odyssey* as in the island of Ithaka.

In Italy work was continuously carried on at the site of Herculaneum. Much of the work was being done with pneumatic drills. In places the town was buried at a depth of 65 feet. Here the houses were found to be of a different type from those at Pompeii, for the peristyle is located in the front of the house. The finds were most instructive. A number of wooden doors, stairways, beams, door jambs and lintels were found completely preserved, although of course in a very carbonized state. A twin bedroom about 8 feet square and without windows was found, and another twin bedroom with two small windows. The beds themselves remind one of a harrow. At Lake Nemi a curious palisade was discovered on the west bank of the lake. At Ostia a cemetery belonging to the third century of the empire was opened between Rome and the sea. It seems to

have been an artificial island. It was called Libanus Almae Veneris. The place was a cemetery of sailors, fishermen and tradesmen. The tombs were arranged in groups of five. All were of brick carrying on the outside a tablet with a simple inscription on a marble slab. One door found in place showed the entrance closed by a solid piece of wood lined with lead. Its hinges consisted of iron pivots. At Pompeii an interesting find was a three-legged table support which carries the name "Casca." It is known that the famous Casca had a house at Pompeii and it is wondered if this may have been his property. At Rome north of the Capitoline was found a very unusual type of house which was at least seven stories high. It belongs in the second century A.D.

In England at St. Albans (Verulamium) was uncovered one of the finest mosaic floors in England. It dates around 100 A.D. Examination of the site has shown that the city was protected by a fosse 80 feet wide and 25 feet deep beside a bank 45 feet wide and 135 feet high. The city gate was 100 feet broad with round towers one either side of a quadruple opening—the two central ones for carts. See PHILOLOGY, MODERN.

ARCHITECTS, THE AMERICAN INSTITUTE OF. The national organization of the American architectural profession, founded in 1857. Its objects are to organize and unite in fellowship the architects of the United States; to combine their efforts so as to promote the æsthetic, scientific, and practical efficiency of the profession and to make it of ever-increasing service to society; and to spread an understanding of art and service among the people. Its activities include devising methods for improving and extending architectural education, not only in the universities but in the lower schools; securing proper laws for the registration of architects in the various States; developing a service for architects which will give them for their actual problems data relative to building materials and methods obtainable from no other source; maintaining a public information service to tell the prospective builder the financial, as well as the æsthetic service, of the architect.

The institute is governed by officers and a board of directors elected by, and responsible to, the delegates from the 66 chapters, assembled at the annual convention. The directors and executive committee hold quarterly meetings in various parts of the country, and the regional directors keep in active touch with the work of local chapters throughout the year. The membership in 1930 numbered more than 3000 of the 10,000 practicing architects in the United States.

The sixty-third annual convention, held May 21-23, 1930, in Washington, was devoted to a symposium on contemporary architecture. The object was stated as the reaching of a common ground between modernists and traditionalists. Various speakers expressed belief in a present-day development of architectural forms, leading to a style in architecture expressive of contemporary materials and function and reflecting modern life and modern ideals. Standardization was described as false modernism, and the hope was expressed that architectural experimentation would continue, based upon a sound foundation of knowledge of architecture in the past.

Successful culmination of several years of effort on the part of institute members to accomplish the passage of the Capper-Cramton and the

Shipstead bills was announced by the president in his opening address. The former bill provided for the purchase of extensive park lands, including land along the Potomac River, thus preserving the Potomac Gorge and the Great Falls as a part of the development of the natural beauties in the capital region. The Shipstead Bill provided for the control by the Fine Arts Commission of the development of private property adjacent to Federal land.

The committee on education reported that the past-president of the Association of Collegiate Schools of Architecture, Goldwin Goldsmith, and his successor, Dean Everett V. Meeks, in cooperation with the committee, had enlisted the interest and help of the Carnegie Corporation to finance a preliminary survey of teaching policies and results in schools of architecture. In the report of the committee in historic monuments and natural resources the increasing need for attention to the preservation of old buildings of historic interest was emphasized. The committee on city and regional planning reported stimulation of public interest in city planning through radio talks and newspaper articles, and announced that the film portraying the development of the plan of Washington, purchased by the institute, had been widely shown under the auspices of the chapters and other organizations.

The fine arts medal of the institute was awarded to Adolph Alexander Weinman for distinguished achievement in sculpture, particularly in its relation to architectural design, while the craftsmanship medal was awarded to John Kirchmayer for distinguished achievement in wood carving. The following honorary members were elected: A. F. Brinckerhoff, S. S. Goldwater, and John D. Rockefeller, Jr., of New York City; Charles J. Connick of Newtonville, Mass.; and William A. R. Goodwin of Williamsburg, Va. Nestor Egydio de Figueiredo of Rio de Janeiro and André Arfvidson of Paris were made honorary corresponding members. The officers elected for 1930-31 were: President, Robert D. Kohn of New York City; first vice-president, Ernest J. Russell of St. Louis, Mo.; second vice-president, Horace W. Peaslee of Washington; secretary, Frank C. Baldwin of Washington; treasurer, Edwin Bergstrom of Los Angeles, Calif.

The Octagon endowment fund capital of the institute in 1930 amounted to approximately \$78,000, the income being devoted to the maintenance of the Octagon House in Washington. The organization's property and funds totaled \$440,993, of which \$53,711 belonged to the Waid Education Fund, the income being used to defray expenses of lecturers sent to various States and to preparatory schools. The institute publishes *The Octagon, a Journal of the American Institute of Architects*; *Handbook on Architectural Practice*; *Structural Service Handbook*; *The Significance of the Fine Arts*; *Standard Contract Forms*, which are in widespread use throughout the United States; and documents on the ethics of the profession. Headquarters are in the Octagon, Washington.

ARCHITECTURE. The most marked feature of the year was the continued development, at a continually accelerating speed, of the "modernist" movement all over the world, and, except in the United States, the growing number of buildings whose style was entirely international. Even in the United States, outside of the field of high buildings, where mere bulk suggests other treat-

ments, and of houses where traditionalism was still strong, this international style was winning more and more converts. This style so common in all the countries is based primarily on the metal framed window in long ranks, the use of concrete and stucco, and the avoidance of cornices, mouldings, columns, and all ornament. It is thus a style as yet exceedingly limited in its scope and vocabulary.

Founded in part on the critical work of Le Corbusier in France, and partly on the free plasticity of form that is characteristic of Mendelssohn's work in Germany, it had been developed into a canon of standardized forms, dogmatically adhered to, that possessed neither the austerity of the French critic nor the imagination of the German designer. It was supported everywhere by certain critics and designers whose enthusiasm was fanatical and unquestioning, and its holier-than-thou evangelical quality, its self-conscious avoidance of ornament, constituted a distinct danger to architectural progress. This was occasionally realized. In *L'Architecte* (Paris) for May, for instance, the editor, J. Porcher, printed a leading editorial on "Standardized Architecture," in which he embodied a warning against this standardization as the death of design, and so of architecture. "Respect for fashion," he wrote—"a taste for the imitation of forms,—the tendency towards commercialization, that is, the leveling and lessening of the inventive faculty, these are the two forces which threaten the development of modern architecture."

THE UNITED STATES. In the United States, the acceptance of this dogmatic functionalism and starkness had been less ready, though even here its supporters were growing. The sketches for the great Chicago World's Fair of 1932 show the effect of it, and its strength increased markedly during the year. Traditionalism was largely dead in the public and commercial field; the question facing America was whether in its place should be accepted the stark, austere, and limited alphabet of forms of the "functionalists," or the free inventiveness of those who feel that there is a place, even in the buildings of a machine age, for ornament, decoration, and a human loveliness.

There was little great public work completed. The University Bridge, Philadelphia, Pa., by Paul Cret, is charming in a quiet, modernistic neo-Grec manner. The Chicago Opera House, Chicago, by Graham, Anderson, Probst and White is an impressive mass seen from the river side, and possesses an unusually complete mechanical equipment, but its architectural detail and character is incoherent and undecided, striving for ostentatious lavishness and novelty, but unable ever to decide whether to be modernist or Louis XIV. The John G. Shedd Aquarium, in Chicago, by the same architects, is a simple Greek Revival building with an ingenious arrangement of the fish tanks.

In Washington, D. C., the further development for the buildings between the Mall and Pennsylvania Avenue continued with speed, though none of the units was completed. Three embassies or legations were added to the city, that of Japan; a quiet building in a modified Georgian style, by Delano and Aldrich; that of the Netherlands, by the Director of Fine Arts of the Dutch government, with high roofs, and a refined Teutonic Renaissance manner; and the great British embassy, by Sir Edwin Lutyens, in a grandiose monumental version of 18th century English classic.

The most interesting public buildings of the year were the New York State Building, in New York City, by the office of the State architect, the Stafford County Court House, St. John, Kansas, by Mann & Co., and the San Francisco Stock Exchange, San Francisco, Calif., by Miller & Pfueger. All are non-archaeological and modern in design; the first and last being differing expressions of an underlying classical dignity, and the other being both more strikingly original and less monumental. The New York State Office Building has simplicity, directness, good proportion, and was an impressive addition to the Civic Centre around the New York County Court House, with which it is in perfect harmony.

Other buildings of public character that deserve mention are the Jones Public Library, Amherst, Mass., by Putnam & Cox, a charming inviting colonial design, the American building in the Venice Exposition, by Delano and Aldrich, also colonial, and the welcome restoration by Norman Isham of the 18th Century City Hall of Newport, R. I. (originally designed by Peter Harrison) as a Chamber of Commerce. The great arena of the County Fair at St. Louis, by Kiewitt & Sohrmann, seating 12,000, is a simple, original, and interesting solution of its problem; its roof, vaulted with a patented system made from small timbers has a lovely outline, and is supported on a delicate steel trussed framework. Two rings of windows around the whole give plenty of light. The combination of materials in the construction is logical and economical, and the interior forms are well proportioned and flow naturally from the construction. Unfortunately the exterior is undistinguished, and far less effective than the impressive interior.

The Union Terminal at Cleveland, Ohio, by Graham, Anderson, Probst, and White, finally completed during the year, has a commonplace interior, not fulfilling the promise of the pleasantly outlined tower. The Central Station at Buffalo, by Fellheimer & Wagner, on the contrary, is fresh, logical, and beautiful; the novelty of its forms is not forced or stylistic, but simple and direct, illustrating the sanest American attitude. The same firm's Union Station at South Bend, Iowa, is distinguished by the same qualities. The Union Station at Atlanta, Ga., by McDonald & Co. is conservative in style, but beneath its dry and academic classic style there lies a simple and direct expression of the problem.

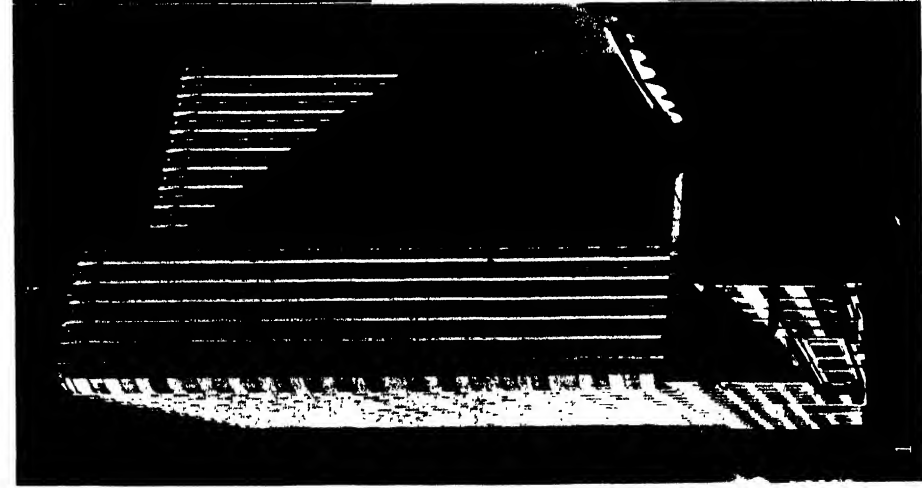
The growing importance of air transportation was reflected in a large number of airport buildings, in which was evident a definite groping for an adequate architectural solution. The novelty of the suitable forms suggests—almost dictates—a pure modernism of style, yet satisfactory solutions in which the inspiration is historical are found, as in the "Spanish" Curtiss-Wright Hangar at Los Angeles, by Gabel & Wyant, the Grand Central Airport at Glendale, Calif., by H. L. Gogerty, and especially in the United Airport, Burbank, Calif., by the Austin Co., remarkable for the good planning evident in the relation between field, roads, parking spaces, and building. The Curtiss Wright Hangars and Restaurant at Valley Stream, Long Island, by Kenneth Franzheim, and the Detroit Municipal Airport Buildings, by the municipal engineer, are simple, direct, modern in spirit, but uninspired. The great Hangar and Station at the Curtiss-Reynolds Airport, Chicago, Ill., by Rebori & Wentworth, resembled some European precedents

in its size and general layout; its observation decks and central landing space were unusually well arranged. The Wayne County Airport building, Wayne County, Mich., by Giffels & Valet, is excellent in itself, but the relation of field, building, and roads is not studied. The most successful airport building of all, is one of the smallest, The Washington Airport, Washington, D. C., by Holden, Stott, & Hutchinson. Here not only are the plan relationships right, but the architectural composition and the style expression combine to give a result simple, unassuming, natural, and beautiful.

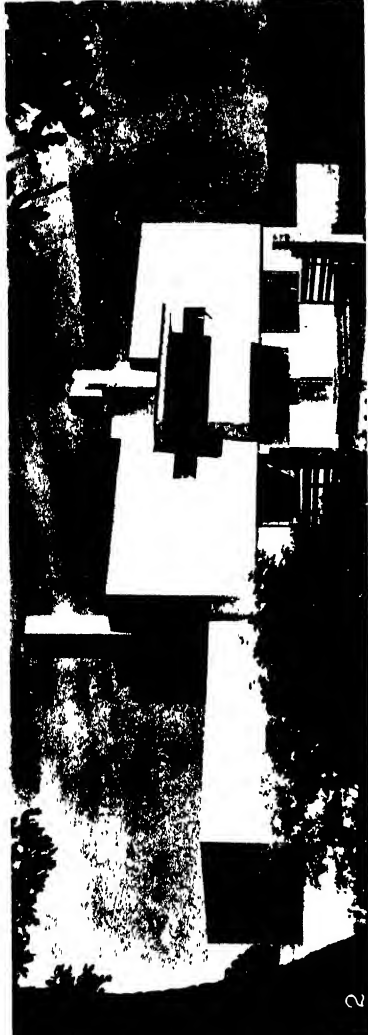
The financial stringency of the year seemed to affect large commercial buildings less than any other type—probably because they were financed and started before the condition was felt. The remarkable fact in their design was the well-nigh complete disappearance of traditional style. Outside of belated attempts to use modified Gothic to express verticality, as in the Steward Office Building and Theatre, Lincoln, Neb., by Davis & Wilson, and the Luhrs Tower, Phoenix, Arizona, by Trost and Trost, the reign of non-traditional forms was complete. This does not mean uniformity.

There seemed three general types evolving. The first is that in which rectangularity is the basis of design, as in much work in New York by the firm of Ely Kahn, such as the Bricken Building and the Holland Plaza Building. The second type is that of free, and generally romantic mass composition, represented especially in the work of Holabird & Root of Chicago, such as the lovely upward sweeps of the Rand Tower, in Minneapolis, Minn., and the La Salle-Wacker building, Chicago, by Holabird & Root, and Rebori & Wentworth, associated. The third is that of the simply composed and richly decorated type particularly associated with Voorhees, Gmelin, and Walker, as in their Irving Trust Building, New York, with its vertical planes accented by varying angles, their Genesee Valley Trust Co., Rochester, New York (with Carl C. Ade), and their very beautiful New Jersey Bell Telephone Building in Newark. The Ohio Bell Telephone Building, Akron, Ohio, by Mills, Rhines, Bellman & Nordhoff, is an even more perfect expression of the same qualities, and one of the most successful buildings of the year, and the Richfield Oil Co., Los Angeles, by Morgan & Clements is another example, perhaps even over-rich.

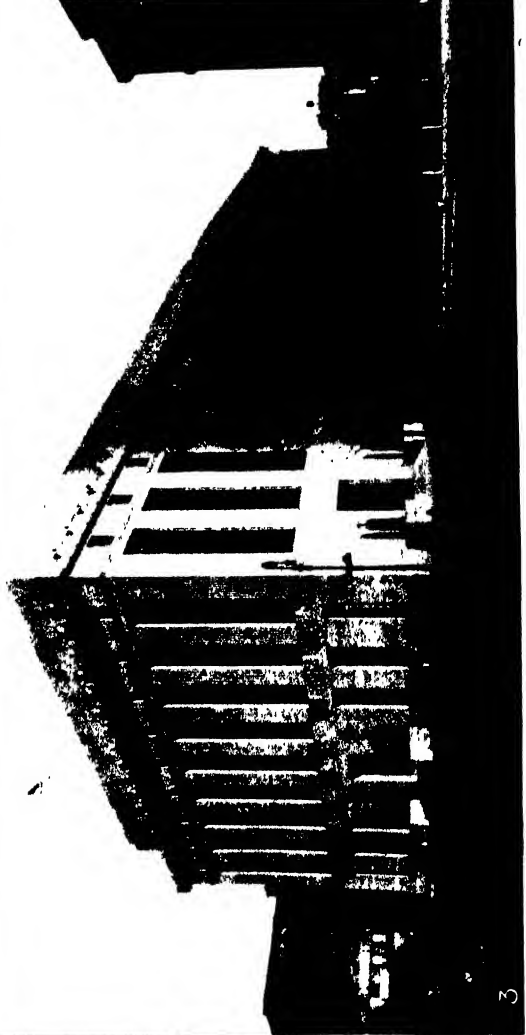
The development of extreme height in building was shown in the Bank of the Manhattan Co. Building, in New York, by H. Craig Severance & Yasuo Matsui, with an effective pyramidal top, and the Chrysler Building, New York, by William Van Alen, at the end of the year the tallest completed building in the world. The former is the more successful because it is the less assuming; its very lack of interest, strangely enough, is in its favor. The basic trouble with the Chrysler building is its lack of unity. The central part of the tower shaft is extremely effective in its opposition of vertical and horizontal lines, but the bottom of the building is utterly without distinction, and the lavish lobby with its funereal entrances is perplexing and ineffective. The tower top, with its receding curved forms and final needle in bright metal is inventive, but entirely without structural significance or any adequate sense of scale. Its soft forms are fundamentally frivolous, and frivolity on such a gargantuan scale is not only itself disagreeable, but it also



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1. "FOUR-FORTY SUTTER" BUILDING, SAN FRANCISCO

J. R. Miller & T. L. Pfueger Architects

2. A MODERN DWELLING—SILVER END GARDEN VILLAGE DEVELOPMENT, ENGLAND

Sir John Burnet & Partners, Architects

3. NEW YORK STATE OFFICE BUILDING, NEW YORK CITY

State Architect, Albany, N. Y.

completely dwarfs the successful scale of the tower it crowns.

The Squibb Building, New York, by the firm of Ely J. Kahn, is a beautiful, glowing white mass, its setbacks composed effectively, but the lower portion is entirely unrelated to the upper, and the entrance and show-window treatment looks skimmed and unreal. In the Daily News Building, by John M. Howells and Raymond Hood, there is a similar fault; the superb straightforwardness of the simple upper part—one of the most successful treatments of the tall building yet achieved—is contradicted by an entrance that is weak and sentimental to the last degree, and an over-ornamental lobby like a circus side show. In many ways the two most consistently successful high buildings were in San Francisco, the Shell Building, by George W. Pelham, with unusually successful entrance and shop-front treatment, and the 450 Sutter Building, by Miller and Pfleger, superb in its vertical accent by means of slightly projecting window bays and ornamental spandrels.

Outstanding among the smaller commercial buildings were the Ohio Savings Bank and Trust Company of Toledo, Ohio, by Mills, Rhines, Bellman & Nordhof, with beautiful setbacks and a great arched entrance; 1616 Walnut Street, Philadelphia, by Tilden, Register & Pepper, with great scale in its entrance; and the Bank of Kalamazoo, Kalamazoo, Mich., by Weary & Alford. The most interesting shop buildings of the year were that for the L. P. Hollander Co., New York, with a lovely exterior by Shreve, Lamb and Harmon, in black, silver, and glass, and novel and charming interiors by Jack Peters and Eleanor Le Maire of California; the Sommer and Kaufman Shoe Store, Los Angeles, by Kem Weber, with a delightful, Viennese playfulness; and the Bullock's Wilshire Department Store of Los Angeles, by Parkinson & Parkinson.

There was a great reduction in the amount of hotel and apartment buildings. The Hotel Pierre, New York, by Schultze & Weaver, is monumental and effective in outline, and the frank separation of the high tower and the long low base is pleasant. The rich treatment and great scale of this base are beautiful additions to the streets they grace, and effectively and invitingly express the hotel function. New York also saw the completion of several typical large apartment houses. The Beaux Arts Apartments, by Kenneth Murchinson and Hood, Godley & Foulhoux, use banded horizontals effectively, but the whole is cramped and tight, and the London Terrace Apartments, by Farrar & Watmough, are monotonous despite their mass. No. 1648 East 50th Street, Chicago, by deGolyer & Morgan, is airy, light, but lacking in domestic character—like many modern apartments in Chicago it might just as well be an office building; 1100 North Dearborn Street, Chicago, by McNally & Quinn, is more homelike, though equally light.

The most interesting apartment house of the year was the low-priced Grand Street Apartments, New York, by Springsteen & Goldhammer; the group plan of the block, the light and air achieved, the planning of the individual apartments, and the simplicity and effectiveness of the architectural treatment are all commendable. They are a great inspiration in showing the possibilities of slum clearance and rehabilitation. The rents, however, were still out of the reach of unskilled laborers and many factory

workers. It would be interesting to see another type built with smaller apartments, studied along the line of the European "minimal" housing.

In housing for less congested districts, the faculty housing group at Princeton University, by Aymar Embury II, carries on adequately the simple English style set by the group (by Park & Morgan) already built; and Mayfair Lane, in Buffalo, by E. B. Greene and A. H. Hopkins, is an ingenious arrangement with a raised garden terrace over a sunken drive leading to basement garages, with apartments on each side above.

The number of private houses of the year was greatly reduced due to the financial stringency. Of the more conventional examples, the quiet modernized colonial house of M. W. Weld, at Stanwich, Conn., by R. H. Dana, Jr.; the Salvage house, Glen Head, Long Island, by Roger Bullard; the Pierce house at LaQuinta, Calif., by Gordon Kaufman; the Thomas house, Pasadena, Calif., by Palmer Sabin (that received the A. I. A. gold medal); and the lovely Venetian-type villa of J. B. Robertson, San Antonio, Texas, by W. M. Bowman; all deserve mention for general excellence of design and livability. The W. S. Wasserman house at Whitemarsh, Pa., by Howe & Lescaze, is an attempt to give a purely LeCorbusier abstract modern exterior to a conventional plan; the "Health House" for Dr. Lovell, outside of Los Angeles, by R. J. Neutra, is equally modern and stark, but much more convincing, because the varied levels of the site, and the requirements of the plan suggests more directly a purely unconventional and modern treatment. The Wilputte house, New Rochelle, N. Y., by Julius Gregory, is a beautiful example of an old tradition (Georgian) treated freely and creatively in a purely modern manner; it achieves an unostentatious fresh beauty and fitness not unlike that of some of the best modern German private houses.

The financial slump also affected adversely the amount of educational and institutional building. The most important educational work of the year was the Henry Art Gallery at the University of Washington, in Seattle, Washington, by Bebb & Gould, distinguished by its large wall surfaces of patterned brick and its simple modernized Gothic detail; the new dormitory group of Girard College, Philadelphia, by John T. Windrim, in an interesting variant of the Greek revival style; and Eliel Saarinen's Cranbrook Academy of Art, Cranbrook, Michigan, with its lovely simplicity, variety, and fresh handling of typically American materials and forms. The Oak Lane Country Day School, Philadelphia, by Howe & Lescaze, with its dry and academic use of starkly "modernistic" forms of the LeCorbusier type seems, however interesting, forced and out of place by contrast. The Saarinen building is a building first and foremost; the Howe & Lescaze school gives the impression of being theoretical and doctrinaire. The Franklin Street School, Hempstead, Long Island, by Ernest Sibley, and the Flower Hill School, Port Washington, Long Island, by Wesley S. Bessell, are both examples of the best type of rambling, colonial day schools.

Among the club buildings of the year, the following are worthy of note: The Junior League, New York, by the office of John Russell Pope, scholarly, lavish yet restrained, in a modified Georgian style; the Kippis Bay Boys' Club, New York, by Delano & Aldrich; the Colonial Dames headquarters, New York, by R. H. Dana, Jr., a

lovely warm-toned recreation of colonial atmosphere superbly handled; the Longue Vue Country Club, Pittsburgh, Pa., by Johnson & Cocken, with picturesque high roofs well composed; and the Lake Norconian Club, Los Angeles, by D. Gibbs, a colossal, pretentious scheme well carried out.

In ecclesiastical work the most widely known event was the opening of the Riverside Church, New York (known popularly as the Rockefeller church), by Henry C. Pelton and Allen & Collens. Its enormous size is bewildering rather than impressive; its great tower dwarfs the whole scheme, and is itself broken up into too small units by a complexity of unnecessary buttresses, gables, and pinnacles; the detail is purely archaeological, and however perfect in execution lacks all the verve, personality, and sense of life of the original inspiration—Chartres Cathedral. When books replace creation in architecture, only dead and uninteresting results can follow. The interior with its spreading vault is much more effective than the outside. Yet even in the interior one feels that archaeology has replaced design; that the style has been accepted as a chain, and not as an inspiration.

The Gothic treatment of St. Paul's Episcopal Church, Yonkers, N. Y., by Cram and Ferguson; and that of the Holy Cross Roman Catholic Church, Chestnut Hill, Pa., by Henry D. Dagit & Son, is, on the other hand creative and alive. The first Baptist Church of Ashville, N. C., by Douglas D. Ellington, is a free development of forms from the problem; the exterior is altogether successful, but the modernistic interior is dry and conventional. The year saw the final completion of St. Bartholomew's Church, N. Y., by the building of the dome by Mayers, Murray and Phillip. It is fresh in design, and pleasant in curve and color, but nevertheless not entirely successful; one feels that a more dominant shape was required. It is, however, harmonious and fitting.

GREAT BRITAIN AND THE BRITISH DOMINIONS. The year 1930 was notable for competitions in England. Especially noteworthy were the competitions for Worthing Town Hall, won by Charles Voysey, F.R.I.B.A.; for a public library and museum at Chelmsford, won by R. A. Cordingley, F.R.I.B.A.; for a street front for certain property owned by the City of Carlisle, won by T. G. Richards; and for Luton Town Hall, won by Gass and Hope, F.F.R.I.B.A. The New Buildings of Magdalen College, Oxford, by Sir G. G. Scott are academic, but in exquisite harmony with the old, and formed the outstanding example of public work actually completed.

Many office buildings in London showed the conflict of the influence toward classic simplicity originating in America, with the influence of the French type of modernism. Stratton House, by W. Curtis Green, and the new department store building for Gamage, by the Messrs. Joseph, with Sir Edwin Lutyens as consultant, both show the classical influence. Stratton house is peculiarly American in its Italianesque dignity. India House, by Sir Herbert Baker, R.A., is quietly detailed and pleasantly composed; much of the detail is Indian in inspiration. An Office Building in Grace Church Street, by S. Sylvester Sullivan, F.R.I.B.A., is illustrative of the more radical trend; full of subtleties, it is altogether successful up to the main cornice; above that, like so many London buildings, it is confused. The new Daily Telegraph building, by Elcock and

Sutcliffe, and Sir John Burnet and partners, associated, is in an English variant of the more lavish French modernist style; and Beckstein Hall, by Sir John Burnet & Partners, over an unsatisfactory first floor has a façade of great interest with a curved corner and lovely vertical reeding on piers and spandrels.

Large modern apartment houses were more and more evident in the year's building. The Grosvenor Estate Housing, Millbanke, by Sir Edwin Lutyens, has great blocks of building covered with a monotonous modernist checkerboard pattern. Gordon Court, Wood Lane, by Hendry and Schooling, F.F.R.I.B.A., for the United Women's Houses Association, is simpler, more effective, but in planning woefully inferior in standard to American examples. Among larger apartments for a wealthier class of people Eyre Court, Finchley Road, by T. P. Bennett, F.R.I.B.A., is well planned with a simple, rather bleak brick exterior; and Crophorne Court, Maida Vale, by Sir G. G. Scott is original in plan, and attractive in appearance.

Several theatres of importance were opened during the year. The Cambridge Theatre, Seven Dials, by Wimperis, Simpson, & Guthrie, has a beautifully detailed simple auditorium with a great elliptical ramping vault over it; ceiling and walls are covered with metallic leaf. Victoria Theatre, by W. E. Trent and E. W. Lewis, has a modernistic interior lit by lights concealed behind vertical tiers of fan-shaped ornaments. The Whitehall Theatre, by E. A. Stone and Partners, is also richly modern in tone, but much more distinguished and refined in detail both inside and out.

Two more interesting examples of a purely new and fresh approach to architectural problems were noteworthy. The first was the new shipping building of the Gramophone factory at Hayes, Middlesex, by Wallis, Gilbert and Partners, a distinguished example of cantilevered concrete construction, with long continuous rows of windows between bands of stucco, the whole beautifully proportioned and apparently equally satisfactory from a practical and æsthetic point of view. It is well up to the standard of the best German industrial architecture, and that is the best in the world.

The second example is the completion of Silver End Garden Village, a housing development for the Crittall Company. Many architects designed units for it, but in harmony. The result is variety, vitality, and a kind of charm not often achieved in so modern a style. There seems no forcing of effect, no doctrinaire quality like that which damages the appearance and livability of many continental housing developments. Instead all is natural, simple, direct. Among the architects whose work is represented are Thomas Tait, of Sir John Burnet and Partners, James Milk, C. M. Hennell, C. H. Quennell, and J. and G. E. Clare.

In the Dominions, the Cathedral of St. Mary, Johannesburg, So. Africa, by Sir Herbert Baker and F. L. Fleming, has a beautiful Byzantine interior with barrel vaulted nave and choir, and a dome at the crossing. The buildings in Sydney, Australia, for the University Club, by Kent & Massia, and for the British Medical Association, by Fowell & McConnell, are both beautiful examples of a rather American type of modern high building design. Stanton House, Sydney, by H. E. White, is an even simpler example of a straightforward modern treatment. The completion for the Anzac Memorial in Sydney was won

by C. B. Dellit, with a design of a vast arched square pylon-like building set on a spreading square base.

FRANCE. French architecture still reflected the conflict between two types of modern or modernist design; one rich, basically classic in idea, and the other stark, theoretical, and abstract. Frequently the beauty of the decorative work at which the French are so superbly competent—in metal, glass, and marble—gives the only interest to buildings otherwise uninspired. Typical of the richer type of modernism is the Palais Berlitz, Paris, by LeMaresquier & Laloux, with vertical supports and an interesting upper portion; and the Parisian Institut d'Optique, by G. Hennequin & Son, with a plan brilliantly clever and an exterior disappointingly thin. The new department store building for La Samaritaine, by Jourdain and Sauvage, is rich and has a magnificent marquee of metal and glass. The newer apartment houses evidenced the clash of ideals in their all too usual complexity and lack of interest. Thus one by Henri Sauvage, in gray and white brick, has neither the richness of the one trend nor the simplicity of the other, and another by M. Hennequet, though interesting in its wide expanse of glass is complicated in effect; yet both are beautifully planned from the French point of view. The apartments by Charles Abella at Asnières, for the employees of the State Railway are better because simpler, with interesting projecting bays; the group plan, however, is unduly congested.

The simpler trend—the Le Corbusier influence—was best seen in two villas by Le Corbusier and P. Jeanneret, especially one at Choisy, where the grouped windows and quiet wall surfaces of the style are seen at their best, and in a villa at Vaucresson, by Pol Abraham, delightfully composed, and more free of doctrinaire starkness than most of such work. The Phébel perfume factory at Puteaux by R. Nicolas shows the application of similar forms to industrial use; the result in this case is delicate, well composed, and beautiful.

Two theatres and a bank were notable for their purely French richness and charm. The Dupont Bank in Paris, by J. Marrast, has that dominantly classic underlying feeling that is the foundation of so much French beauty. Its forms are chaste and yet not forbidding, the plan is brilliant, and the banking room attractive. The restoration of the Théâtre Marigny on the Champs Élysée, by de Grimaldi and Ulmer, is a lovely and delicate work preserving the quiet classicism of the older building. The Théâtre Pigalle, by Charles Siclis, Just and Blum, is equally lovely and delicate, though modern in expression; especially interesting is the intricate openwork metal screen between vestibule and promenade. A somewhat similar spirit of fresh, sincere beauty characterizes the mausoleum and entrance of the Cimetière Parisien, at Thiais, by Ch. Halley; and, to a less extent, the lavish and comfortable lecture hall Iéna, in Paris, by Maurice Gross.

The construction of a representation of Angkor-Wat, for the French colonial exposition of 1931 at Vincennes, by Charles and Gabriel Blanche was completed. It is a magnificent piece of work; perhaps rather archaeological than architectural, although it is not an absolute copy. It is beautifully and carefully done throughout, and, as enabling many to see the grandeur of that group hidden so inaccessibly in the Khmer jungle, was well worth doing. Notice should also be made of the

impressive monument to the defense of the Suez Canal by M. Roux-Spitz, architect, and M. Delamare, sculptor.

GERMANY. German building in the year was large in amount and high in quality. In Germany, despite occasional lapses, the development of a sane, fresh, and in general beautiful modern style had progressed further than in any other country save Scandinavia and Finland, and despite the doctrinaire influence of men like Gropius, the creative, beauty-producing function of architectural design had more and more triumphed over the machine theory of architecture. This is particularly noticeable in industrial architecture. The new Werner works in Berlin-Siemensstadt, by H. Hertlein, show this creative element: powerful, typically factory like, they nevertheless have beauty. Similarly effective is the administration building of the Schultheiss-Patzner Brewery in Berlin, by H. Dernburg.

The most interesting public buildings of the year were the Munich Post Office, by Vorholzer & Schmidt, a simple brick design; the even more effective Police Building in Breslau, by the municipal architect; the long Office of Works, Kiel, by Hahn and Schroeder, in the Mendelssohn manner; and the magnificently daring Leipzig Market Hall, by H. Ritter, with two enormous domes in concrete and glass, light, airy, and delicate. The new Cologne-Mülheim bridge by A. Abel is also daringly delicate; it is of the suspension type, and makes the utmost use of the lightness of form and the curved lines such a method of construction allows. In Nürnberg a beautiful stadium and swimming pool was completed by E. Schweizer; it is a clean, neat design, attractively composed, with the grand-stand roof unusually pleasant in its curves. The whole is typical of the German skill in buildings or groups with a social purpose. The Hans Sachs house in Gelsenkirchen, with theatre and concert hall, by A. Fisher shows the same skill.

Three great department store buildings showed how completely the type of design created first by Erich Mendelssohn had dominated that field. The Wertheim store in Breslau, by H. Dernberg, is simple, quiet, and effective; the enormous shop at Mannheim, by F. Nathan, is similar in general style, though the outline is broken up and accented by a large simple tower. The best of these shops is the Schrocken Store in Chemnitz, by E. Mendelssohn himself; the horizontal lines of the style are particularly effective on a curved front such as this.

Church building flourished during the year, and almost without exception, the designs were purely non-historical in type. Brick, and stuccoed concrete were the favorite materials; exteriors are usually simple, and interiors high, simple, with a decorative climax in the chancel. Towers are frequent, especially towers with a rectangular plan. It is interesting to see that despite the novelty of the style, the ecclesiastical character is usually perfectly expressed. Two Catholic churches in Glewitz-Sosnita, by the Prussian Hochbauverwaltung, are noteworthy. St. Wilibrord, in Kellen, by Wahl & Rödel; the simple almost classic St. Sebastian's Church in Munich, by Kurz & Herbert; and a circular concrete church in Essen by O. Bartning are all characteristic. A more daring approach, with more radical results, was evident in the "steel church" in Cologne, by O. Bartning, in which supports are reduced to the minimum, and the whole

church wall becomes stained glass—a sort of steel gothic—and in the Nikolai church at Dortmund, by Pinno and Grund, where concrete is the constructive material, with the same effort to increase glass area; it is even more successful than the steel church, because having an equal delicacy, it nevertheless possesses a feeling of substantial permanence that the other lacks.

The development of German housing progressed along the lines already developed. There was evident, however, a tendency towards theoretic abstraction in design that constitutes a real danger. For instance, the circular development in Leipzig-Lössing, by H. Ritter, however attractive as an abstract idea, in reality is harsh and uncompromising. The developments at Essen, by Pfeiffer & Grossmann, and the apartment house groups in Berlin-Neuköln and Berlin-Lichtenberg by Mebes and Emmerich, are, however, still human, attractive, and livable.

The same quality of unforced modern shapes, coupled with some regard for local traditions and a governing sense of simple homelikeness distinguished the best German private houses of the year. Examples deserving notice are those in Berlin-Grünwald, by H. Reifenberg; at Volklingen, by K. Wachaman; at Honnef, by H. Wirwinghaus; and at Bremen, by O. Blendermann.

ITALY. Architectural taste in Italy was still in chaos. More and more a sort of ostentatious neo-baroque, with certain borrowings of modernist forms, seemed the rule. Several important competitions showed the same influences at work, though in them there was rather a greater sense of classical monumentality. The competition for the building for the *Sindicati Fascisti dell' Industria* at Milan was won by Caneva, Carminati, & Bordini with a well-planned but chaotically detailed scheme. This was entirely restudied for actual construction, however; and the final scheme had great scale power. A most interesting competition for a cathedral at Spezia produced many interesting designs, most of them under the influence of Byzantine, Romanesque, or Baroque influence. Those of Buzzi, Daneri, and Brenno del Giudice, deserve especial mention.

Among actually completed work, the buildings of the Sicilian F. Fichera stood out, especially a Post Office at Catania, a Commercial Institute in the same town, and the attractive modernized classic Villa Inga in Genoa. The most interesting work in Italy was, however, largely German in inspiration, like the Supercinema Verona, at Verona, by M. Dezzoti, an attractive modernist interior, and the San Materno theatre in Ascona, by S. Weidmeyer, a purely modernist conception of German type both outside and in.

SCANDINAVIA AND FINLAND. By far the most important architectural event of the year was the Stockholm Exposition, in buildings designed by Gunnar Asplund. This group formed probably the most complete expression of stark functionalism that has yet been achieved. The forms were simple to the last degree, the temporary character of the buildings being realized and expressed; supports were tiny, window areas enormous, and there was a total lack of ornament, carved or painted. Instead, careful landscaping, banners, and advertising lettering were depended upon to give the human touch. The total effect was interesting and bizarre, but hardly beautiful, save incidentally. The great curved cantilevered top over the bandstand, and the advertising tower at the entrance appeared arbitrary and inharmonious

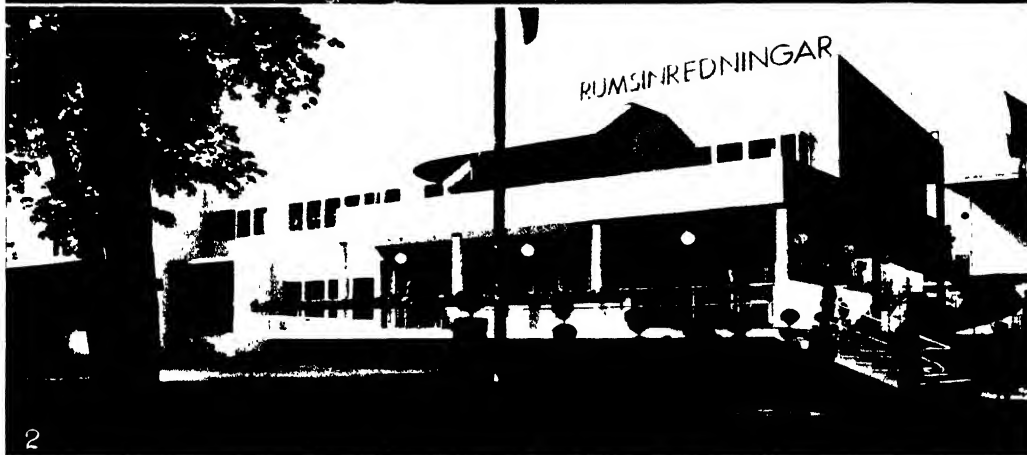
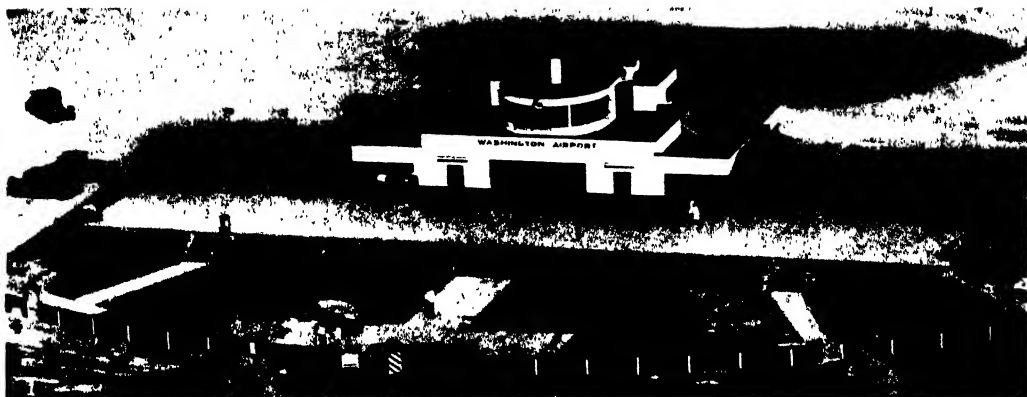
notes; yet the cleverness displayed in the whole was enormous and obvious. It was an interesting and worthwhile experiment—one that needed to be made—but it cannot be called an architectural masterpiece.

The Chalmers Technical Institute at Gothenburg by Fuhre, Jahnke, Nyquist & Samuelson, an impressive brick neo-baroque building, and some charming housing in wood outside of Gothenburg, by K. Samuelson and E. Sjöström, also deserve notice, as well as a lovely light airy modernist apartment house in Stockholm with many balconies, by S. Wallender.

In Copenhagen, Denmark, the Berlingskehus, a large newspaper building, with offices and printing establishments, by Nokkentved & Jespersen and H. Møller, showed the effects of the international functionalist style; its banded windows and stark treatment are typical of the power the style has. The Chapel and Crematorium at Søndermark, by Thomsen & Schlegel, is much more typical of the quiet neo-classical modernism that is characteristically Scandinavian, and is a group of great loveliness.

The architectural vitality evident in Finland during the year was enormous. Much of the work is Scandinavian—especially Swedish—in character and inspiration, but an even stronger trend towards a quiet, simple and direct classic type of feeling is present. Thus the office building for Karl Fazerin, by G. T. Juslin, the Saastopankki Bank and Hotel, and the Lutopankki Bank, both by P. E. Blaustedt, all in Helsingfors, have a simple dignity, a creative quality, and a humanity that is delightful. The same quality distinguishes the Chapel and Cemetery at Viborg, by T. Thesleff; the Mission Hospitz at Åbo by Alvar Aalto; the Helsingfors apartment houses (all beautifully planned in rather a French manner) by M. Valikangas, B. Liljequist, and Frøsternus & Gripenberg; and the villa near Storbästo, by Il. Linden. The Juvaskyla church, by Elsi Borg, and the Jamsa church by K. Kallio, are in the same spirit, the quiet, delicate, almost "colonial" feeling of the second being particularly lovely. The more doctrinaire type of modernism in Finland appeared in the Pohjas Office building in Helsingfors, by D. Kallio; the Viborg Art School and Museum by U. Ullberg, and the public school at Kotka, by K. Borg.

OTHER COUNTRIES. In Austria, the most important works were a lovely simple hospital building in Grimmerstein, by Iik and Pfann, and housing developments in the accepted type of Viennese modernism at Simmering and Breitensee, by J. Frank. In Budapest, Hungary, the tendency was towards a modernized classic of the Scandinavian type, through more arbitrary in its forms, as in the office building by D. Gjorgyi, and the Cistercian Gymnasium by I. Kotsis; the Hungarian Biological Institute on the Plattensee, by I. Kotsis is more doctrinaire. In Czechoslovakia the reign of stark modernism was almost complete, as in the bleak building for the Praeger Mustermesse, by O. Tyl, and the apartment houses in Prague by J. K. Riba and F. A. Libra. The Phoenix Insurance Co. building, Prague, by F. Ehrman and J. Gocar is more in the Mendelssohn manner, and capably handled, and the little Y.W.C.A. building in Prague, by O. Tyl, is lovely and simple. In Rumania, the great Rumanian Assurance Co. Building at Bucharest, by Horia & Son and Mme. Greangra, is an interesting but rather incoherent hash of French and



1. AIRPORT AT WASHINGTON, D. C., HOLDEN, STOTT, & HUTCHINSON, ARCHITECTS
2. STOCKHOLM EXPOSITION—EXPOSITION HALL FOR INTERIOR FURNISHINGS.
(Photo from American-Swedish News Exchange)
3. LENIN MAUSOLEUM, MOSCOW. (Photo from Keystone View Co.)

ARCHITECTURE OF 1930

German modernist ideas. The most outstanding architectural achievement in Belgium was the Antwerp Exposition, with M. Smolderen as supervising architect; the great monumental modernist gateway by him had scale and power, and the correct festive character. The national buildings were disappointing; that of England, by Sir Edwin Lutyens, academically correct and classic, and that of France, by de Montarnal, in a suave modern style, being the two most interesting structures.

Spanish work was hesitating between Baroque, Art Nouveau, and extreme modernist influences. The Royal Spanish Yacht Club at Santander, by Labaye-Aizpurua, is like a boat, and charmingly simple and modern. The most important work of the year was probably the 15-story Telephone Building in Madrid, by I. de Cardenas, a setback building of the American type in a lavish classic style. In South America, the building for the Tribuna of Montevideo, by Valabrega and Aubriat, was noteworthy for its direct and logical modern expression; it is one of the most successful large structures of its type. The modernist stadium at Montevideo by J. Scasso, with a tall, slim, concrete tower is also an impressive conception.

In Russia, the official attempt to break with all past culture has led to the complete adoption of an architectural style of the starkest, most doctrinaire type, developed along the lines of the Le Corbusier criticism. The work is interesting and occasionally vital despite its harshness. The work of G. Barchin and B. Welikowsk is typical. The completion of the permanent mausoleum of Lenin during the year in Moscow, by Shushev, revealed a sombre, impressive stepped mass, not unlike the former temporary wooden mausoleum, in black and red granite, the whole making a memorial of great emotional power.

ARCTIC EXPLORATION. See ANTHROPOLOGY; POLAR RESEARCH.

ARGENTINA. A federal republic occupying, with Chile, the southern third of South America; consisting of 14 Provinces, 10 territories, and the federal district. Capital, Buenos Aires.

AREA AND POPULATION. With an area of 1,153,110 square miles, Argentina had an estimated population on Jan. 1, 1929, of 11,193,000, compared with 7,885,237 at the census of 1914. With the exception of about 30,000 Indians, the inhabitants are of European antecedents. Immigrants in 1928 numbered 272,501 and emigrants 190,537. In 1929 immigration increased by 6 per cent, with Spaniards, Italians, and Poles, in the order named, contributing the largest quotas. The population of Buenos Aires on Jan. 31, 1930, was estimated at 2,116,284, a gain of 43,595 over the same date in 1929. Other leading cities are Rosario, with 500,000 inhabitants (estimated) in 1930; Córdoba, 221,200 in 1928; La Plata, 165,813 in 1928; Tucumán, 91,216; Santa Fé, 105,000 in 1929; Mendoza, 58,790; Bahia Blanca, 44,143. In 1927 the Federal government established 29 towns and 12 colonies on 1,373,320 acres of public lands.

EDUCATION. Primary education is free, secular, and compulsory. There were (1928) 11,280 primary schools, with 1,381,804 pupils. Public secondary, normal, and special schools in 1929 numbered 324, with 82,993 students, and private secondary, normal, and special schools, numbered 126, with 11,632 students. There are national universities at Buenos Aires, La Plata,

Tucumán, Rosario, and Córdoba and provincial universities at Santa Fé and Cuyo.

PRODUCTION. Agriculture and stock raising are the basic industries, manufacturing being confined principally to the preparation of foodstuffs. Of the total area of 699,278,300 acres, about 250,000,000 acres are cultivable (10,000,000 acres require irrigation), a similar area is suitable for cattle raising, 96,250,000 acres are woodland, and the remainder consists of mountains or arid regions. Only about 12 per cent of the arable land was cultivated in 1930. The area sown to cereals and flaxseed in 1930-31 was placed by the Ministry of Agriculture at 34,504,550 acres, or 1,303,150 acres more than in the previous year. The chief crops were distributed as follows: Wheat, 20,139,650 acres; flax, 7,536,550 acres; oats, 4,084,563 acres; barley, 1,524,607 acres; rye, 1,141,602 acres; and bird seed, 78,578 acres.

The production, in bushels, of the chief crops in 1929-30, with comparative figures for 1928-29 in parentheses, was: Wheat, 143,175,000 (307,360,000); rye, 4,409,000 (7,666,000); barley, 16,813,000 (16,815,000); oats, 68,020,000 (65,172,000); corn, 253,175,000 (231,706,000); linseed, 55,621,000 (82,810,000). Wine production in 1929-30 amounted to 218,229,000 gallons (209,619,000 gallons in 1928-29); cane sugar, 340,000 metric tons (375,000 in 1928-29); potatoes, 878,600 metric tons (estimated). The area devoted to cotton in 1929-30 reached a record figure of 332,165 acres; cotton production in 1928-29 was 98,700 metric tons.

Exports of wheat increased from 2,034,800 tons in 1926 to 6,709,300 tons in 1929. The value of all grain crops in 1928 was \$498,175,000. Tobacco, yerba maté, rice, sugar, potatoes, fresh fruits, and peanuts are other products. Exports of wheat in 1928 were 20 per cent of the world's exports; of maize (corn), over 46 per cent; of linseed, over 70 per cent.

On Jan. 1, 1929, the number of cattle in the country was estimated at 34,410,000, distributed mainly in the central and northern grazing regions. Sheep were estimated at 35,000,000 in 1926. Cattle products account for approximately one-fourth of the value of all exports; in 1928, the farm value of cattle marketed was \$297,000,000. Meat refrigeration is the chief industry. In 1929, there were exported 5,449,000 tons of chilled, and 1,060,000 tons of frozen beef, 4515 tons of pork, and 3,883,000 tons of mutton. Flour milling is second in importance, the average annual output being about 7,000,000 sacks. The dairy, quebracho extract, and textile industries are expanding also, the latter receiving high tariff protection.

A 1929 estimate placed the number of manufacturing plants in the country at 61,000, employing 600,000 persons and 1,000,000 h.p., with an annual gross production of about \$1,225,000,000. Lack of domestic fuel supplies is a distinct handicap to industry. Most of the coal and wood and three-fourths of the petroleum products consumed in the country are imported. Argentinian coal deposits are low-grade and inaccessible, while the extensive forests in the north are too distant for economical exploitation. Petroleum production is increasing. The output in 1929 reached 9,391,385 barrels (5,106,900 in 1927). Of the 1929 production, State wells furnished 5,485,956 barrels and private wells 3,905,430 barrels. Domestic oil is used increasingly as fuel for the railways. Other branches of mining are comparatively unimportant, although some

gold, silver, copper, tin, and salt deposits are worked.

FOREIGN INVESTMENTS. American investments in Argentina at the beginning of 1930 totaled \$658,589,000, as compared with \$40,000,000 in 1914. The British investments in 1929 were estimated by the D'Abernon Mission at from £500,000,000 to £600,000,000 and the annual interest thereon amounted to about £25,000,000. Over 61,000 miles of railway were British owned and managed, in addition to numerous tramways, water works, gas works, and other public utilities. French investments of about \$425,000,000 and other foreign investments brought the total outside capital in Argentina to about \$4,000,000,000.

COMMERCE. The Government Statistical Department reported a total foreign trade in 1929, excluding specie, of 1,815,000,000 gold pesos (1 gold peso equals \$0.9648 at par), or 75,400,000 pesos less than in 1928. Imports were valued at 861,900,000 gold pesos, a gain of 25,200,000 pesos over 1928, while exports fell 100,700,000 gold pesos below 1928 to 953,000,000 pesos. The favorable balance of trade in 1929 was 91,100,000 pesos, as compared with 217,000,000 pesos in the previous year. The continued economic depression was accompanied by further trade declines in 1930. Exports declined to 612,550,000 gold pesos, the lowest since 1917 and 35.8 per cent below the 1929 figure. The heaviest export declines were in grains and flaxseed, which decreased 38.9 per cent in volume and 50.1 per cent in value. The values of meat, hide, and wool shipments declined also, as compared with 1929.

In 1929, the United States sold Argentina merchandise valued at \$210,288,000, or 40 per cent of all American exports to South America. The value of imports from the United States increased 17.5 per cent as compared with 1928. Imports from Germany increased 6.7 per cent, while imports from Great Britain declined 6.9 per cent. Exports to the United States increased 18.3 per cent over 1928. Imports were chiefly iron and steel products, burlaps, lumber, newsprint, and mineral and vegetable oils, while exports consisted mainly of agricultural and animal products.

FINANCE. The budgets for 1929 and 1930 were virtually identical, the estimated revenues for both years totaling 733,660,000 paper pesos (1 paper peso equaled \$0.42 at par) and the estimated expenditures, 732,797,000 pesos.

Import duties furnish about 76 per cent of the revenue and direct taxation about 10 per cent. The national debt on June 30, 1930, was estimated at 2,841,000,000 paper pesos, while the combined consolidated and floating debts of nation, the provinces, and the municipalities were placed at 4,160,000,000 pesos. In April, 1930, the government floated a \$50,000,000 six-month 5 per cent loan in the United States. At that time the gold reserves were equivalent to \$438,757,000 and the note circulation equaled \$560,157,000. Despite the unusually high ratio of gold reserves to note circulation, the decline of the exchange value of the peso continued in 1930, reaching the lowest level since 1925 on June 24, 1930. The Presidential decree of Dec. 16, 1929, suspending the delivery of gold for paper currency by the Caja de Conversion, remained in effect throughout 1930. For other financial developments see below under *History*.

COMMUNICATIONS. Railways in operation Jan. 1, 1929, extended 23,548 miles, of which 4388 miles were state owned and 19,160 miles were

privately owned. Plans for new state railway construction costing nearly 20,000,000 paper pesos (about \$8,400,000) were approved in 1930. For the fiscal year ended June 30, 1930, 19 of the country's 25 railroads reported receipts which were 34,340,000 gold pesos (about \$33,131,000 at par) under receipts for the preceding fiscal year and 27,757,000 gold pesos under the 1927-28 receipts for all railways, which totaled 146,840,000 gold pesos. The decreased receipts were due to the greatly diminished movement of crops during the year. A contract for the construction of four subway lines linking the Buenos Aires business district with the suburbs and costing about \$130,000,000, was awarded to a Spanish company in August, 1930.

There were 1858 miles of motor highways in 1924. Air lines radiate from Buenos Aires to New York, Montevideo, and various Argentine and South American cities. At the beginning of 1930 there were 75,141 miles of telegraph line, and 221,261 telephones in operation, in addition to 12 wireless telegraph stations. Wireless telephone service to the United States and Europe was available. A total of 3325 ocean-going vessels of 11,701,924 net registered tons entered Argentine ports during 1929, as compared with 3323 vessels of 11,716,098 tons in 1928.

GOVERNMENT. The Constitution vests executive power in a President elected for six years, and the legislative power in a national Congress, comprising a Senate of 30 members elected for nine years, and a Chamber of Deputies of 158 members elected for four years by the people at the ratio of one deputy for every 49,000 inhabitants (census of 1914). One-third of the Senate retires every three years and one-half of the Chamber every two years. The cabinet is appointed by and under the direction of the President. The Governors of the various Provinces are vested with extensive powers and in their Constitutional functions are independent of the central executive. In the election of April, 1928, Dr. Hipólito Irigoyen's party, the *Union Cívica Radical*, secured 87 of the 158 seats in the Chamber of Deputies and 7 of the 30 seats in the Senate. President at the beginning of 1930, Dr. Hipólito Irigoyen, elected for the six-year term ending Oct. 12, 1934; Vice President and President of the Senate, Dr. Enrique V. Martínez. See below under *History*.

HISTORY

The deposition of President Hipólito Irigoyen on September 6 by a popular revolt led by army officers and the return to power of the wealthy and conservative classes defeated by Irigoyen in the election of 1916 were the outstanding developments in Argentina during 1930. The new provisional régime, established September 8, was headed by General José Francisco Uriburu, member of a wealthy and distinguished Argentine family and nephew of former President José Evaristo Uriburu. In contrast to the anti-American policy evidenced by the Irigoyen Government, President Uriburu announced on September 10 that his Government was "very desirous of cooperating to the fullest extent with the United States." One of his first acts, after recognition had been accorded his régime September 18 by the United States, was the appointment on September 20 of Dr. Don Manuel E. Malbran as Ambassador to Washington, a post Dr. Malbran resigned early in 1929 as a protest against the discourtesy evidenced by

President Irigoyen in connection with arrangements for President-elect Hoover's visit to Argentina.

GENESIS OF REVOLT. The popular uprising which unseated President Irigoyen with more than four years of his six-year term still unserved had its roots in numerous grievances. Foremost among these was the economic crisis due to the decline in prices of the country's chief exports, which caused widespread want, unemployment, and unrest. The situation was aggravated by a general breakdown of governmental machinery resulting from the President's insistence upon personally supervising every detail of routine administration, and his refusal to fill important Government posts, nominees for which required confirmation by the hostile Senate. Numerous federal judgeships, important diplomatic posts, and various positions in national boards and commissions remained vacant, while contractors' bills, and other Government obligations remained unpaid. At the time of Irigoyen's resignation, 1159 executive orders and decrees had accumulated, awaiting his signature.

Through questionable constitutional interpretations, the President caused the Federal Government to intervene in four Provinces, where locally elected officials were removed and replaced by Irigoyen's personal followers. Rioting and shootings were the common accompaniment of these political struggles. The business elements were alarmed by the President's radical tendencies and angered by his refusal to secure higher tariff protection for the textile, packing, and yerba maté (tea) industries. Labor was equally discontented because of unemployment and hard times. To the chagrin of patriotic and progressive citizens, Argentina under Irigoyen abdicated its political leadership of the South American continent and virtually suspended diplomatic relations with the leading world powers.

The gathering storm was undoubtedly precipitated by news of successful revolts in Bolivia and Peru. Toward the end of August anti-Government demonstrations became increasingly frequent. On August 28, the city awoke to find troops and police heavily concentrated about the President and the Government House to guard against a rumored plot to assassinate Irigoyen. Arrests of several army officers on charges of conspiracy followed on August 29, and on September 2, Minister of War Dellepiane resigned, protesting against the innumerable intrigues in Administration circles. In an effort to tide over the crisis peaceably, leaders of the President's party on September 3 urged him to resign. He declined. The following day several were killed when the police fired on 2000 rioting students, and on September 5 the President, who was ill throughout the crisis, delegated the executive power temporarily to Vice President Martinez. At the same time martial law was declared. The aroused populace was not content with Irigoyen's temporary resignation. While huge street demonstrations demanded the President's permanent withdrawal and the election of a successor not under his control, General Uriburu seized the opportunity to lead a revolt of the army. Supported by the navy and a huge throng of civilians, he captured the Government House after a short struggle, in which 10 or more were killed and some 70 wounded. Acting President Martinez immediately resigned and Irigoyen was arrested in La Plata where friends had taken him to escape

the fury of the mob. In continued ill health, the deposed President was imprisoned in a warship in the harbor of Buenos Aires until November 14, when it was reported that he and General Dellepiane, former Minister of War, were transferred to a land prison to await trial on charges of false statements and violation of public duties.

THE URIBURU GOVERNMENT. The new Government formed by General Uriburu on the day of the revolt was composed largely of wealthy and conservative civilians of the land-owning and business classes. Besides himself as President, it included the following: Vice President, Enrique Santa Marina; Finance, Enrique Perez; Interior, Marias Sanchez Sorondo; Public Instruction, Ernesto Padilla; Foreign Relations, Ernesto Bosch; Agriculture, Horacio Becca Varela; and Public Works, Octavio S. Pico. Martial law was continued and public order was quickly restored, despite an effort at counter-revolution on the part of Irigoyenistas on September 9. Troops ousted Irigoyen appointees from the four Provinces in which the Irigoyen Government had intervened. Censorship of the press was removed.

Despite rumors of counter-revolution, confidence in the new Government was shown in the strong recovery in the exchange value of the peso and in the extension of recognition by the various powers immediately before or after the action of the United States on September 18. Local banks voluntarily subscribed to a 100,000,000 paper peso six-month 5½ per cent Government loan, while Government and corporate securities on the Buenos Aires stock exchange remained firm. A \$50,000,000 loan, at 5 per cent, was negotiated in New York. The Provisional Government on October 1 announced that the proposed revision of the Constitution would be undertaken by a new Congress, elections for which were tentatively fixed for March, 1931. The proposed constitutional reforms, according to the proclamation, would harmonize national and provincial taxation and make possible the automatic functioning of Congress, real autonomy of the Federal States, the independence of the judiciary, and "the perfecting of the electoral régime to cover social necessities as well as those of the nation's productive forces." The press expressed dissatisfaction with the Government's programme, which they interpreted to mean that the election of a constitutional President and other executive officers would not take place until after the revision of the Constitution by Congress.

The Uriburu Government's effort to consolidate its power through the formation of a new national party of conservative tendencies, met with little success. It became evident that general elections if held in the near future would deliver the country back to radical elements unaffiliated with Irigoyen's immediate group. Possibly due to this fact, the Government adopted a policy of intervention in the Provinces resembling that which had made Irigoyen so unpopular. Several provincial newspapers were suspended and others were notified to revise their editorial policies. Dr. Irigoyen and Elpidio Gonzales, former Minister of Interior, were transferred on November 30 from the cruiser *Buenos Aires* to the island of Martin Garcia in the La Plata River. It was announced December 6 that the former President would be brought to trial for the alleged issuance of decrees in violation of the Constitution.

An examination of the finances of the nation revealed a deficit of 300,000,000 paper pesos. In

addition it was found that expenditures for public works amounting to 395,000,000 pesos had been paid with general treasury funds and without recourse to long-term obligations authorized under existing laws. The financial programme of the Provisional Government was outlined as one of rigorous economy, the raising of additional foreign loans for construction, gradual valorization of the peso, creation of a central bank, and a general monetary reorganization.

A memorandum of the Minister of Finance, published Nov. 30, 1930, estimated the Government's total income for 1930 and 1931 at 616,000,000 and 650,000,000 paper pesos, respectively, and the public debt service requirements at 226,000,000 and 239,000,000 paper pesos, respectively. He estimated the adverse balance of trade for 1930 at about 259,000,000 paper pesos and the ordinary expenditures for 1931 at about 375,000,000 paper pesos. In an address to heads of Government bureaus on Dec. 6, 1930, Provisional President Uriburu placed the existing floating debt at approximately 1,200,000,000 paper pesos, of which 750,000,000 paper pesos were contracted during the previous two years. Of the floating debt, more than 1,000,000,000 paper pesos were due to local bankers and to contractors and providers.

The *Union Civica Radical* party received a severe blow as a result of the revolution. The rapidity of the change in public sentiment against it was indicated by the fact that in the Congressional elections of March 2, the party increased its representation in the Chamber of Deputies from 87 to 100. In the capital, however, the Irigoyenistas lost ground to the Independent Socialist and Socialist parties. The campaign was marked by serious riots, 6 persons being killed and 20 injured in election-day disorders. Efforts to reorganize the Radical party under new leadership were made following the announcement that the Provisional Government would call a Congressional election.

OTHER EVENTS. The Argentine press continued its attacks upon the intervention of the United States in the countries of the Caribbean and its policies with regard to immigration and the tariff. The Haitian settlement arrived at by the Forbes Commission was denounced by *La Prensa* on the ground that the commission had failed to touch upon the question of Haitian sovereignty, thus demonstrating that the United States had no intention of abandoning "its intensive activities in the territories it has illegitimately dominated." *La Nacion* on May 3 asserted that "the colossus of America will begin to be respected even if not loved," if it threw off its mask and sincerely proclaimed its imperialism.

Among the many protests against the American tariff bill was one addressed on May 23 to the Pan American Union, the American Embassy, and the American Chamber of Commerce in Buenos Aires by the Argentinian Confederation of Commerce, Industry, and Production. Upward revision of the Argentine tariff, particularly on products from the United States, was discussed during the session of Congress which adjourned April 29. The new American Embassy in Buenos Aires, purchased by the United States government, was formally opened on Dec. 6, 1930.

As usual, labor disputes proved a serious handicap to the commercial and industrial welfare of the nation. Train service was disrupted and packing houses were closed by a dispute between railway owners and employees which commenced

March 13 and was ended by Government intervention March 20. In the meantime exasperated passengers had done much damage to railway property. Port traffic in Buenos Aires was completely tied up during April by a general sympathy strike of stevedores. A new eight-hour day law went into effect on March 12. See **EARTHQUAKES.**

ARIZONA. POPULATION. According to the Fifteenth Census, the population of the State on Apr. 1, 1930, was 435,573. The population on Jan. 1, 1920, was 334,162. The capital is Phoenix.

AGRICULTURE. The following table gives the acreage, production, and value of the principal crops in 1929 and 1930:

| Crop | Year | Acreage | Prod. Bu. | Value |
|----------------|------|---------|----------------------|------------|
| Cotton | 1930 | 212,000 | 160,000 ^a | \$ |
| | 1929 | 226,000 | 153,000 ^a | 17,550,000 |
| Hay | 1930 | 214,000 | 768,000 ^b | 9,948,000 |
| | 1929 | 203,000 | 689,000 ^b | 12,357,000 |
| Wheat | 1930 | 46,000 | 1,288,000 | 1,352,000 |
| | 1929 | 42,000 | 1,134,000 | 1,531,000 |
| Corn | 1930 | 41,000 | 1,353,000 | 1,556,000 |
| | 1929 | 41,000 | 1,148,000 | 1,492,000 |
| Grain sorghums | 1930 | 59,000 | 2,065,000 | 1,446,000 |
| | 1929 | 52,000 | 1,560,000 | 1,482,000 |

^a Bales. ^b Tons.

Farms in the State numbered 13,260 in 1930, as against 10,802 in 1925 and 9975 in 1920. Irrigated lands in the State totaled 577,263 acres in 1929, as against 467,565 in 1919.

MINERAL PRODUCTION. Copper, of which the State continued in 1928 the foremost domestic producer, supplied in that year more than nine-tenths by value of its mineral output. The production of copper rose sharply for 1929, to 830,628,411 pounds, from 732,276,803 pounds for 1928. As the estimated average value of this product for 1929 ran 3.2 cents a pound above that for 1928, the total production of 1929 as measured by value was still more notably above the total for 1928, when the value of copper mined attained \$105,447,860. Of the five metals gold, silver, copper, lead, and zinc, the combined production in 1929 was valued at \$155,567,133, as compared with \$114,300,381 for 1928. For 1928, the total value of mineral production was \$115,999,643; for 1927, \$100,558,556.

The value of gold, silver, copper, lead, and zinc produced by mines in Arizona in 1930 was about \$76,095,000, a decided decrease from \$155,567,133 in 1929, according to estimates made of the U. S. Bureau of Mines. A pronounced decrease was shown in the output of all five metals and the decrease in copper was more than the copper output of Montana in 1930. On account of the decreased metal production and the greatly decreased metal prices of silver, copper, lead, and zinc, the value of each metal was also distinctly less than in 1929. Nearly all the large producers of copper reported a greatly decreased output in 1930 and several companies reported as much as a 50 per cent decrease. Arizona, however, was again by far the largest producer of copper in the United States and it exceeded all other States in the total value of the five metals. There was a large decrease in the output of gold corresponding to the abnormal decrease in the output of copper, but the increase in gold from gold ore in Mohave County was notable. There was also an unusually large decrease in the silver output, which in general follows the trend of copper. The production

of lead and zinc, although relatively unimportant in Arizona, was much less than in a normal year. Large expenditures were made in improvements at the copper smelters, in installing new mine equipment, and in building new mills. The gold output decreased from \$4,182,287 in 1929 to about \$3,514,000 in 1930 due to the marked curtailment in the output of copper ore. The silver output decreased from 7,543,283 ounces in 1929 to about 5,300,000 ounces in 1930, and the value from \$4,020,570 to about \$2,040,000 as the average price of silver decreased from 53.3 cents an ounce in 1929 to 38.5 cents an ounce in 1930. The output of silver in 1930 was the smallest since 1922 but the State again ranked fourth in the production of silver after Utah, Idaho, and Montana. The copper output decreased from 830,628,411 pounds in 1929 to about 564,500,000 pounds in 1930, and the value from \$146,190,600 to about \$70,000,000. As the average price of copper decreased from 17.6 cents a pound in 1929 to 12.4 cents in 1930, mines in Arizona decreased their output decidedly and the production of copper was the smallest since 1922.

FINANCE. State expenditures in the year ended June 30, 1928, as reported by the U. S. Department of Commerce, were: for maintenance and operation of governmental departments, \$6,794,187 (of which \$1,913,267 was for local education); for interest on debt, \$96,275; for permanent improvements, \$1,902,140; total, \$8,792,602 (of which \$2,977,324 was for highways, \$1,382,283 being for maintenance and \$1,595,041 for construction). Revenues were \$9,627,493. Of these, property and special taxes formed 64.0 per cent; departmental earnings and remuneration to the State for officers' services, 4.2; sales of licenses, 18.7 (including taxes of \$1,004,312 on sales of gasoline). The State's funded debt outstanding on June 30, 1928, was \$747,972. Net of sinking-fund assets, it was nil, such assets exceeding funded debt. On property bearing an assessed valuation of \$670,398,447 were levied in the year State taxes of \$6,988,316.

TRANSPORTATION. The total number of miles of railroad line in operation on Jan. 1, 1930, was 2494.21. There were constructed, in 1930, 22.40 miles of additional second track.

EDUCATION. The State Board of Education purchased the site for a school for the feeble-minded, to be built in 1931. The performance of three years of training in normal school or college was required for all to be admitted to teach in grade schools.

POLITICAL AND OTHER EVENTS. The State continued its opposition to the execution of the provisions of the Swing-Johnson Boulder Dam Act. The State Attorney-General filed with the United States Controller-General in July a brief impugning the legality of the disbursement of the \$10,660,000 of the Federal appropriation for starting the construction of the dam. The brief denied the validity of the contracts made by the Secretary of the Interior and the metropolitan water district of Southern California, by which a share of the water to be derived from the project had been assigned, and challenged the sufficiency of the provisions that had been made to amortize the \$165,000,000 to be spent by the Federal Government on the work. The State also sought to bring its case before the United States Supreme Court in the autumn with a view to securing an early decision preventing the prosecution of the work of construction without Arizona's consent.

The State Board of Tax Survey created by a statute of 1929 was enjoined, by a writ sustained by the State Supreme Court, from establishing the valuations that it had fixed for taxables in Maricopa County. These valuations were to have superseded those made by the county assessors in the several counties. The Supreme Court held that the new board had failed to make the scientific survey of values, including mines, railroads, public service corporations and personalty, such as the statute required.

The Coolidge Dam was dedicated on March 4, by ex-President Coolidge, for whom it was named. This structure, situated on the Gila River, 130 miles southeast of Phoenix and 30 miles from Globe, was built by the Federal Government, and was designed to furnish water for about 1,000,000 acres of arid lands, including the Sacaton Indian Reservation. The work of making an aërophotographic map of the prehistoric canal systems of the Salt and Gila River valleys was undertaken by Dr. N. M. Judd of the Smithsonian Institution. According to his estimate the canals had an aggregate length of some 250 miles and indicated the former existence of a fairly populous agricultural community with the means of performing work requiring utmost labor and patience.

Through the Federal Department of Agriculture the growing of cotton was stopped in Arizona in an area infected by the pink bollworm, and compensation for the losses thus imposed on the growers was provided by a Federal act of Feb. 8, 1930.

ELECTIONS. Ex-Governor George W. P. Hunt, Democrat, was reelected, defeating Governor Phillips, Republican, by 47,670 votes to 44,995 (unofficial). L. W. Douglas, Democrat, was elected Congressman; an overwhelmingly Democratic Legislature was chosen. Three constitutional amendments were ratified; they provided for equalization of certain Supreme Court and commissioners' salaries; for limiting votes on special assessments to owners of real property; and for requiring that employees on public works be citizens. Other amendments, including a restricting of the State for Legislative representation, were lost.

OFFICERS. Governor, John C. Phillips; Secretary of State, I. P. Fraizer; Attorney-General, K. Berry Peterson; Treasurer, Charles R. Price; Auditor, Ana Frohmiller; Superintendent of Public Education, C. O. Case.

JUDICIARY. Supreme Court: Chief Justice, Alfred C. Lockwood; Associate Judges, A. G. McAlister, Henry D. Ross.

ARIZONA, UNIVERSITY OF. A coeducational State institution of higher learning in Tucson, Ariz.; founded in 1885. The 1930 autumn enrollment totaled 1875; the registration for the summer session of 1930 was 391. The faculty numbered 186. The endowment fund amounted to \$20,000, and the income for the year was \$1,305,485. The university receives both Federal and State support. The library contained approximately 85,700 volumes. President, Homer LeRoy Shantz, Ph.D., Sc.D.

ARKANSAS. POPULATION. According to the Fifteenth Census, the population of the State on Apr. 1, 1930, was 1,864,482. The population on Jan. 1, 1920, was 1,752,204. The capital is Little Rock.

AGRICULTURE. The following table gives the acreage, production, and value of the principal crops in 1929 and 1930:

| Crop | Year | Acres | Prod. Bu. | Value |
|-------------------|------|-----------|------------------------|----------------|
| Cotton ... | 1930 | 8,897,000 | 910,000 ^a | \$ 124,415,000 |
| | 1929 | 8,834,000 | 1,490,000 ^a | 8,068,000 |
| Corn | 1930 | 1,788,000 | 8,404,000 | 25,821,000 |
| | 1929 | 1,882,000 | 26,348,000 | 8,096,000 |
| Hay | 1930 | 767,000 | 570,000 ^b | 11,415,000 |
| | 1929 | 745,000 | 752,000 ^b | 5,776,000 |
| Rice | 1930 | 172,000 | 7,912,000 | 7,320,000 |
| | 1929 | 156,000 | 7,956,000 | 2,535,000 |
| Oats | 1930 | 195,000 | 4,875,000 | 2,998,000 |
| | 1929 | 186,000 | 4,836,000 | 3,299,000 |
| Potatoes .. | 1930 | 33,000 | 2,869,000 | 3,791,000 |
| | 1929 | 31,000 | 2,708,000 | |
| Sweet potatoes . | 1930 | 28,000 | 1,904,000 | 1,809,000 |
| | 1929 | 26,000 | 1,716,000 | 1,973,000 |
| Sorghum sirup ... | 1930 | 43,000 | 1,978,000 ^c | 1,681,000 |
| | 1929 | 41,000 | 2,337,000 ^c | 2,220,000 |

^a Bales. ^b Tons. ^c Gallons.

Farms in the State numbered 243,216 in 1930, as against 221,991 in 1925 and 232,004 in 1920. Irrigated lands in the State totaled 151,305 acres in 1929 as against 143,946 in 1919.

MINERAL PRODUCTION. The production of petroleum diminished again in 1929, but again furnished rather more than half of the mineral product, by value, of the State. There were produced, by quantity, 25,076,000 barrels of petroleum in 1929, as against 32,096,000 in 1928; the value of the year's output was estimated at \$22,600,000 for 1929, while for 1928 it was \$27,450,000. From natural gas were extracted, in 1929, 32,300,000 gallons of gasoline; in 1928, 32,677,000. The value of this product was, for 1929, \$2,301,000 (estimated); for 1928, \$2,568,000. Of natural gas itself (figures for 1929 unavailable), the quantity produced was 20,235,000 M cubic feet for 1928 and 30,450,000 M for 1927; the value, \$3,562,000 for 1928 and \$4,281,000 for 1927. As these fuels declined the production of coal tended somewhat to increase. There were mined, in 1929, 1,695,108 net tons of coal, as against 1,600,973 in 1928; in value, \$5,624,000 for 1929 as against \$5,393,000 for 1928. Bauxite, in which the State was the predominant domestic producer, was mined to the quantity of 351,054 long tons in 1929 and of 361,236 in 1928; as to value, \$2,181,158 in 1929 and \$2,193,230 in 1928. Clay products, the only other mineral production in excess of \$1,000,000 a year, attained \$1,580,571 for 1928; for 1927, \$1,285,720. The entire mineral production of the State had, allowance made for duplications, a value of \$45,009,780 for 1928; for 1927, of \$59,449,100.

FINANCE. State expenditures in the year ended June 30, 1928, as reported by the U. S. Department of Commerce, were: for maintenance and operation of governmental departments, \$14,983,475 (of which \$3,670,545 was for local education); for interest on debt, \$4,694,050; for permanent improvements, \$10,887,747; total, \$30,848,112 (of which \$12,851,143 was for highways, \$2,699,147 being for maintenance and \$10,151,996 for construction). Revenues were \$20,001,152. Of these, property and special taxes formed 30.8 per cent; departmental earnings and remuneration to the State for officers' services, 5.6; sales of licenses, 47.1 (including taxes of \$4,089,859 on sales of gasoline). The State's funded debt outstanding on June 30, 1928, was \$80,558,342. Net of sinking-fund assets, it was \$80,557,125. On property bearing an assessed valuation of \$613,494,618 were levied State taxes of \$5,337,403.

TRANSPORTATION. The total number of miles of railroad line in operation on Jan. 1, 1930, was

4809.34. There were built, in 1930, 16.23 miles of first track, 9.82 of second track, and 0.09 of third track.

EDUCATION. It was reported in 1930 that the State equalizing fund was in successful operation and that 400 consolidated schools had been established. With this notable movement of school consolidation went an increase of some 20 per cent in the high-school enrollment. The U. S. Census of 1930 reported that the number of persons 10 years of age and over unable to read and write was 96,818, as compared with 121,837 in 1920. The percentage of illiteracy was 6.8, as compared with 9.4 ten years ago. All classes of the population, including foreign-born whites and Negroes, showed lower percentages of illiteracy in 1930 than in 1920, except the small group of persons classified as "other colored." The number of persons from 5 to 20 years of age attending school in 1930 was 449,117, as compared with 406,727 in 1920. Persons attending school represented 66.3 per cent of the total population within the ages specified in 1930, as compared with 61.2 per cent in 1920.

POLITICAL AND OTHER EVENTS. The State suffered severely during the summer from the general drought that spread over a great part of the country. Early in August it was ranked with Virginia and Kentucky as one of the three States hardest hit. Rains later alleviated the trouble in Arkansas. State measures taken to relieve stricken counties included the distribution of food through State agencies and the acceleration of road work. An attack was made by inhabitants near Lonoke late in August on a road gang which included Negroes brought in from another locality. Residents of the neighborhood thus sought to prevent outsiders from sharing in the pay for work done in the vicinity. A detachment of the National Guard was sent out from Little Rock to check the disorder.

The malt tax imposed by the State yielded in the fiscal year 1929-30, \$39,267. The State commissioner of revenue, David A. Gates, estimated that this total of collections indicated that malt had been consumed in sufficient quantity to make 3,272,260 gallons of beer, and recommended raising the tax on malt extract to a point sufficient to bring in the equivalent of the old tax on \$1 a barrel on beer.

The practice of the State's Democratic organization of excluding Negroes from the primaries was contested in the courts, as it had been in Texas. A group of Negro voters in Little Rock sought a temporary injunction against exclusion from the primaries in 1928; obtaining this, they subsequently voted, but later the State Supreme Court, holding that the Fourteenth and Fifteenth Federal amendments did not apply to votes within party organizations, refused to render the injunction permanent. Appeal was then taken, shortly before the primaries of 1930, to the United States Supreme Court. Party action among the Democrats of the State, with regard to the standing of the members who had bolted the Democratic Presidential nominee in 1928 was largely a matter of county option. In Union County five members of the Central Committee were ousted on the bolting charge. Except where specially dealt with, the bolters of 1928 were free to return to the party fold and to participate in the primaries of 1930, on taking the pledge to support the party's candidates in the general election.

An epidemic of collapse in banking institutions, starting in Tennessee early in November and extending to Kentucky, reached Arkansas on November 17. On that day four banking institutions in the State closed their doors for liquidation or reorganization and 39 others suspended under the State law allowing 5-day suspensions under certain conditions. Combined deposits of about \$27,000,000 were involved. The chief banks of the group were members of a chain connected through a holding company of Little Rock. Among them were the American Exchange Trust Company of Little Rock, the Merchants' and Planters' Trust Company of Pine Bluff, and the Merchants' and Planters' Bank of Helena.

ELECTIONS. United States Senator Joseph T. Robinson, Democrat, was reelected unopposed. Governor Harvey Parnell, Democrat, was reelected by a majority of about 5 to 1 over the Republican candidate, Judge J. O. Livesey. Seven Democrats were sent to the House of Representatives, five being the actual incumbents. One of the two others was Essie Jeane Wingo, widow of Representative Wingo, who had been approved by both parties. The Legislature remained Democratic. Nine constitutional amendments, dealing with taxation and with the State Highway Department, were defeated. The voters carried an initiated act for the obligatory reading of the Bible in the public schools and approved, by a referendum vote, the State income-tax law.

OFFICERS. Governor, Harvey Parnell; Secretary of State, Jim B. Higgins; Treasurer, Ralph Koonce; Auditor, J. O. Humphries; Attorney-General, Hal L. Norwood; Superintendent of Public Instruction, C. M. Hirst.

JUDICIARY. Supreme Court: Chief Justice, Jesse C. Hart; Associate Justices, Frank G. Smith, T. H. Humphreys, William F. Kirby, Thomas M. McHaffey, E. L. McHaney and Turner Butler.

ARKANSAS, UNIVERSITY OF. A coeducational State institution of higher learning in Fayetteville, Ark.; founded in 1871. It comprises the colleges of arts and sciences, education, engineering, agriculture (including experiment station), and schools of law, business administration, and medicine, the last named being in Little Rock. In the autumn of 1930 the enrollment was approximately 2000, and for the summer session it was 1091. The number of faculty members, including administrative officers, was 201. The productive funds amounted to \$132,000, and the income for the year 1930-31 was about \$1,150,000. The library contained approximately 100,000 volumes. President, John Clinton Futrell, LL.D.

ARMAMENTS, LIMITATION OF. See MILITARY PROGRESS, NAVAL PROGRESS, DISARMAMENT and GREAT BRITAIN, FRANCE, and ITALY, under *History*.

ARMENIA. The name applied, since Dec. 2, 1920, to the Socialist Soviet Republic of Armenia. On Jan. 10, 1923, it became one of the three constituent republics of the Transcaucasian Socialist Federated Soviet Republic, a member of the Union of Socialist Soviet Republics. The population of that part of the former Turkish Empire known as Armenia and Kurdistan was given at about 2,470,900.

The Armenian Socialist Soviet Republic comprises the southeast frontier region of Transcaucasia, and is bounded on the west and south by Turkey and Persia, on the east by Azerbaijan,

and on the north by Georgia. The area is 11,945 square miles and the population (1926), 876,557, of whom 86 per cent were Armenians, 2.4 per cent Turko-Tartars, and the remainder Russians and other nationalities. Capital, Erivan, with a population in 1929 of about 75,000. Only 16.6 per cent of the population live in towns. The school enrollment in 1925 was 81,000, in addition to those attending the state university and a number of trade and technical schools. Agriculture is the main industry. In 1925 about 85 per cent of the cultivated land was devoted to grain and about 6 per cent to cotton and other industrial crops. See RUSSIA.

ARMIES. See MILITARY PROGRESS, and ITALY, FRANCE, and GREAT BRITAIN, under *Army and Navy*.

ARNOLD, JOHN OLIVER. A British metallurgist and educator, died in Oxford, Mar. 27, 1930. He was born in Peterborough, Northamptonshire, in 1858. On completing the course at King Edward's School, Birmingham, he entered the engineering department of the Sheffield Steel and Iron Works. In 1889 he was appointed professor of metallurgy at the Sheffield Technical School and remained a member of the staff when the school was absorbed by the university. In 1917 he was appointed dean of the faculty of metallurgy, and retired as professor-emeritus in 1920. He was a pioneer in applying chemical analysis and microscopy to steel manufacture, discovering the influence of vanadium and producing a powerful high-speed steel by substituting molybdenum for tungsten. During the World War he rendered valuable advice to the Admiralty, on steel to be used in naval construction. Elected Fellow of the Royal Society in 1912, he was president of the Sheffield Society of Engineers and Metallurgists from 1914 to 1918. Among his honors were: the Telford Premium of the Institution of Civil Engineers (1887); the Telford Premium and Gold Medal (1895); and the Bessemer Gold Medal of the Iron and Steel Institute (1905). His publications include: *Steel Works Analysis*; *The Influence of Elements on Iron*; *The Molecular Constitution of High-Speed Steels and Their Correlations with Lathe Efficiencies*; *The Influence of Carbon on Iron*; and *Factors of Safety in Marine Engineering*.

ARNOLD, SIR THOMAS WALKER. A British educator and author, died in Kensington, London, June 10, 1930. He was born Apr. 19, 1864, and was educated at the City of London School and Magdalene College, Cambridge. He had been professor of philosophy at the Government College in Lahore, India, and dean of the Oriental Faculty of Punjab University. For ten years he was professor at the Mohammedan Anglo-Oriental College in Aligarh. He was assistant librarian of the India Office from 1904 to 1909, educational adviser to Indian students from 1909 to 1916, and educational adviser to the Secretary of State for India from 1917 to 1920. From 1920 until his death he was professor of Arabic in the School of Oriental Studies at the University of London. He was made a Companion of the Order of the Indian Empire in 1912 and a Knight in 1921. He was also an honorary Fellow of Magdalene College, Cambridge. His works, on which rest his reputation as one of the greatest Islamic scholars, include: *The Preaching of Islam* (1896); *Al Mu'tazilah* (1902); *The Court Painters of the Grand Moguls* (with Laurence Binyon, 1921); *The Caliphate* (1924); *Survivals of Sasanian and*

Manichæan Art in Persian Painting (1924); *Painting in Islam* (1928); and *The Islamic Faith* (1928).

ARTERIAL DISEASES OF THE EXTREMITIES. See SURGERY, PROGRESS OF.

ART EXHIBITIONS. On New Year's Day, 1930, there opened in London at Burlington House one of the most important exhibitions of Italian art ever held, and probably the finest display of old masters of any school ever shown. Paintings, sculpture, drawings, and other works of art were contributed from all Europe. The decision of the Italian government at the last moment to lend the most treasured works from Italian collections did much toward making possible the completeness of the exhibition and gave it a value surpassing the Flemish and Dutch exhibitions of previous years. Italy naturally contributed the largest number of paintings. England was second with her beautiful collection of paintings from the National Gallery as well as many valuable works from private collections. The attendance at Burlington House was unprecedented.

An exhibition of Italian art supplementary to that at Burlington House was held at the British Museum. Other exhibitions in London were Art in the Dark Ages at the Burlington Fine Arts Club and English Conversation Pieces at the house of Sir Philip Sassoon. In Paris a retrospective exhibition of the work of Sisley was held, a rather extensive showing of Pissarro in honor of the artist's centenary, and an exhibition of Delacroix at the Louvre. An exhibition of Flemish art treasures from the fifteenth to the eighteenth centuries was shown in Antwerp and in Amsterdam 600 paintings formed a most interesting representation of Vincent Van Gogh and his times.

Berlin held a large and inclusive exhibition of Matisse and a comprehensive exhibition of Rembrandt, the latter as a prelude to the celebration in the autumn of the centenary of the state collections. Venice held its seventeenth biennial exhibition during the year and Vienna exhibitions of baroque and rococo art. The two chief events in Munich were the exhibition of the Church Art Treasures of Bavaria and the first public showing of Baron Meinrich Thyssen-Bornemisza's private collection from Castle Rohonez which aroused great interest with its wide range of pictures.

Exhibitions in New York were varied as usual. Exhibitions of old masters tended to be fewer as fewer of them appear in the market. The exhibition of a single Van Eyck, the "Madonna of Ypres," was of considerable interest since there was only one other authentic work by this master in the United States. There were some fine examples of prints by Rembrandt shown in February.

European art, especially French, still held the highest place in America. Perhaps the most interesting exhibition was Painting in Paris held at the Museum of Modern Art in January. This was a comprehensive and valuable showing with a high average of individual pictures. An exhibition of Derain and Picasso about the same time was an interesting supplement to the work of these artists in the Modern Museum's show although it offered less fine examples. A retrospective exhibition of Derain, in April, comprising 28 pictures from 1911 to 1930 was the most comprehensive exhibition of his work ever held in America. The exhibition in October of Bonnard, Roussel, and Vuillard was a rather important one. The significant feature was the work of Vuillard which had

hitherto not been adequately represented in either France or America.

Although French painting still received the emphasis of fashion American painting was decidedly on the up-grade. Usually greater in quantity than in quality, it had this year been more forcibly represented and more enthusiastically received than ever before. Perhaps the best American show was the exhibition of Homer, Ryder, and Eakins at the Modern Museum. The exhibition of "Modern Americans" in February was an impressive one and gave a good idea of the strength of the school, especially as a group. Two other interesting exhibitions were "One hundred Representative American Prints" in March, and in April the Modern Museum's showing of painting and sculpture by American artists under 35. Important sculpture, particularly "The Wrestler," by Dudley Vail Talcott, and "Man, 1930," by Gaston Lachaise, dominated the Museum's December exhibition, although the canvases shown were at a high level.

Other notable exhibitions held in New York galleries were: still lifes from the Chester Dale Collection; "La Vierge en France," French sculpture of six centuries, from Pre-Gothic to Renaissance; a rare collection of central Asian art from the third to the eighth centuries; Kmer sculpture from the Quaritch Wales Collection; a memorial exhibition of the work of Jules Pascin; an exceedingly rare collection of Chinese porcelains at the Ralph M. Chait Galleries; the comprehensive group of Eakins's paintings shown by the Babcock Galleries; and the antique show at the Grand Central Palace, the largest and most successful venture of its kind in New York.

One of the most important exhibitions of the year was that of the H. O. Havemeyer Collection at the Metropolitan Museum of Art. The showing of this remarkable collection of paintings, prints, and Far Eastern art, acquired in 1929, was eagerly awaited and the Museum arranged to have it on exhibition during almost the whole of the year so that the public might have an opportunity to see it as a whole before the objects were distributed among the various departments. Another exhibition at the Metropolitan which aroused a good deal of general interest was the memorial exhibition of the work of Arthur B. Davies, showing the development of his art in painting and other media. The exhibition in January of copies of Egyptian tomb paintings showed a phase of Egyptian art which it has hitherto been impossible to appreciate except in Egypt. Other exhibitions at the Museum were; in June Persian Rugs of the so-called Polish Type, in October Mexican art, and in December the annual exhibition of the American Federation of Arts, this year metalwork and cotton.

Contrary to custom, the November National Academy exhibition was open to members only, and no awards were made. The showing of prints was unusually good, and among others, the contributions of John Taylor Arms, Frank W. Benson, and Charles A. Platt were well received. In general, the paintings were unfavorably criticized by the art critics.

A number of notable exhibitions were held during 1930 in various museums throughout the United States. Probably the most important of these was that at the Detroit Museum of paintings by Rembrandt. Seventy pictures lent entirely from American collections made up what was the first large exhibition of Rembrandts in this country.

Although these were naturally only a small part of the artist's work they were well chosen and represented all phases of his genius. The Detroit Museum also held exhibitions of Mohammedan art from the ninth to the seventeenth centuries and of eighteenth century tapestries. The loan exhibition of Eakins at the Pennsylvania Museum, including recent gifts to the museum, was one of the most interesting of museum exhibitions. The Fogg Museum held exhibitions of English eighteenth century paintings and Persian painting. Other exhibitions at museums were: One Hundred Colonial Portraits, a special loan exhibition at the Boston Museum of Fine Arts of portraits of distinguished members of the Massachusetts Bay colony; at the Cleveland Museum prints by Mantegna; Chinese bronzes at the Chicago Art Institute; rare English silver from many collections at Minneapolis; and the Corcoran exhibition at Washington, D. C.

PENNSYLVANIA ACADEMY. With the one-hundred-and-twenty-fifth annual exhibition the Academy of Fine Arts entered upon the second year of its recent-day broad-minded policy and arranged the largest and most inclusive exhibition in its history. Among the 571 paintings and 139 pieces of sculpture by 490 artists every trend of art was represented, and an attempt to make each one of this varied group feel at home might be seen in the intentionally haphazard arrangement. Hugh H. Breckenridge, chairman of the jury of selection, considered this the most educational show ever held by the Academy, representing every aesthetic and educational idea in painting, and said that the jury had tried to include all forms from the most conservative to the most radical. The awards were made as follows: The Temple Gold Medal to Arthur B. Carles of Philadelphia for "Still Life"; the Jennie Sesnan Gold Medal for the best landscape in the exhibition to S. Walter Morris of Philadelphia for "Arorwark"; the Carol Beck Gold Medal for the best portrait to Leon Kroll of New York for "Joie"; the Lippincott Prize for the best figure piece to Abram Poole of New York for "Miss Greta Kemble Cooper"; the Widener Memorial Gold Medal for sculpture to Mitchell Fields of New York for "Torso"; the McClees Prize for group sculpture to Gaetana Cecere of New York for "Boy and Faun"; and the Mary Smith Prize for the best painting by a Philadelphia woman to Grace Gemberling for "Rocks and Flowers." The exhibition included a memorial group of the works of Charles Grally.

CARNEGIE INSTITUTE, PITTSBURGH. The Twenty-ninth International Exhibition of Paintings displayed representative works of 14 European nations. There were 425 paintings in all, 135 of these contributed by American artists and 290 from abroad. The plan which the Institute adopted several years ago of inviting fewer artists and hanging a large number of pictures of each has apparently become permanent. The exhibition was notable for quality and if the emphasis seems to have been on the French school that was only to be expected. The Institute and America were honored this year by having Henri Matisse as one of the jurors. The other members of the jury were Glyn Philpot of London, Karl Sterrer of Vienna, and Bernard Karfoll, Emil Carlsen, and Ross Moffett of America. The first prize of \$1500 was won by Pablo Picasso for a portrait of Madame Picasso. As this picture was not for sale the Albert C. Lehman award of \$2000 for the

best purchasable picture went, together with the second prize of \$1000, to Alexander Brook of New York for his painting "Still Life." The third prize of \$500 was given to Charles Dufresne of France for "Still Life." The first honorable mention with \$300 was given to Henry Lee McFee, American, for still another "Still Life." This same artist won the special prize of \$300 offered by the Garden Club of Allegheny County for the best painting of flowers or a garden. Other honorable mentions were Maurice Sterne of New York, Giuseppe Montanari Como of Italy, and Niles Spencer of New York.

ARTHRITIS, RHEUMATOID. See MEDICINE, PROGRESS OF.

ARTIFICIAL RESPIRATION, A MACHINE FOR. See MEDICINE, PROGRESS OF.

ARTIFICIAL SILK. See CHEMISTRY, INDUSTRIAL; RAYON.

ARTIFICIAL WOOD. See CHEMISTRY, INDUSTRIAL.

ARTILLERY. See MILITARY PROGRESS.

ARTISTS. See MUSIC; PAINTING; SCULPTURE.

ART MUSEUMS. Although the Metropolitan Museum of Art officially acquired the H. O. Havemeyer Collection in 1929 it was not then shown to the public, and the exhibition of the collection as a unit before it was divided among the various departments during almost the whole of 1930 makes it an event of this year and a very important one. The magnificent group of paintings, principally modern French, forms the most impressive addition in many a day. The department of paintings acquired this year a large and interesting altarpiece by Luca Signorelli. The most notable acquisition to the classical department was a piece of Greek sculpture from the Lansdowne Collection dispersed in London in the spring. It is a fragment of a gravestone with a portion of the pediment and a life-size head of a woman done in the grand fifth century manner. Other additions to the classical collection were a bronze statuette of a satyr of the Hellenistic period, an Etruscan cauldron, and a Hellenistic vase with black glaze. The department of Far Eastern Art made one of the most important additions it has ever made, a rare Chinese stele of the sixth century, one of the finest Oriental treasures in the West. Other acquisitions were additional gifts of paintings, tapestries, and prints to the H. O. Havemeyer Collection, fine woodcuts including two unique primitive German colored single-sheets, and an especially clear "Holy Trinity," by Durer, two stone lion heads, and a large and important collection of Chinese textiles. The department of decorative arts announced a number of interesting accessions: two chairs from the Figdor Collection, one of them the famous Strozzi chair, a head of Lincoln by George Grey Barnard, a stained glass window by John La Farge, an Indian relief of the Amaravati school, three eighteenth century clocks, five sculptures for the medieval collection at The Cloisters, an English carved oak chest front of the fourteenth century, and an Italian Renaissance writing-cabinet.

The Pennsylvania Museum showed itself forehanded in reserving Edmund Foulc's rare and distinguished collection of sixteenth century French and Italian sculpture, furniture, faience, metalwork, tapestries, etc. This collection, valued at well over \$1,000,000, was considered so important that a banking syndicate was formed to advance a fund sufficient to obtain control of it until the museum could purchase it outright. Other ac-

cessions were a Florentine Gothic room of the fifteenth century which completes the architectural background of the south wing of the Museum, 36 paintings by Thomas Eakins given by the artist's widow, and a silver tankard by Edward Winslow.

The Art Institute of Chicago acquired five modern French paintings by Jean Lurcat, Jean Marchand, Charles Dufresne, Georges Braque, and Eduard Georg; a bronze Chinese mirror of the Han dynasty, a group of nine paintings from the Worcester Collection, including works by Veronese, Tintoretto, and Moroni; a painting by Gustave Courbet, "Mère Gregoire"; a portrait of a man by Lucas Cranach; "The Creation of Eve" by Veronese; a rare painted scroll by Maronoba, Japanese work of the seventeenth century; and a Buddhist stone triad of the T'ang dynasty.

The Cleveland Museum of Art made a number of interesting accessions, including six objects from the famous Guelph Treasure, a collection of reliquaries, etc.; two Tiepolo drawings; "The Coronation of the Virgin," a panel by Conrad von Soest; "Passage de Banlieu" by Henri-Julien Rousseau; a Greek mirror case; a group of fourteen Romanesque capitals; three Renaissance watches; the head of a Buddhist disciple of the late T'ang dynasty; and a marble statue of Kwan Yin of the seventh century.

The most interesting accession of the Detroit Museum of Art was a Venetian school piece from the Havemeyer Collection which, after repainting had been removed turned out to be a portrait by Titian of Doge Girolomo Priuri. Other interesting acquisitions were a "Dance of Peasants" by Pieter Breughel, "The Birth of Venus" by François Boucher, sketches by Rubens and Van Dyck, and "Madonna and Child" by Dosso Dossi, and "Jacob and Rachel" by Murillo.

The Boston Museum of Fine Arts acquired a life-size figure of Aphrodite, a replica of a lost Greek work; a Spanish sixteenth century painting of the Madonna and Child; a portrait by John Constable; a portrait by Van Dyck of Isabella, Lady de la Warr; and some rare prints by Dutch masters including Master W with the Key.

The Memorial Art Gallery of Rochester added to its collections a thirteenth century Gothic statue of Saint Mary Magdalen; a fifteenth century Flemish tapestry representing "The Judgment of the Emperor Otho III" which formerly hung at Knole, the estate of the Sackville family in England; and some important Greek vases of the seventh and sixth centuries B.C.

The St. Louis Museum opened a series of five English and French rooms of the seventeenth and eighteenth centuries and acquired an important Gothic sculpture of the Madonna and Child of the fle-de-France school and the three Marys at the Tomb by Annibale Carracci.

The Museum of Modern Art in New York acquired five important sculptures, a relief, two figures and a bronze torso by Maillol and a bronze figure of a woman by Lehmbruck; "The House by the Railroad," by Edward Hopper; and "Railroad Gantry," by Charles Burchfield.

The Cincinnati Museum reopened with loans of the Emery and Hanna Collections. The Fogg Museum received a collection of jewels, textiles, paintings, etc. as a gift from Mrs. Naumburg. The design of Dayton's new museum is based on that of the Villa Caprrola near Viterbo. Part of the Garvan collection of Americana has been

given to Yale University. The Minneapolis Institute of Arts has added "Dancers Resting" by Jules Pascin to its collection of paintings. Accessions of the Toledo Museum include four modern paintings by Narcisse Diaz, Jules Dupre, Felix Ziem, and Georges Inness, and twelve pieces of ancient glass from the third to the eleventh century. The Brooklyn Museum acquired a Greco-Roman torso of Aphrodite, the Houston Museum of Fine Arts a painting by Lorenzo Lotto, and the Freer Gallery in Washington some Chinese mirrors of the T'ang dynasty and several ceremonial bronzes.

EUROPEAN MUSEUMS. The National Gallery in London opened a new room, the gift of Sir Joseph Duveen, which has an unusual arrangement of lighting. Acquisitions of the National Gallery include a self-portrait by Turner and a letter from Ruskin referring to it and two portraits by Romney. The British Museum received as gift a group of prints and drawings of the present day. The Victoria and Albert Museum acquired a sixteenth century portable altarpiece of the Milanese school. It is of iron damascened with gold and set with painted glass panels. The Louvre received as gift the collection of paintings of M. Carlos Beistegui, which includes the Virgin by Jean Malouel, the portrait of Dauphin Charles Orlando by Rubens, a portrait of Don Olívio Odescalchi by Van Dyck, a portrait of the Marquesa de la Solana by Goya, two portraits by David, and two by Ingres. The palace and large art collection of Max Schmidt was given to the city of Budapest as a museum. A painting by Duccio recently lent to the Uffizi is a most interesting addition since the gallery has hitherto had no example of this master. The National Archaeological Museum of Madrid received a valuable collection of antiquities as the gift of a Franciscan monk. The collection contains 281 objects of Egyptian, Greek, Greco-Roman, and early Christian art. The state collections in Berlin celebrated their centenary by the opening of new wings, the north wing of the Deutsches Museum, the centre of the Pergamon Museum, and two rooms containing Near Eastern Architecture.

See ART EXHIBITIONS.

ART SALES. Although the trade in works of art suffered in the general depression, the change was not considerable. There were many optimistic statements about the stability of the art market to the effect that the prices of generally accepted works of art had shown little decrease. On the other hand many people felt that prices of art objects in recent years had been out of proportion to their real value, that fewer and fewer authentic pieces were coming into the market, and that the expected decline in both quality and quantity had definitely begun in 1930. It is certainly true that the supply of masterpieces cannot last forever, especially since a large portion leaves the market permanently each year in going to museums, but as long as private collections continue to change hands a certain number of art treasures will be available. Few spectacular sales were held in America; the dispersal of the famous Figdor Collection in Berlin and Vienna would, however, add interest to any season.

The Figdor sale was undoubtedly the most important one of the year. This large and valuable collection was formed in a spirit now more the exception than the rule, that of personal discrimination and regard for artistic rather than financial value. The result was that rare phenomenon of the modern art market, a group of

works of art whose authenticity is not to be challenged. The auction of the first section of the first part took place in Vienna early in June and included an important group of medieval and Renaissance furniture, tapestries, textiles, and silver ware. The 810 items realized about \$1,300,000. The highest price, \$100,000, was paid for a Tournai tapestry of the fifteenth century, "Dispensing Justice," which went to the Copenhagen Museum. A Brussels tapestry of Ahasuerus and Esther brought \$28,000, and a small Swiss panel showing wild men and animals, \$17,150. The highest price for furniture was \$21,430 paid for a chest from Lindau. The famous Strozzi chair brought \$20,000 and a traveling chest bought for the Pennsylvania Museum, \$8000. A Nuremberg antependium of the fifteenth century showing the Adoration of the Magi was sold for \$14,300 and one showing the Death of the Virgin, \$24,300. The second section of the sale, at which paintings, sculpture, etc., were sold, was held in Berlin in September. The highest price, \$96,250 was brought by the "Prodigal Son" by Jerome Bosch. Other prices were: Statue of Saint Sebastian by Riccio, \$37,000; bridal box with lovers, painted by Domenico Bartolo, \$30,000; "Saint Augustine in his Study" by Giovanni di Paolo, \$25,000; Virgin and Child in landscape by Giovanni di Paolo, \$34,000; and Saint Ursula setting forth for the hunt, \$10,000.

The sale in London of the famous Lansdowne Collection of antique marbles was a rare occasion since it is not often that museums and collectors have an opportunity of choosing from so large a group. The bulk of the collection was formed in the eighteenth century and reflects the taste of that period in the numerous Roman works, but there were a number of exceptionally fine Greek pieces also. A Pentelic marble statue of a wounded Amazon brought the highest price, \$141,750. The second large payment was \$25,250 for the fragment of an attic sepulchral relief, and the third \$24,150 for a Heracles of Pentelic marble from Hadrian's Villa. The total of the sale was \$342,150.

The Vieweg Collection of Brunswick was sold in the spring with a total of \$220,000 and not a very high average of prices. The Dutch paintings of the eighteenth century excited the greatest interest. Some of the prices are as follows: "Haarlem Bleaching Ground," by Ruysdael, \$30,500; Lunette by della Robbia from the church of San Michele Arcangelo in Faenza, \$23,000; Brussels woven hanging of about 1530, \$12,250; "Virgin and Child" by the Brussels Master, \$10,250; "Ice Pleasures," by Hendrik Averkamp, \$7040; "Children with a Cat," by Jan Steen, \$5060.

A five-day auction of prints at Boerner's, many of which were the property of the Soviet government, was one of the most brilliant events of the season and brought a total of 1,300,000 marks. The highest price was 53,000 marks for a drawing by Moreau le Jeune. A rare engraving of a fountain by Master W with the Key was sold for 33,000 marks, "Christ's Entry into Jerusalem," an early woodcut, for 30,000 marks, and a playing card by Master E S for 21,000 marks.

Another sale of prints of old masters in Berlin in the spring brought record prices: "The Life of Mary," 130,000 marks; "Erasmus of Rotterdam," 62,000 marks; "The Sea Monster," 6400 marks; and "Christ on the Mount of Olives," 6000 marks, all these by Dürer.

At Christie's in June important pictures by

old masters, chiefly of the British school, were sold, the property of the Duke of Leeds, Lord Cavan, and others. The 131 lots totaled £52,486. The market for the British school was apparently somewhat affected by business depression. The highest prices were: "Miss Margaret Ingles" by Raeburn, 6800 guineas; two other portraits by Raeburn, 3400 guineas and 850 guineas; "Janet, Lady Anstruther" by Reynolds, 2900 guineas.

In May the medieval art collection of Dr. Leopold Seligmann of Cologne was sold with a total of 350,000 marks. An Egyptian ivory plaque brought 45,000 marks and an antependium of about 1000 A.D. 42,000 marks.

The most notable auction of the year in America was that of the remainder of the Havemeyer Collection, that is, that part not given to the Metropolitan Museum. The paintings, ancient glass, Mohammedan, and Italian decorative arts, and Far Eastern art reached a total of \$374,366. The paintings alone totaled \$241,315. The following are some of the pictures and the prices they brought: David, a portrait of a young girl in white, \$26,000; Cezanne, "L'Enlèvement," \$24,000; Goya, "Lady with a Guitar," \$21,000; El Greco, "Saint Peter," \$15,000; Manet, portrait of Marguerite de Conflans, \$10,500; three pictures by Mary Cassatt, "La Femme au Tournesol," \$8500, "Sa Famille," \$5500, and "Jeune Femme Allaitant son Enfant," \$48,000; Delacroix, "Expulsion of Adam and Eve," \$3500; William Kalf, "Still Life," \$3700; Monet, "Morning Haze," \$2600.

The sale of the Flaydeman Collection in January was significant in showing that there is a continued demand for early American furniture of high quality. The total amount, \$429,840, was second only to that of the Reifsnnyder sale of the previous year. The average of prices was high and the attendance broke all records. The highest price, \$30,000, went for a labeled Seymour tambour secretary, and the second highest, \$29,000, for a carved mahogany Chippendale claw-and-ball tea table.

The sale of Col. James Elverson's collection brought \$132,635. There were fifty paintings, most of them by masters not in the heyday of their fashion. The five Corots brought interesting prices. One of them, "Les Baigneuses des Iles Boromees," \$41,000, was sold for \$900 more in 1926. Three, "Au Bord d'une Riviere," \$14,000, "Morning," \$11,000, and "La Vachere de Ribagnac," \$8000, had increased in value. "Les Trois Commeres au Bord du Lac" went for \$10,000.

The Roerich Collection, which contained a number of interesting paintings, reached a total of \$114,165. The top prices were as follows. "The Virgin and Saint Anne" by El Greco, \$9500; "Ecce Homo" by the Master of the Virgo inter Virgines, \$7000; "Tobias and Sarah" by Jan Steen, \$5500; "Holy Family with Saints" by Herri Met de Bles, \$4500; "Madonna and Child" by Simone Martini, \$4000; "Adoration of the Magi," school of Gerard David, \$4000.

The sale of the Benguiat Collection, which brought \$214,902, established a new record price of \$20,000 for an Italian Renaissance table. Comtesse de la Bérandiere's collection brought \$277,455 for the 467 pieces auctioned in December. The most important sale was the \$80,000 paid for Houdon's marble bust of Comtesse de Labrau.

ASHANTI. See GOLD COAST.

ASIA. See CHINA, JAPAN, SOVIET CENTRAL ASIA, and the other articles on the subdivisions

of the continent. See also the articles on **ARCHAEOLOGY** and **EXPLORATION**.

ASIATIC BEETLE. See **ENTOMOLOGY**, **ECONOMIC**.

ASIR. See **ARABIA**.

ASSOCIATION AGAINST THE PROHIBITION AMENDMENT. See **PROHIBITION**.

ASSOCIATION FOOTBALL. See **SOCCER**.

ASSUAN or ASWAN. See **DAMS**.

ASTRONOMY. The mathematical prediction by Leverrier which led to the discovery of the planet Neptune by Galle, on Sept. 23, 1846, is justly regarded as one of the greatest intellectual achievements of man. During the half century after Herschel's discovery of Uranus, the motion of the latter was found to be unmistakably different from that which would have been produced by the gravitational attractions of the sun and the then known planets; and this difference indicated the presence of still another planet beyond Uranus. From the discrepancies between the predicted positions of Uranus in the sky and the actual positions from night to night, Leverrier and Adams, independently of each other, calculated the position of the hitherto unseen planet which by its attraction on Uranus was producing these discrepancies; and after a brief search the planet was found, less than a degree from the calculated position.

Throughout the 84 years since the discovery of Neptune, it has been realized that one or more additional planets, still more remote from the sun, might exist. The influences which such planets would exert on the motion of Uranus would be almost too small to detect with certainty; and the deviations, if there be any, of the actual motion of Neptune from that which would be produced by the attractions of the known bodies of the solar system cannot be determined accurately until observations have been made throughout at least one complete revolution of Neptune around the sun. However, the minute irregularities in the motion of Uranus which still remain unexplained after allowance has been made for the attraction of Neptune, together with some of the characteristics of cometary orbits, have led several investigators to suspect the existence of at least one more planet. The most comprehensive study of this problem was that of the late Percival Lowell, who concluded that the unexplained perturbations of Uranus indicated the presence of a Trans-Neptunian planet situated either in Gemini or else in the diametrically opposite region of the sky. A systematic search for this object was commenced at the Lowell Observatory in 1905; and the long-sought planet, to which the name Pluto has been given, was finally discovered in Gemini, by C. W. Tombaugh, on a photograph taken Jan. 21, 1930.

A Trans-Neptunian planet would inevitably be so faint and slow-moving that its actual detection could be accomplished only by photography. Two plates of the same region of the sky, taken at different times, are compared with an instrument known as the blink comparator; if, among the thousands of stars on the plates, any one has moved between the two exposures, it can easily be picked out with the aid of this instrument. The delay in the discovery of Pluto was due to the fact that the telescopes at first used in the search were of insufficient light-gathering power; in his calculations, Lowell had overestimated the magnitude of the perturbative effects that were being

exerted on Uranus, and had predicted too large a mass and too great a brightness for the disturbing planet. As the search continued without success, it was realized that the planet must be fainter than had been expected, and that more powerful instruments were needed; a new 13-inch high-speed triple objective, with wide field and sharp definition, was presented to the Observatory by Lowell's younger brother, President A. Lawrence Lowell of Harvard University, and within a year after this lens had been put into operation, an object of the fifteenth magnitude was discovered which, after being observed for several weeks, was found to be moving just as was to be expected were it the Trans-Neptunian planet predicted by Lowell. Announcement of the discovery was made on March 13, 1930, the 149th anniversary of the discovery of Uranus, and the 85th anniversary of Lowell's birth.

A large number of observations of the new planet were accumulated before conjunction with the sun took place, but they proved to be insufficient for a reliable determination of the orbit because they covered too small a portion of the complete path of the planet about the sun; the apparent motion of such a distant body is so slow that even very minute inaccuracies in the observations lead to serious errors in the computed orbit. The first computations that were attempted indicated an orbit so peculiar as to give rise to suspicions that the body was merely an unusual comet, or at least not the planet that Lowell had predicted; meanwhile, however, photographs made in past years at other observatories were being searched, and the planet was found on plates taken in 1919, 1921, and 1927. The orbit determined from 136 observations that extended from December, 1919, to June, 1930, left no doubt of the truly Trans-Neptunian planetary character of the body, and has accurately represented the observed motion since reappearance after conjunction.

The orbit, which agrees closely with that predicted by Lowell, has the high eccentricity of 0.25, and is inclined $17^{\circ} 9'$ to the plane of the ecliptic; this large inclination increased the difficulty of finding the planet. The mean distance from the sun is nearly 40 astronomical units, and the period is over 240 years; the planet is due at perihelion about 1989. Near perihelion, the orbit overlaps that of Neptune, so that over a short arc Pluto comes closer to the sun than Neptune does. The mass and the size of Pluto seem to be comparable with the mass and the size of the earth.

COSMOLOGY. According to the Theory of Relativity, space is curved; and hence the universe, though unbounded, is finite, somewhat like the two-dimensional space formed by the surface of a sphere. Einstein's theory of cosmology ascribes the curvature of space wholly to the presence of matter. In the alternative cosmological theory developed by de Sitter, however, it is supposed that even a universe totally devoid of matter would possess a curvature, due to the inherent properties of space and time; and that the additional curvature introduced into the actual universe by the presence of matter is insignificant in comparison with the inherent curvature, because of the relative sparseness with which this matter is distributed. Now, Lemaitre has shown that an Einstein universe would be unstable, and that it would expand indefinitely, and approach continually closer and closer to the condition of an empty

de Sitter universe as the matter became more and more sparsely distributed. The universes of Einstein and de Sitter are the two limiting cases of all possible universes, and it may be supposed that the actual universe is now at some stage of its progress from the former toward the latter; we should therefore expect to find astronomical bodies to be receding from each other in general, but were this the explanation of the observed apparent recessions of the remote spiral nebulae, the initial stage, when these nebulae were all closely congregated together, would have to have been only a few thousands of millions of years ago, whereas there is abundant evidence that the universe is millions of millions of years old.

Although there can be no doubt that the spirals on the whole are receding, it does not seem possible that any large part of the displacements of the lines in nebular spectra can be due to motion in the line of sight such as would be produced by a general expansion of space. In de Sitter's theory, distance in itself produces a displacement of the lines in the spectra of remote objects, but neither this nor any of the other known causes of displacements toward the red seems capable of accounting fully for the observed characteristics of the actual displacements.

Zwicky has suggested, however, that light may be reddened in its journey through space, as well as changed in direction, by the gravitational attraction of the matter near which it passes. To test this suggestion, P. ten Bruggencate has examined the spectra of a number of globular clusters so selected as to be at about equal distances, but such that the amount of intervening matter which their light must pass on the way to the earth varies greatly from one to another; a systematic line displacement to the red was found, which instead of being the same for all the clusters as it should if due to an expansion of space, was nearly proportional to the amount of intervening matter as required by Zwicky's theory.

EXTRAGALACTIC SYSTEMS. With the 100-inch telescope and a new high-speed, short-focus spectrographic objective (designed for use ultimately with the 200-inch telescope), spectra so faint that they formerly could not be photographed, have been obtained by Humason. In the spectrum of a faint nebula in Ursa Major, obtained by exposing the plate on nine different nights for a total of 45 hours, the lines have a displacement that corresponds to a recession of 7200 miles per second; the proportionality of line displacement to distance indicates this nebula to lie 75,000,000 light years away, in good agreement with Hubble's estimate from the brightness. Shapley estimates the most remote of the Coma-Virgo systems to be 170,000,000 light years distant; and he has recently studied a cloud of galaxies in Centaurus which apparently lies at a distance of about 150,000,000 light years.

The external galaxies are distributed largely in groups and great clusters, but when large enough volumes of space are considered this tendency to cluster averages out, and the distribution in space is found to be approximately uniform out to as great a distance as existing telescopes can reach. The faintest extragalactic nebulae identifiable as such on photographs taken with the 100-inch telescope are estimated to lie at an average distance of 300,000,000 light years; within the region of space observable with this

instrument, there are probably about 30,000,000 galaxies, each of which is a great stellar system similar to the Milky Way.

STRUCTURE OF THE GALACTIC SYSTEM. The galaxy is known to have many of the characteristics of a spiral nebula; and since the spectroscope shows the spirals to be in rapid rotation, the recent discovery that the galactic system likewise is rotating constitutes additional evidence for the essential similarity of the galaxy to a typical spiral: The possible rotation of the stellar system has long been a subject of speculation, but until recently such discussions rested on very uncertain foundations. The first direct evidence of a galactic rotation was presented in 1926 by Lindblad, who perceived that some of the puzzling systematic motions of the stars which modern observations had brought to light indicated the galactic system to be composed of a number of component subsystems, approximately concentric with one another and rotating with different speeds about a common axis perpendicular to the galactic plane. The component system having the most rapid rotation, and consequently the smallest random or peculiar motions, is composed of the local cluster, the Milky Way star clouds, and the majority of the rest of the stars. The so-called "high velocity" stars belong to systems with slower rotations and higher random motions; the members of these systems appear to move much faster than the stars in our own system, because of the high rotational speeds (amounting to 300 kilometers per second) of the latter. The globular clusters, which have radial velocities of the order of 300 kilometers per second, compose the most slowly rotating system of all. The motion of the sun about the centre of galactic rotation explains the peculiar preferential motions that were discovered sometime ago by Strömberg: The heavenly bodies seem to be distributed among several groups which are each moving as a whole, like a great swarm, along nearly the same direction in space, while the members of each group fly about within the group in all directions with speeds which are greater the greater the speed of the group; the direction of this asymmetry in celestial motions is nearly in the galactic plane, and at right angles to the centre of the galactic system. The rotation of the galaxy also explains the phenomena of star-streaming.

In 1927, Oort developed a mathematical formulation of Lindblad's theory; and by an analysis of the distribution of observed radial velocities among the stars, he showed these radial motions to be identical with those that would be produced by a galactic rotation. More recently, J. S. Plaskett has shown that the radial velocities of the stars of spectral types B and O provide conclusive evidence of a rotation of the galaxy, and, moreover, that the diffuse interstellar matter which gives rise to the fixed lines in stellar spectra is uniformly distributed throughout at least the region of space occupied by the B and O stars, and partakes of the galactic rotation. Under the centrally directed force which results from the mutual gravitational attractions of the stars, the latter move in nearly circular orbits around a massive centre, about 36,000 light years distant, in galactic longitude 234° ; the period of rotation is probably about 230,000,000 years.

The galactic system as outlined by the globular star clusters differs from the spiral nebulae, however, in that its dimensions are much greater

than those of any spiral yet observed. Now, the globular clusters avoid the Milky Way, and their distribution shows practically no relation to that of the stars in general. The open star clusters, on the other hand, are concentrated near the galactic plane, and are intimately related to the star clouds of the Milky Way; furthermore, in the arms of some of the nearer spirals, nuclei with all the characteristics of the galactic open clusters are found, and some of those in M33 are partly resolvable into stars. There is thus every reason to believe that the space distribution of galactic clusters is similar to that of the stars in general, and that these, rather than the globular clusters, therefore outline the Milky Way system.

Trumpler has recently devised statistical methods for estimating the distances of open clusters, and has found that while the space distribution of these clusters indicates the Milky Way to be a highly resolved spiral, the dimensions thereby implied for the stellar system are far less than those inferred from the globular clusters, the distribution of faint stars, and the phenomena of the galactic rotation: The system of open clusters is only about 3500 light years thick and 35,000 in diameter, with a centre, 1200 light years distant, in galactic longitude 247° ; the sun is 35 light years north of the plane of symmetry of this system. These dimensions are comparable with those of the Andromeda nebula and of M33.

Trumpler therefore concludes that the globular clusters do not form an integral part of the galaxy; rather, as previously suggested by Lundmark, the globular clusters and the Magellanic Clouds, together with the Milky Way system as outlined by the galactic clusters, form an aggregation of separate systems, to which may also belong another large system, partly hidden by obscuring matter, in the region of Sagittarius. A similar conclusion has recently been reached by Shapley from a study of the extragalactic aggregations of nebulae; he considers the galactic system as a whole to be in reality neither an uncommonly large spiral nor a single unified star system, but a discoidal aggregation of individual galaxies which is a counterpart of such supergalaxies as the Coma-Virgo and Centaurus clouds. The local cluster, the Magellanic Clouds, and the great Milky Way star clouds are each typical galaxies, similar to the individual extragalactic nebulae; the star cloud in Sagittarius in this case appears analogous to the Andromeda nebula. The Orion nebula with its involved stars, the Pleiades, and other similar groups, form nebulous knots in the local system; according to Mineur, observed stellar motions may be interpreted as due to a rotation of the local cluster rather than of the whole galactic system.

The local aggregation of galaxies includes the globular clusters, but such nearby spirals as M31 and M33 may or may not belong to this aggregation. The Centaurus cloud seems to resemble the local supergalaxy more nearly than does any other system now known; this remote cloud is a distinctly discoidal aggregation comprising over 2000 separate galaxies, with many of its component members in actual contact with each other; the whole system is about 7,000,000 light years in diameter, and the largest member has about the diameter of the Andromeda nebula.

ASTROPHYSICS. Milne has investigated the internal physical constitution of the stars by a method essentially different from those used by

previous investigators, and has obtained a solution of the problem which appears to be free from the difficulties involved in the conflicting theories of Eddington and Jeans. Milne assumes only that the stars are in mechanical equilibrium, and that the *outer parts* are perfect gases in radiative equilibrium. Nothing is assumed a priori about the condition of the interior, the mean molecular weight, or the internal distribution of the source of energy; it is supposed, however, that no matter what the mass, the opacity, or the energy distribution may be, there is some distribution of density, temperature, and pressure for which the star will be in equilibrium and the surface emission will equal the internal generation of energy.

Milne's investigations lead to the conclusion that the distribution of mass which results from Eddington's theory is unstable. In the stable distributions, the density and the temperature tend to very high values as the centre is approached, and before the centre is reached the gas laws must cease to apply. A star must have a central nucleus of white dwarf type, with a temperature of perhaps 100,000,000,000 degrees and a density probably equal to the maximum of which ionized matter is capable. In this intensely hot and dense nucleus, the transformation of matter into radiation can take place with ease. Luminosity cannot be predicted from mass by the general laws of physics, and the mass-luminosity law is a consequence of the special conditions under which energy is liberated in the stellar interiors.

The origins of many hitherto unidentified lines in celestial spectra have recently been discovered: Some of the bands in stars of type N and in comets have been found to be due to isotopes of carbon. Struve has found five previously unidentified lines in 88 Gamma Pegasi, type B2, to belong to doubly ionized aluminum; several lines are due to doubly ionized phosphorous, an element not previously found in any celestial source because all the lines in the neutral spectrum lie in unobservable regions of the spectrum, and very high temperatures are necessary to bring out the ionized spectra. "Forbidden" lines of metastable iron atoms have been found in the spectra of about twenty stars, including the bright-line spectrum of the famous southern variable Eta Carinae in which numerous strong lines had hitherto remained unidentified. The familiar sodium lines have been found bright, for the first time in a stellar spectrum (except for novae), in H.D.190073.

From a study of the widths and intensities of spectral lines, Struve and Elvey have succeeded in measuring the speed of axial rotation of a number of stars. Many stars of early spectral types were found to be rotating with great rapidity; the equatorial velocities of rotation of Eta Ursae Majoris and the brighter component of Alpha Virginis are about 200 kilometers per second.

The apparent general recession of the fainter B stars has been shown by J. S. Plaskett to be due to the rotation of the galaxy; that of the brighter ones is due mainly to group motions among the bright southern B stars, but partly to the Einstein spectral shift in these massive bodies.

From the tilting of the lines in the spectra, Moore has found the rotation periods of Uranus and Neptune to be about 11 hours and 16 hours, respectively; both rotations are direct.

The polarization of the light from the moon and the planets has been extensively studied by Lyot. Among other results, he finds that the surface of the moon is probably covered with volcanic ash, and that the atmosphere of Mercury cannot be more than $1/50$ as dense as that of the earth; the atmosphere of Venus seems to be filled with minute water droplets, much smaller than those which compose terrestrial clouds.

ASTRONOMICAL PHENOMENA. A central eclipse of the sun occurred on April 28, 1930; over a belt barely half a mile wide, extending from California to Montana, within which the tip of the moon's shadow just grazed the earth, the eclipse was total for about one second, while elsewhere along the central track it was annular. The entire width of the path of totality was less than the error which may, because of the irregular topography of the moon's limb and the uncertainties in the motions of the earth and the moon, be made in calculating the location of an eclipse path; stations were therefore established at three different places by the Lick Observatory, to make certain that observations of the corona would be secured. Observations of the moon made as late as March 12 were used in the final computations; the location of the path was calculated to within 100 feet, and proved to be quite accurate. The total eclipse of October 21 in the South Pacific was also successfully observed by several parties.

Seven comets appeared during 1930, including a return of Tempel II. Striking displays of Leonid meteors were seen during the morning of November 17 by a number of observers, and it seemed probable that a really great shower might occur about 1932 or 1933.

The minor planet Eros approached to within about 16,000,000 miles of the earth on Jan. 30, 1931; and an extensive program of observations for the redetermination of the solar parallax and the mass of the moon was in progress during the closing months of 1930.

NECROLOGY. Asaph Hall, January 12; Herbert Hall Turner, August 20; Father John George Ilagen, S.J., September 6.

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ASTROPHYSICS. See ASTRONOMY.

ATHLETICS. TRACK AND FIELD. A mid-Olympiad year of unusual activity in track and field events was featured by the 100-yard sprints of Frank Wykoff, of the University of Southern

California, who twice ran the "century" in $9\frac{1}{2}$ seconds without aid of starting blocks. He was officially credited with a new world's record for the event by the National Amateur Athletic Union. Wykoff won all of the premier 100-yard varsity championships in the United States in 1930, but did not compete in national championships. His closest rival was George Simpson of Ohio State University, who ran 100 yards in $9\frac{1}{2}$ seconds in 1929, but with the aid of starting blocks disapproved by the International Amateur Athletic Federation in May, 1930.

Paul Jessup, of the University of Washington, established a world's discus record of 169 feet $8\frac{1}{2}$ inches. An American javelin record of 222 feet $6\frac{1}{4}$ inches was made by Jas. DeMers of the Los Angeles A.C. and Herman Brix, of the same club, set a new American shotput record of 52 feet $5\frac{1}{4}$ inches. Closely rivaling Brix in the shotput was Harlow Rothert, of Stanford University, who became American collegiate champion with a heave of 52 feet $1\frac{1}{4}$ inches. Other outstanding performers of the year were Steven Anderson, of the University of Washington, who equaled the world's record of $14\frac{1}{2}$ seconds for the 120-yard high hurdles; Ralph Hill, of the University of Oregon, credited with a new American mile record of 4 min. $12\frac{1}{2}$ sec.; Russell Chapman, of Bates College, winner of the 880-yard intercollegiate championship in 1 min. $52\frac{1}{2}$ sec.; the Harvard mile relay team (Vincent Hennessey, Francis Cummings, Vernon Munroe, and Eugene Record), which set a new world's indoor record of 3 min. $20\frac{1}{2}$ sec.; Dr. Paul Martin, of Switzerland, winner of the American national 1000-yard title in 2 min. $12\frac{1}{2}$ sec., and Ray Conger, who remained national champion in the mile. Wilson Charles of Haskell Institute, an Oneida Indian, won the decathlon title of the National Amateur Athletic Union at Pittsburgh August 25. Miss Stella Walsh (Stanislawa Walasiewicz) of the New York Central A. A. of Cleveland smashed 11 American and world's records in women's sprint events during the year.

Track and field teams representing the United States and the British Empire met before 45,000 people at Soldiers' Field, Chicago, on August 27, in the most notable international competition of the year. The American team won 9 of the 14 events, making a clean sweep of the six field events and capturing the 400-yard relay, 480-yard shuttle hurdle relay, and the 1-mile medley relay. The Chicago meet was preceded by the Empire Games at Hamilton, Ontario, August 23, which were won by the English team, followed by Canada, and South Africa, in the order named.

A team of American athletes visited Europe during the summer, with marked success, and Princeton and Cornell defeated a combined Oxford-Cambridge squad in England. The National Collegiate Athletic Association and the Amateur Athletic Union, meeting at Washington November 19, unanimously elected Avery Brundage, head of the A. A. U. as president of the American Olympic Association. The A. A. U. during the year received an endowment fund of \$2,000,000 to be used for the advancement of athletics. See UNIVERSITIES AND COLLEGES.

ATLANTA, GEORGIA. See GEORGIA under *Political and Other Events*.

ATMOSPHERE. See METEOROLOGY.

ATOMIC WEIGHTS. See CHEMISTRY.

ATOMS; ATOMIC THEORY. See PHYSICS.

AUBURN PRISON OUTBREAKS. See CRIME.

AUER, ou'ér, LEOPOLD. A Hungarian violinist, died in Dresden-Loschwitz, Germany, July 15, 1930. He was born in Veszprim, Hungary, June 9, 1845, and studied at the Budapest and Vienna Conservatories and in Hanover under Joachim. He made his début in Leipzig in 1866 at one of the Gewandhaus concerts. From the first he was recognized as a virtuoso, his playing being characterized by extraordinary technical skill, depth of conception, and remarkable beauty of tone. From 1863 to 1865 he was concert master in Düsseldorf, and from 1866 to 1868 he held the same position in Hamburg. In 1868, through the influence of Anton Rubinstein, he succeeded Henri Wieniawski as professor of the violin at the Imperial Conservatory in St. Petersburg (now Leningrad) and as violin soloist to the Russian court. He also was conductor of the symphonic concerts given by the Imperial Musical Society in St. Petersburg from 1887 to 1892. Having become a Russian subject in 1883, he was created a hereditary noble in 1895 and a state counselor in 1903, and in 1912 was presented the Grand Cross of the Order of Stanislaus by Czar Nicholas II. After the outbreak of the Russian Revolution he decided to move to the United States, becoming associated with the Institute of Musical Art in New York City and the Curtis School of Music in Philadelphia. In 1926 he was naturalized. He gained his greatest fame as a violin teacher, having undoubtedly trained more artists who subsequently attained world-wide renown than any other teacher. Among these were Mischa Elman, Efrem Zimbalist, Jascha Heifetz, Toscha Seidel, and Max Rosen. His works include: *Violin Playing as I Teach It* (1921); *My Long Life in Music* (1923); and *Violin Masterworks and Their Interpretation* (1925).

AUGSBURG CONFESSION. QUADRICENTENAL ANNIVERSARY OF. See CELEBRATIONS; LUTHERAN CHURCH.

AUSTRALIA, COMMONWEALTH OF. A self-governing dominion of the British Empire, consisting of the six original states (formerly colonies) of New South Wales, Victoria, Queensland, South Australia, Western Australia, and Tasmania, together with the Northern Territory and the Federal Territory, and comprising the island continent of Australia with its dependencies. Capital, Canberra.

AREA AND POPULATION. With an area of 2,974,581 miles, Australia had an estimated population on Mar. 31, 1930, of 6,429,207, as compared with 6,356,770 a year earlier. The area of the several states, with the respective populations on March 31 in 1929 and 1930, is shown in the accompanying table compiled from estimates of the Commonwealth Statistician.

AREA AND POPULATION OF AUSTRALIA

| States and Territories | Area in square miles | Population Mar. 31, 1929 | Population Mar. 31, 1930 |
|---------------------------------|----------------------|--------------------------|--------------------------|
| New South Wales .. | 309,432 | 2,457,127 | 2,483,645 |
| Victoria | 87,884 | 1,766,378 | 1,783,649 |
| Queensland | 670,500 | 919,251 | 934,643 |
| South Australia ... | 380,070 | 579,665 | 580,249 |
| Western Australia .. | 975,920 | 408,486 | 417,423 |
| Tasmania | 26,215 | 213,481 | 215,969 |
| Northern Territory .. | 523,620 | 4,024 | 4,584 |
| Federal Capital Territory | 940 | 8,358 | 9,045 |
| Total | 2,974,581 | 6,356,770 | 6,429,207 |

The excess of births over deaths in the calendar year 1929 was 68,624 (74,700 in 1928), while the excess of immigration over emigration was 8963 (27,232 in 1928), making a total estimated increase for the year of 77,587 (101,932 in 1928). The birth rate in 1929 was 20.31 per 1000 of mean population; the death rate was 9.55. Marriages in the same year numbered 47,501 (48,592 in 1928). The above figures do not include full-blooded aborigines, estimated at about 600,000. The population of the capital cities on Jan. 1, 1930, with figures for Jan. 1, 1929, in parentheses, was as follows: Sydney, New South Wales, 1,238,660 (1,127,470); Melbourne, Victoria, 1,018,200 (1,000,000); Brisbane, Queensland, 318,031 (308,580); Adelaide, South Australia, 324,898 (330,217); Perth, Western Australia, 202,888 (196,251); Hobart, Tasmania, 57,500 (56,730). Canberra, the Federal capital, had 6878 inhabitants on June 30, 1929.

EDUCATION. Primary education is compulsory and free throughout the Commonwealth and state aid is extended to the higher state schools, the secondary schools, and the universities. In 1927, there were 10,208 state schools, with 30,992 teachers and 901,326 enrolled pupils. Private schools in the same year numbered 1763, with 9753 teachers and 235,074 pupils. The six state universities (at Sydney, Melbourne, Brisbane, Adelaide, Perth, and Hobart) had 7959 students. For details of education in the respective states and territories, consult the individual articles.

PRODUCTION. Of the total area of Australia in 1927, 116,558,492 acres, or 6.12 per cent, were alienated; 62,566,568 acres, or 3.29 per cent, were in process of alienation; and 970,604,140 acres, or 50.98 per cent, were held under various forms of leases and licenses. The estimated value of all production in 1928-29 was £447,863,000 as compared with £452,869,000 in 1927-28. The value of production by principal industries is shown in the accompanying table. The record production value of £454,106,000 was established in 1924-25.

VALUE OF AUSTRALIAN PRODUCTION, YEARS ENDED JUNE 30

| Item | 1927 Thousand | 1928 Thousand | 1929 Thousand |
|-----------------------------------|------------------|------------------|------------------|
| Agricultural | £ 98,295 | £ 84,328 | £ 89,440 |
| Pastoral | 111,716 | 124,554 | 116,733 |
| Dairy, poultry, bee farming | 46,980 | 50,261 | 50,717 |
| Forestry and fisheries | 12,790 | 12,181 | 11,617 |
| Mining | 24,007 | 22,983 | 19,597 |
| Manufacturing | 153,634 | 158,562 | 159,759 |
| Total | 447,422 | 452,869 | 447,863 |

The total area under all crops in 1928-29 was 21,189,557 acres, of which 14,840,113 acres were devoted to wheat. The area and yield of the principal crops in 1928-29 was reported by the Commonwealth Statistician as follows: Wheat, 14,840,113 acres, 159,679,421 bushels; oats, 1,045,670 acres, 14,108,677 bushels; maize, 315,140 acres, 8,322,718 bushels; hay, 2,738,673 acres, 3,175,238 tons; sugar cane, 209,357 acres, 3,883,725 tons (cane sugar, 537,574 tons). Final estimates for 1929-30 placed the wheat yield at 126,476,863 bushels from 14,930,774 acres and the sugar cane yield at 3,763,009 tons (cane sugar, 527,832 tons) from 312,445 acres. For 1930-31, the wheat crop was estimated at 215,000,000 bushels. At the end of 1929 there were 106,117,278 sheep, the wool clip from which totaled 968,152,935 pounds in the year ended June 30, 1929.

For 1929-30, the wool clip, as in the grease, was estimated at 910,000,000 pounds. Other livestock in the country at the beginning of 1929 included 11,300,757 cattle, 1,942,753 horses, and 910,181 swine. The principal dairy produce in 1928-29 consisted of butter, 289,883,200 pounds; cheese, 30,217,101 pounds; bacon and ham, 74,499,397 pounds.

Mineral production has shown a steady decline from a total of £24,645,914 in 1924 to £19,596,634 in 1928. Preliminary figures for the production of the leading minerals in 1929, with final figures for 1928 in parentheses, were as follows: Gold, £1,807,411 (£1,944,054); silver and lead, £3,168,949 (£2,687,126); copper, £1,052,025 (£639,428); tin, £458,680 (£664,030); coal, £8,674,587 (£10,695,530). In contrast to mineral production, the value added by processes of manufacture steadily increased from a total of £155,424,259 in 1925-26 to £167,623,316 in 1928-29. In the latter year, there were 22,916 factories, with 450,482 employees and a gross value of output of £420,445,288. Chief among the manufacturing industries were those producing foods and drinks, metal works and machinery, clothing and textile fabrics, books, paper and printing, heat, light and power, wood working, stone, clay and glass articles, and vehicles and harness.

With the continued decline in world prices for agricultural produce and raw materials, the value of Australian production fell off markedly in 1929 and 1930; unemployment increased, government revenues were sharply curtailed, and in general the Commonwealth experienced an economic depression of unprecedented magnitude. The unemployed were estimated by trade union officials at 130,000 in April, 1930, and at 180,000 the following August. The largest wage reductions in nine years were authorized by the various industrial tribunals following publication of cost of living figures for the quarter ended Mar. 31, 1930, showing a decrease of 3s. 6d. for the six capital cities. The extent of the depression was indicated by a decline of 53 per cent in the value of building permits issued during the period from January to April, 1930, as compared with the same period in 1929. See also under *Finance* and *History* below. Statistics of production, etc., for the individual states are given in separate articles on each.

COMMERCE. Australian foreign trade, including specie and bullion, declined sharply (by £32,515,515) during the fiscal year ended June 30, 1930, according to preliminary figures of the Dominion Statistician. Imports totaled £131,134,269, as compared with £143,647,881 in 1928-29, and exports, including £2,511,908 of reexports, were valued at £124,848,549, as against a total of £144,850,452 in the preceding year. The excess of imports in 1929-30 was £6,285,720, while in the previous year there was an export surplus of £1,202,571. Declines were registered in all but a few classes of imports, the chief reductions being in metals, metal manufactures, and machinery imports, which fell to £36,346,960 from £42,987,433 in 1928-29; in apparel, textiles, and manufactured fibres, which declined to £32,548,858 from £36,710,916; and in rubber and leather manufactures, £2,070,535 from £2,943,661. Preliminary figures for the 12 months ending with November, 1930, showed exports amounting to £92,000,000 in merchandise and £20,000,000 in gold (£120,000,000 in merchandise and £10,000,000 in gold in 1929). Imports were valued at

£100,000,000 in merchandise, as compared with £147,000,000 in 1929. About 21 per cent of all imports came from the United States.

Exports of animal substances, other than foodstuffs, totaled £43,855,413 in 1929-30 (£71,497,445 in 1928-29); of vegetable foodstuffs, £22,772,585 (£36,600,903); of animal foodstuffs, £14,362,380 (£15,884,314); of oils, fats, and waxes, £1,146,107 (£1,714,432). In contrast with the drastic decline in most export commodities was the increase in exports of gold and silver and of bronze specie from £3,926,520 in 1928-29 to £27,748,549 in 1929-30. Total merchandise exports in 1929-30 were valued at £97,100,000, as compared with £140,923,932 in 1928-29. For the year ended June 30, 1929, Great Britain supplied 38.98 per cent of the total imports (42.6 per cent in 1927-28), the United States, 24.53 per cent (23.36 per cent in 1927-28); Netherlands East Indies, 4.84 per cent (3.74); Canada, 3.33 (2.14); Japan, 3.26 (2.89); and Germany, 3.13 (3.10). The United Kingdom in 1928-29 purchased 38.5 per cent of all exports (37.6 per cent in 1927-28); France, 10.5 (10.7); Japan, 8.1 (9.0); and the United States, 3.9 (6.3).

FINANCE. For the fiscal year ended June 30, 1930, the Commonwealth treasurer on July 9, 1930, reported a deficit of approximately £1,470,164, bringing the accumulated deficit to a total of £6,457,882. This was to be covered temporarily by a loan appropriation of £7,000,000. On the basis of existing taxation the treasurer anticipated a deficit of £14,038,770 for the fiscal year 1930-31. Increased taxation proposed in the budget was expected to result in a slight surplus in 1930-31, as shown in the accompanying tables giving approximate actual receipts and expenditures in 1929-30 and those estimated for 1930-31.

AUSTRALIAN BUDGET OPERATIONS

| Revenue | Actual ^a 1929-30 | Estimate ^b 1930-31 |
|-------------------------------|--------------------------------|----------------------------------|
| Taxation: | | |
| Customs | £30,157,041 | £27,900,000 |
| Excise | 11,617,350 | 11,800,000 |
| Sales ..... | ..... | 5,000,000 |
| Land | 2,840,077 | 2,750,000 |
| Income | 11,120,030 | 10,100,000 |
| Estate duties | 2,122,478 | 1,800,000 |
| War-time profits | 14,680 | ..... |
| Amusements | 316,121 | 320,000 |
| Total taxation | 58,187,777 | 59,670,000 |
| Other revenue | 4,858,526 | 5,952,000 |
| Total governmental ... | 63,046,303 | 65,622,000 |
| From post office (surplus) .. | 564,703 | 1,500,000 |
| Grand total | 63,611,006 | 67,122,000 |
| Expenditure | | |
| War and repatriation | 30,118,569 | 30,326,925 |
| Defense | 4,104,328 | 3,748,950 |
| Special appropriations | 14,378,297 | 15,358,700 |
| Department's ordinary votes | 2,950,459 | 2,972,300 |
| Miscellaneous | 619,504 | 782,650 |
| Works | 131,585 | 37,765 |
| Total governmental ... | 52,302,742 | 53,227,290 |
| Payment to railways (deficit) | 690,386 | 630,200 |
| Payments to territories | 598,697 | 708,308 |
| Payments to States | 11,489,345 | 12,544,912 |
| Total | 65,081,170 | 67,110,710 |
| Deficit | 1,470,164 | ..... |
| Surplus ..... | ..... | 11,290 |

^a Approximate.

^b Including largely increased taxation.

The principal sources of the additional revenue provided in the 1930-31 budget were as follows:

New customs and excise duties, £5,700,000; sales tax, £5,000,000; additional postal charges, £1,000,000; increased income-tax rates, £850,000. To this total yield of new taxes and charges, aggregating £12,550,000, the government planned to add £1,600,000 representing the accumulated income arising from liquidation of ex-enemy properties, making a total of £14,050,000, thus balancing the budget. Customs revenues for the first quarter of 1930-31 totaled £7,470,000, or £2,455,000 below the estimate. The prospective deficiency for the year was then estimated at £12,500,000.

The total Commonwealth debt stood at £372,639,836 on June 30, 1930, as compared with £337,621,572 on the same date in 1929. The debt on account of the several states on June 30, 1930, totaled £727,639,836 (£726,406,490 on June 30, 1929), making a total debt for the Commonwealth and states of £1,100,597,198, or £170 17s. 6d. (about \$830), per capita. Of the Commonwealth debt, £282,390,532 represented obligations incurred in connection with the World War and £90,566,830 represented expenditures on public works, including the Federal Capital, and for other Federal purposes. See under *History* below.

COMMUNICATIONS. In 1928-29, there were 26,335 miles of Federal and State railway lines open for traffic, representing a capital cost for construction and equipment of £323,770,550. The aggregate gross earnings for the year were £48,816,000 (£48,186,000 in 1927-28) and the operating expenses were £38,517,000 (£38,358,000 in 1927-28), leaving aggregate net earnings for the year of £10,299,000. This, however, was exclusive of interest and capital charges. The Commonwealth Railways showed a deficit equivalent to \$1,713,500 after interest charges, and a surplus of about \$25,000 before. A definite plan for the adoption of a uniform railway gauge throughout the country, in place of three separate gauges in use on state railways in Victoria, New South Wales, and Queensland, was announced by the Federal government Jan. 14, 1930. The government offered to defray one-fifth of the expense, estimated at \$150,000,000. A new railway line between New Brisbane, Queensland, and Koygle, New South Wales, was opened Sept. 27, 1930.

Civil aviation has shown a steady expansion. In the nine months ended Mar. 31, 1930, commercial planes flew 2,271,135 miles (1,351,608 in the same period of 1928-29), and carried 77,022 passengers (44,825) and 152,864 pounds of goods (117,548). Daily air-mail service was inaugurated between Sydney and Melbourne in May, 1930. The number of overseas vessels entering and clearing the ports in 1929 was 3175 of 11,097,164 tons (3674 of 9,503,018 tons in 1928). Telephone service between the United States and Sydney, Australia, was inaugurated Oct. 27, 1930.

GOVERNMENT. The executive power is vested in the King, who acts through a Governor-General, assisted by an executive council of responsible ministers, who must be members of the Federal Parliament, comprising the Senate and House of Representatives. The Senate consists of at least six members from each of the original states, elected for six years, half of whom are renewed every three years; while the House of Representatives consists of approximately twice as many members as there are senators, the representation being apportioned among the several states according to the population shown at the last census. The number in the House in 1930 was 75 and in the Senate, 36. The composition of the

House following the election of Oct. 12, 1929, was: Labor, 46; Nationalist, 14; Country party, 10; Independents, 5. Governor-General at the beginning of 1930, Lord Stonehaven. The Labor Ministry, formed Oct. 22, 1929, was constituted as follows: Prime Minister, Minister for External Affairs, and Industry, J. H. Scullin; Treasurer, E. G. Theodore; Vice-President of the Executive Council and party leader in the Senate, J. J. Daly; Attorney-General, F. Brennan; Postmaster General and Minister for Works and Railways, J. A. Lyons; Trade and Customs, J. E. Fenton; Home Affairs, A. Blakeley; Health and Repatriation, F. Anstey; Defense, A. E. Green; Markets and Transport, P. J. Moloney.

HISTORY

Political developments in Australia in 1930 were mainly economic in origin, springing from the increasingly serious financial difficulties already evidenced in 1929. The Dominion was hard hit by the decline in the world prices for foodstuffs and raw materials. Wool and wheat are the main sources of the country's income, and the price decline resulted in financial stringency, with accompanying industrial and commercial depression, unemployment, and increased labor disputes.

In Australia's case the situation was aggravated by poor crop seasons and the fact that large post-war borrowings abroad and a constantly rising tariff wall had created an artificial standard of living with consequent high production costs. High costs handicapped the export trade in many primary products. The price slump brought the country face to face with two problems—how to export enough to pay for necessary imports and foreign debt charges, and how to meet the high costs of domestic production out of the lower prices prevailing. The country's annual buying power, it was estimated by the Federal Treasurer in March, had been reduced by £50,000,000, while the yearly oversea interest bill amounted to £30,000,000 and merchandise exports had declined to about £100,000,000 annually. In addition to its inability to meet current budget obligations, the Commonwealth had to meet internal maturing securities of approximately \$135,000,000 due in December, 1930; of \$220,000,000 due in 1931; \$350,000,000 due in 1933, and \$250,000,000 due in 1934.

The Labor government's plan of financial rehabilitation was to correct the adverse balance of trade by three methods—discouraging imports by a higher tariff, increasing exports by guaranteeing an artificial price for wheat and providing export bounties on other products, and restricting foreign loans to requirements for financing current oversea obligations. Additional taxation was imposed to offset the expected decline in customs revenues.

EMERGENCY MEASURES. Effective Apr. 4, 1930, the government introduced an emergency tariff measure which was expected to curtail imports by £20,000,000 annually. In the parliamentary debate on the measure the new tariff was characterized as the highest in the world and "the holdest and gravest experiment in economics perhaps in the world's history." About 100 articles, ranging from agricultural machinery to laundry blue, were placed on the prohibited list, to be imported only with the written consent of a Cabinet Minister. A second list, including intoxicants, smokers' accessories, matches, and other articles, was ra-

tioned, the importation being reduced to one-half of what it was in 1929. A third list contained articles rationed to one-half of the previous year's imports and on which the existing duty was increased by 50 per cent. The fourth and last list, covering a great variety of articles from motor chassis to nail brushes, was assessed only the 50 per cent surcharge over the former duty. Criticism of the tariff caused the Cabinet on May 14 to rescind the ban placed on many articles. Instead such articles were rationed to 50 per cent of the normal importations.

To increase Australian exports, the Cabinet secured passage of equally drastic measures during the session of the Federal Parliament which opened March 12. In May, a bill providing an export bounty of 1 shilling 9 pence (approximately \$0.43) per gallon on wine was adopted. Another government measure provided for the establishment of a compulsory wheat pool, provided the consent of the majority of wheat growers was obtained by plebiscite, and payment of a guaranteed price of 3 shillings (about \$0.73) per bushel at country railway stations.

The wheat pool bill had a political aspect similar to the Federal Farm Board act in the United States. It was intended to still the protests of the rural voters at the government's policy of fostering manufacturing industries by high protective tariffs, a policy which raised the prices of agricultural machinery and other farm needs. The agricultural protest had been effectively voiced by the comparatively rapid growth of the Country party as a new and significant factor in Australian politics. To bolster the sagging Australian exchange, the Commonwealth Banking Act was amended to authorize the Commonwealth Bank to take control of gold stocks and to control gold exports. Between July, 1929, and February, 1930, £17,000,000 in gold was shipped to London to strengthen the Australian pound without fresh borrowing.

After three months' trial of the extraordinary measures introduced in April, the government discovered that while imports had been gradually reduced, the tariff regulations had proved an encumbrance to necessary trade. Furthermore, domestic business had been seriously retarded by the stringent taxation and the budget, instead of balancing, showed signs of an increasing deficit. At this stage, Premier Scullin called in Sir Otto Niemeyer of the Bank of England to advise the government. On August 20, the Labor government agreed that if the budget for the year beginning July 1, 1930, failed to yield sufficient revenue after a three months' trial, a special session of Parliament would be called to reduce expenditures further. At the same time a meeting of Federal and State authorities adopted seven recommendations submitted by Sir Otto. The most important of these pledged to several states to balance their budgets in 1930-31 and successive years, obligated the Loan Council to postpone further overseas borrowing until after the repayment of existing overseas short-term debts, and provided that only reproductive public works would be undertaken during the emergency. A standing committee was appointed to watch the operations of the plan for financial rehabilitation, and it was agreed to examine the question of duplication of State and Commonwealth services. The conference extended a loan of £1,000,000 to South Australia, whose financial plight was acute, and arrangements were completed with the Bank

of England for funding some £36,000,000 of overseas liabilities on which the government was unable to meet payments.

At the end of the first quarter of the budget year the continuing deficit caused the Labor government to reduce appropriations for the year by an additional £4,000,000 (about \$20,000,000). These drastic measures promised to restore the nation's financial equilibrium. They were opposed, however, by the New South Wales Labor party and affiliated trade unions, which on August 27 voted to read out of the party any Labor members of the Federal Parliament who supported the Niemeyer programme. Repudiation of Australia's war debts and a moratorium for the Commonwealth's loans from overseas were demanded. Premier Scullin and his government immediately repudiated these policies. But the government's policy of retrenchment received a setback in the State election in New South Wales October 23, in which the Labor party under former Premier J. T. Lang won on a platform of opposition to the Niemeyer retrenchment programme (see NEW SOUTH WALES). Mr. Lang disclaimed any idea of debt repudiation. He offered as a solution of the economic difficulties the stimulation of industry, more rapid exploitation of Australian resources, organization of markets, and price stabilization.

Repercussions of the New South Wales election were seen in the general decline in the value of Australian loans on the London Stock Exchange and in the action of the Australian Federal Labor Cabinet on October 27 in voting to reject the Niemeyer proposals. The Cabinet acted during the absence of Premier Scullin and two of his colleagues, Brennan and Moloney, at the Imperial Conference in London. All three had supported the Niemeyer programme and their presence at the voting would probably have reversed the decision. The rift within the Labor party rapidly widened over the question of conversion of a \$135,000,000 loan maturing December 15. The Federal Labor party caucus voted to compel bondholders to wait a year before being repaid. In response to the pleas of Premier Scullin in London and the declaration of Federal Treasurer Joseph A. Lyons that he would resign if the recommendation of the caucus was accepted, the Labor Cabinet on November 8 voted to defy the party majority and redeem the loan at maturity. New proposals adopted for balancing the budget included the further reduction of expenditures by \$15,900,000 and new taxation totaling \$24,100,000. The deficit on the existing budget basis would total between \$40,000,000 and \$50,000,000 by June 30, 1931, it was estimated by Treasurer Lyons on November 5. Acting Prime Minister Fenton announced on Dec. 16, 1930, that the \$140,000,000 Australian Conversion Loan had been a complete success, subscriptions having been received from about 100,000 citizens. Its success, in the face of the opposition of the Labor party caucus, was considered a triumph for Acting Treasurer Lyons and a blow at extremist elements in the party.

The Australian Loan Council, which acts as borrowing agent for both the Commonwealth and the Federated States, on November 11 refused to allow the State of New South Wales to withdraw from the council. Premier Lang announced that his State would seek to borrow money on its own responsibility, with or without the Loan Council's approval.

Still another repercussion of the Labor government's financial and tariff programme was seen

in the development of a movement in Western Australia for separation from the Commonwealth. See WESTERN AUSTRALIA.

NON-EMERGENCY MEASURES. Apart from the emergency measures called forth by the economic situation, the Labor government introduced into Parliament two bills to amend the Constitution which required eventual submission to the people by referendum. One, which took from the electorate the right to veto a constitutional amendment by referendum and granted Parliament authority to make any constitutional changes it desired, was vetoed by the Senate. The second sought to give the Commonwealth Parliament jurisdiction over industrial disputes in the several States.

Another Government measure cancelled the preference granted to World War veterans on government contract work, except in cases where the veterans were also trade unionists. It provoked wide indignation in both Parliament and the country and was hastily withdrawn by Premier Scullin.

On November 27, the Government announced that a bonus of \$5 would be paid on every ounce of gold produced in the Commonwealth in excess of the 1929 production. Plans were announced November 18 for sending an Australian trade mission to Canada.

OTHER EVENTS. The appointment on Dec. 2, 1930, of Sir Isaac Alfred Isaacs, a native-born Australian and the Chief Justice of Australia, as Governor General of the Commonwealth in succession to Lord Stonehaven, raised the question of Australia's future relationships with the mother country. In accordance with the procedure authorized at the Imperial Conference in September (see GREAT BRITAIN under *History*), the appointment was made on direct application of the Premier Scullin to the King without consulting the British government. The press of London and many Australian journals viewed the new method of appointing the Governor General with some alarm as tending to weaken the imperial connection.

The Federal Treasurer, Ernest G. Theodore, former Premier of Queensland, resigned in July following the publication on July 4 of the report of a Royal Commissioner appointed to inquire into the purchase of the Mungana Mines by the Queensland State government. The commissioner charged that Theodore and three others were "guilty of dishonestly exploiting the State by purchase of the mine." This Mr. Theodore denied. The Treasurer's duties were taken over by Premier Scullin.

Evidence of Communist activities in Melbourne, Sydney, Brisbane, and Fremantle was uncovered by police during raids on Communist political clubs in Melbourne October 23, in which 23 persons, most of them foreigners, were arrested. The raids followed injuries suffered by many police during unemployment demonstrations in Melbourne. See NEW GUINEA; OLD AGE PENSIONS; GREAT BRITAIN under *History*; MATERNITY PROTECTION.

AUSTRIA. A federated republic of central Europe proclaimed Nov. 12, 1918, and consisting of the nine provinces of Vienna (City of), Lower Austria, Upper Austria, Salzburg, Styria, Carinthia, Tirol, Vorarlberg, and Burgenland. Capital, Vienna.

AREA AND POPULATION. At the census of 1923 the area was 32,369 square miles and the population, 6,534,481, as compared with an area of 39,-

017 square miles and a population of 7,529,935 in 1910. The estimated population June 30, 1929, was 6,694,152. In 1923, the City of Vienna had 1,865,780 inhabitants, or 28.55 per cent of the total population. Other chief cities, with their populations in the same year, are: Graz, 152,706; Linz, 102,081; Innsbruck, 56,401; and Salzburg, 37,856. The movement of population in 1928 was: Births, 116,783; deaths, 96,007; marriages, 40,414. Emigrants in 1928 numbered 4589 (5339 in 1927), of whom 1020 went to the United States.

EDUCATION. Education is nominally compulsory for elementary pupils between the ages of 6 and 14. In 1927, there were 5287 public and private elementary schools, with 28,590 teachers and 710,397 pupils, and 151 secondary schools, with 3848 teachers and 47,455 pupils. There are three universities, the enrollment for 1926-27 being as follows: Vienna, 853 teachers and 9907 students; Graz, 285 teachers and 1871 students; and Innsbruck, 212 teachers and 1752 students.

PRODUCTION. Agriculture is the principal occupation of the population, the area under cultivation in 1928 totaling 4,782,244 acres. Foodstuffs production, however, is insufficient for the national needs. The chief crops, with the production in quintals in 1929 and 1928, were: Wheat, 3,152,000 (3,515,493 in 1928); rye, 4,832,000 (5,060,053); barley, 2,564,000 (2,819,860); oats, 4,476,000 (4,621,715); maize, 1,054,000 (1,079,026). Potatoes, turnips, flax, and sugar beets are other important crops, the latter totaling 110,005 metric tons in 1927-28. There are extensive forests, which contribute materially to the national income. The value of livestock in 1929 was estimated at more than 2,000,000,000 schillings (about \$280,000,000).

Lignite production in 1929 was 3,524,792 metric tons (3,262,570 in 1928) and anthracite production, 208,020 metric tons (202,098 in 1928). Iron ore (output 1,928,200 metric tons in 1928), salt (80,817 tons in 1928), copper, zinc, and lead are other mineral products. Pig iron production in 1928 was 457,911 tons; raw steel, 635,657 tons. The chief manufacturing industries are the making of pianos, motor cars, furniture, and textiles. The state tobacco monopoly in 1928 produced 200,723,000 cigars, 4,651,913,000 cigarettes, and 47,639 quintals of smoking tobacco.

Industrial conditions were in general badly depressed in 1930, the industries most affected being textiles, lumber, iron, machinery, and electrical equipment industries. On Oct. 15, 1930, unemployment subsidies were being distributed to 145,000 persons, or 60,000 more than on the same date in 1929.

COMMERCE. Both exports and imports declined in 1929, the exports totaling 3,276,700,000 schillings (3,306,492,000 schillings in 1928) and the imports, 2,192,300,000 schillings (2,241,123,000 schillings in 1928). (The schilling exchanged for about \$0.14 during 1929.) The adverse balance of trade, amounting to 1,084,400,000 schillings, was about normal. Expenditures of approximately 2,000,000 foreign tourists, who visit Austria annually, and other invisible items serve to balance the national income and disbursements. Exports go mainly to Germany, Czechoslovakia, Hungary, Italy, and Yugoslavia, in the order named, while imports are supplied chiefly by Germany, Czechoslovakia, Poland, Hungary, the United States, and Switzerland.

FINANCE. In the budget for 1930, as approved by the Legislative Assembly, current revenues

totaled 1,975,325,000 schillings and current expenditures, 2,128,950,000 schillings, leaving an anticipated deficit of 153,634,000 schillings (1 schilling equalled approximately \$0.14). The report on the Federal budget for 1929 showed a surplus of 167,000,000 schillings in current accounts, and capital expenditures of 147,000,000 schillings, leaving a final surplus of 20,000,000 schillings. Actual receipts were 10 per cent higher and expenditures 4 per cent higher than the budget estimates. The first section, amounting to \$62,000,000, of Austria's \$100,000,000 international loan, was floated in New York, London, Sweden, Switzerland, and other markets in July, 1930 (see below under *History*). The public debt on Jan. 1, 1929, stood at 2,363,692,666 schillings, of which 137,232,556 schillings represented the pre-war debt and 365,895 schillings the debt incurred as a result of the World War. The per capita debt was about 338 schillings (\$47.50).

COMMUNICATIONS. At the beginning of 1929, Austria had 4156 miles of railway line, of which 3618 miles were operated by the state and 538 miles by private companies. About 12 per cent of the mileage was electrified. The state railways for 1929 reported total receipts of 632,000,000 schillings and total expenditures of 634,000,000 schillings, both figures representing substantial increases over 1928. Construction of a 30-mile Alpine highway across the Grossglockner Range from Ferleiten to Heiligenblut was commenced in September, 1930. Highways in 1929 extended 21,257 miles divided as follows: National, or first-class, 2452 miles; provincial, or second-class, 1029 miles; departmental and municipal, or third-class, 17,776 miles. A network of autobus lines in the Alpine districts of the country is operated by the Postal Administration. Air lines connect Vienna with most of the European capitals and large cities.

GOVERNMENT. Under the Constitution adopted Oct. 1, 1920, and amended Dec. 7, 1929, executive power is vested in a president, elected by popular vote for six years, who appoints the Ministry and has power to dissolve Parliament. Legislative power rests with an assembly (Nationalrat), elected by popular vote for four years, and a first chamber (Bundesrat), chosen by the Provincial Diets in proportion to the population of the respective provinces. The composition of the Nationalrat following the election of Apr. 24, 1927, was: Christian Socialists, 73; Social Democrats, 71; Pan-Germans, 12; and Agrarians, 9. In the Bundesrat in 1930 there were 25 Christian Socialists, 20 Social Democrats, 3 Agrarians, and 2 Pan-Germans. President in 1930, Dr. Wilhelm Miklas, elected Dec. 5, 1928. The Ministry as constituted Oct. 16, 1929, was: Federal Chancellor and Minister of Foreign Affairs, Johann Schober; Vice-Chancellor and Minister of Defense, Karl Vaugin (Christian Socialist); Justice, Dr. Franz Slama (Pan-German); Social Welfare, Dr. Theodor Innitzer; Agriculture and Forestry, Florian Födermayr; Finance, Dr. Otto Juch; Commerce and Communications, Dr. Michael Hainisch; Education, Dr. Heinrich Srbik; Interior, Vinzenz Schumy (Agrarian).

HISTORY

Under the leadership of Chancellor Johann Schober, who assumed office in September, 1929, Austria made rapid progress during the first half of 1930 in the solution of her difficult foreign and domestic problems. With the downfall of his Cab-

inet on September 25, progress was again interrupted by fruitless party bickerings, a situation which new elections on November 9 failed to improve. Herr Schober returned from the second Hague Reparation Conference held in January and from the subsequent conference on Eastern reparations at Paris with two noteworthy achievements to his credit—the definite promise that Austria would not be required to make further reparation payments until 1943, and the termination of the control of her foreign borrowing operations by the Reparation Commission. See **REPARATIONS**.

FOREIGN AFFAIRS. The Chancellor seemed equally successful in the conduct of other phases of Austrian foreign affairs. An important treaty of friendship and conciliation was signed with Italy during his visit to Rome the first week in February, and on April 12 he brought to a successful conclusion the long-pending negotiations with Germany for a commercial treaty. A commercial treaty with Hungary was signed June 14, which caused Minister of Commerce Hainisch to resign in protest two days later. Commencing April 12, Herr Schober paid the first public visit since the World War by an Austrian Chancellor to the British and French capitals. He was cordially received, and took advantage of the opportunity to pave the way for the flotation of a \$100,000,000 foreign loan.

The pact with Italy provided for the judicial settlement of disputes between the two nations. Containing no mention of the Austrian minority in the South Tirol, it was construed as giving Austria's acquiescence to the permanent retention of that territory by Italy. Some alleviation of the treatment accorded the South Tirolese by Italy was reported following the signing of the treaty. Chancellor Schober repeatedly proclaimed, during his tour of European capitals, that the treaty was in accord with his policy of cultivating friendly relations with all neighboring States and that Austria, by her geographical position, was forced to remain strictly neutral with regard to the rivalries of other nations. Nevertheless, Yugoslavia regarded the treaty as completing its encirclement by Italy, Hungary considered it a diplomatic coup directed at the Little Entente (q.v.), and a section of German and Austrian opinion opposed it as a further obstacle to Austro-German union.

INTERNAL DEVELOPMENTS. The domestic problems presented by a severe economic depression and by the bitter rivalry between Socialist Vienna and the Catholic and conservative provinces proved less easy of solution. However, Chancellor Schober's administration brought the nation internal harmony and security greater than had been enjoyed since the outbreak of the World War. The question of constitutional reform, which caused the fall of the Streeruwitz Cabinet in September, 1929, had been disposed of in December, 1929, in a way which strengthened the central authority of the government and gave moderate satisfaction to the leaders of the Heimwehr, or private army of the Catholic conservatives, without driving the Socialists into open revolt. Freedom to hold public meetings had been re-established and a law passed which prevented discrimination against a worker on account of his political or trade union views.

There remained the threat to internal order and security offered by the activities of the rival private armies—the Heimwehr and the Socialist

Schützbund, or municipal guard of Vienna. These organizations had been regarded with uneasiness in other capitals, particularly after serious clashes occurred in 1929, as a possible menace to the peace of Europe. Following representations from the League of Nations and warning from Foreign Secretary Henderson of Great Britain and other European statesmen that they would withhold consent to the flotation of an Austrian loan in their respective countries pending the abolition of the private armies, Chancellor Schober in May agreed to disarm them. The Socialists consented, but the Heimwehr, which had secured the Chancellor's election in the belief that he was sympathetic to its aims, refused to disband unless Herr Schober agreed (1) to disarm the Schützbund with the aid of the Heimwehr, (2) to replace Dr. Vinzenz Schumy, the Minister of Interior, with a Heimwehr nominee, and (3) to appoint a new chief of gendarmes and chief of police.

Herr Schober's answer was the introduction of a disarmament bill on May 22, the day following receipt of the Heimwehr ultimatum, and a polite rejection of the demands. The bill provided merely for the transfer of privately owned arms and ammunition from the provincial to the Federal authorities and for increased penalties for violation of the existing arms law. It was passed by Parliament June 13, by a vote of 82 to 76, despite the opposition of the Socialists, who characterized it as a subterfuge to allay foreign suspicions without disarming the Heimwehr. The following day, the Chancellor appeased the Socialists by causing the arrest of Major Waldemar Pabst, chief of staff of the Heimwehr and the notorious organizer of the Kapp *putsch* of 1920 in Germany. Pabst was expelled from the country June 15 as an undesirable alien. His departure left Schober victorious in a crisis which seriously threatened the overthrow of the Cabinet and possibly the outbreak of civil war.

Besides the threat of foreign intervention and his control of the army and gendarmerie, a factor which contributed to the Chancellor's victory was the growing economic depression and the certainty that civil war would make matters worse. Austrian exports, imports, and railway receipts all showed marked declines in the first half of 1930, while unemployment increased substantially. It was in the hope of relieving these conditions that the government on July 15 negotiated a foreign loan for 439,000,000 schillings (about \$61,460,000), at 7 per cent for 27 years, repayable after five years at 103. Issued at 95, the loan actually brought Austria less than 400,000,000 schillings at a cost of about 8.3 per cent. The government agreed to wait at least 12 months before attempting to float the balance of the total authorized loan of 725,000,000 schillings. The proceeds were to be used in part for railway equipment, installment of automatic telephones in Vienna, and other public works.

Another complication faced by the Chancellor in his struggle with the Heimwehr was the election early in May of Karl Vaugoin, Vice Chancellor and Minister of War, as leader of the Christian Socialist party. Vaugoin, a staunch supporter of the Heimwehr, succeeded the Roman Catholic priest and former Chancellor, Ignaz Seipel, who had ostensibly retired from politics. On September 24, the Minister of War precipitated a new Cabinet crisis by presenting his resignation. His action grew out of Dr. Schober's support of Minister of Commerce Schuster, the Heim-

wehr spokesman in the government, in a quarrel between the two Ministers over the appointment of the general manager of the Austrian State Railways. The other Christian Socialist in the Cabinet, Minister of Agriculture Födermayr, resigned also. Deprived of the support of the largest party in Parliament, Chancellor Schober was forced to resign on the following day. The crisis was due primarily to conflict between the extreme Clericals, led by Vaugoin, and the moderate Conservatives supporting the compromise policies of Dr. Schober, a non-party man.

Vaugoin was entrusted with the formation of a new Cabinet, but was unable to secure a parliamentary majority, due to the refusal of the Farmers' party and Pan-German party leaders to enter his Ministry. He therefore governed until the election of November 9 with a minority Cabinet, which included Monsignor Seipel as Foreign Minister and Prince Ernst Rudiger von Starhemberg, leader of the Heimwehr, as Minister of Interior. His failure to present his Cabinet to Parliament was declared unconstitutional by the other parties. The subsequent electoral campaign was marked by a Heimwehr communique of October 2 threatening a Fascist dictatorship if a Socialist majority was returned. Monsignor Seipel's significant reappearance in active politics was regarded as an effort to unite the Christian Socialists and the Heimwehr in crushing the Social Democrats once for all. The Heimwehr, however, rejected his scheme and entered their own candidates. The cancellation by Prince Starhemberg of the ban on Major Pabst (October 8), the revelation by the *Frankfurter Zeitung's* correspondent of a plan for a *putsch* in Vienna November 2 by the Austrian monarchist wing of the Syrian Heimwehr, and the disarming of the Socialist Schützbund throughout the country on November 4 and 5, were other incidents of the campaign. The Socialists were disarmed by the Heimwehr, acting under the direction of Prince Starhemberg. The latter repeatedly indicated his contempt for Parliament and declared that he would not surrender his office, whatever the outcome of the voting.

The election gave the Social Democrats 72 seats in Parliament, a gain of one; the Christian Socialists, 66, a loss of seven; the Schober bloc, composed of the Agrarian and Pan-German parties, 19, a loss of two; and the Heimwehr, eight. The Heimwehr had never entered candidates independently before. As the Christian Socialists' losses were accounted for by the Heimwehr successes, the election did little to break the parliamentary deadlock. The balance of power rested with former Chancellor Schober, who enjoyed the united support of both the Agrarian and Pan-German parties. At the celebration of the anniversary of the Republic in Vienna November 12, President Miklas said that the election was a clear decision of the Austrian people for democracy. A meeting of the Christian Socialist party on November 19 repudiated efforts to amend the Constitution by violent methods, expressed dissatisfaction with the Vaugoin-Starhemberg régime, and demanded the formation of a constitutional government. At the same time, the party invited Herr Schober to join with it in negotiations for the establishment of a ministry with a parliamentary majority.

These negotiations succeeded on December 3, after three weeks of wrangling and following the resignation of Vaugoin as Chancellor on November 29. The new Cabinet was composed as follows:

Chancellor, Dr. Otto Ender; Vice Chancellor and Foreign Affairs, Dr. Schober; Interior, Franz Winkler; Justice, Dr. Hans Schuerff; Finance, Dr. Otto Juch; Agriculture, Andreas Thaler; Trade and Commerce, Edward Heintz; War, Karl Vaugoin; Education, Dr. Emmerich Czermak; Social Welfare, Dr. Joseph Resch. The Schober bloc held three seats in the Cabinet, as against six for the Christian Socialists and one non-party man, Finance Minister Juch. The Christian Socialist-Schober coalition had a majority of only two seats over the total voting power of the Socialists and Heimwehr. The Socialists, however, indicated that they were prepared to cooperate with the Government. See ITALY under *History*.

AUTHORS' LEAGUE OF AMERICA. A national organization of authors, artists, dramatists, and screen writers; founded and incorporated in 1912 for the purpose of procuring adequate copyright legislation, both international and domestic; protecting the rights and property of all those who create copyrightable material; advising all such in the disposal of their productions and obtaining for them prompt remuneration therefor; and disseminating information among them as to their just rights and remedies. The league supplies to its members confidential information relating to publishers, theatrical and motion-picture producers, art buyers, and other persons and companies engaged in the purchase, sale, publication, or production of copyrightable material.

The league is divided into four departments or guilds: The Dramatists' Guild; the Authors' Guild; the Artists' Guild; and the Screen Writers' Guild. Closely affiliated with the league is the Authors' League Fund, an agency formed by the league to meet its obligations with respect to the care of the sick, the aged, and the unfortunate, the endowment in 1930 amounting to about \$80,000. The officers of the league in 1930 were: President, Arthur Richman; vice president, Inez Haynes Irwin; secretary and treasurer, Louise Silcox. Headquarters are at 2 East Twenty-third Street, New York City.

AUTOGIRO. See AERONAUTICS.

AUTOMOBILE RACING. Both the American Automobile Association speedway championship and the 500-mile Indianapolis speedway contest on Memorial Day were won by Billy Arnold of Chicago, who thus displaced Louis Meyer of Los Angeles as official American speed king. Arnold averaged 100.448 miles an hour at Indianapolis, finishing the 500-mile race in 4 hr. 58 min. 39.72 sec. Bill Cantlon of Detroit was second. To win the A. A. A. championship, Arnold accumulated 1027.5 points in eight meetings, to 653 points for Cantlon. The 100-mile dirt track events at Toledo, Ohio, and Syracuse, N. Y., were won by Wilbur Shaw and William Cummings, respectively. Kaye Don set a new American record for the 5-mile route at Daytona Beach, Fla., in March, covering the distance in 1 min. 58.715 sec. or an average of 161.623 miles per hour.

AUTOMOBILES. In the 1929 YEAR BOOK attention was called to the fact that motor vehicle production had slumped every third year since and including 1918, according to which it was suggested that a falling off would be due in 1930. The general business depression throughout the world during the year would probably have insured such a result anyhow, but it happened to synchronize with the now quite generally recognized three-year cycle in the automotive

industry, and the slump occurred. While production for 1930 was about 2,000,000 below 1929 the latter year was about 1,000,000 above what is popularly accepted as a normal year's production, 4,500,000, so 1930 was only about the same amount below normal and cancelled out the effect of the 1929 over-production.

It would seem most fair to compare 1930 with the last previous slump year, 1927, and the two are found to be closely on a par in spite of the absence of general business depression in 1927. The figures of such a comparison are interesting. (These had to be based on eleven-month periods of the two years as the December reports were not available in time to include.) For example: Production of motor vehicles in the United States and Canada in 1930 was only 2.2 per cent below 1927, passenger cars being 4.6 per cent below, and commercial cars 6.7 per cent above. Retail sales in the United States of both classes of vehicles were above those of 1927, passenger cars being 1.1 per cent and commercial cars 24.5 per cent higher. Exports from the United States and Canada in 1930 were down 14.4 per cent for passenger cars and up 40.2 per cent for commercial vehicles as compared with 1927.

While the industry might be said to have been "marking time" during 1930, carefully gauging production to the curtailed demand, the engineering and designing departments at least were extremely busy, endeavoring to put the utmost appeal into the new 1931 models. Probably never before was quite so much attention given to appearance with the result that all lines were strikingly beautiful.

Mechanical improvements were mainly in the nature of refinements, there being really only one outstanding innovation—free-wheeling. This is an arrangement of the drive that, in principle, is similar to the coaster-brake of a bicycle—only forward effort is effective in turning the wheels. In other words, the engine is connected to the wheels only while accelerating or maintaining speed and idles when the momentum of the car will independently carry it forward, as when coasting down hill or on the level. Heretofore, unless the clutch was disengaged, the wheels drove the engine during coasting or deceleration periods. The principal advantages are decreased fuel consumption, reduced engine wear and an agreeable sensation to the passengers that can best be described as gliding. Free-wheeling would not have been accepted before the days of four-wheel brakes for then the load of the engine was considerably depended upon to assist the brakes in slowing down the car. With free-wheeling all retardation is accomplished with the brakes and easily now that four-wheel brakes are in universal use. Nevertheless, the free-wheeling cars are so arranged that they may be operated in the conventional manner when, to save overheating the brakes, as in a long descent, it is desirable to put the car in low or intermediate gear and cause the wheels to drive the engine against its compression as a load and so hold back the speed of the car without prolonged brake application.

Free-wheeling was not an invention of the year, for experimenting along that line had been in progress in both America and Europe for 10 years or more, but 1930 was the first year in which it was applied to models of any considerable production. Pierce-Arrow had an over-running clutch in the transmission in 1919, although the purpose was not free-wheeling but

silent gear shifting. Six makes of cars having the free-wheeling feature were to make their debut at the January Automobile Shows in 1931, the Studebaker, Pierce-Arrow, Lincoln, Hupmobile, Auburn and duPont Special.

Free-wheeling transmissions overcome a long-time defect of speed-changing mechanisms—difficulty in shifting gears easily and quietly when they are in motion at other than slow speeds. With free-wheeling, gears can be shifted at any car speed and from second to third speed, or third back to second without disengaging the clutch. Others were accomplishing easy quiet gear shifting by mechanism that synchronizes the gear speeds before engagement, as in the synchro-mesh transmission introduced by Cadillac and now added to the Buick, Oakland, Graham, Olds, and Pontiac lines. Use of herring-bone or plain skew gears was making second-speed operation as noiseless as direct-drive and is found in Reo, Pierce-Arrow, and Nash transmissions.

Other general trends evidenced in the new models were increased horse power, mainly through increased displacement rather than higher compression ratios, steering stabilizers that combat the shimmying tendency, longer wheel bases, stiffer frames, lower and wider bodies for greater comfort, improved steering gears, almost universal adoption of three-spoke steering wheels, greater use of rubber mountings to quiet noises, metal spring covers and central chassis lubrication systems. These with many smaller but important improvements contribute to more pleasing performance, and more attractive appearance has been achieved with better streamlining (incidentally greatly reducing wind resistance to which considerable study is now being given), more graceful bumpers and fenders, radiator grills, pointed and sloping fronts and more use of bright metal parts. Never before were buyers offered such a variety of choice, nor so much for their money. In completeness and luxury of equipment even the lower price cars had more than the highest priced cars of only a few years back.

Two years previously nearly 60 per cent of the chassis models were sixes; in 1930 that percentage were eights. Buick was the latest to abandon six cylinders and became the General Motors first straight eight. Cadillac, pioneering with 16 cylinders in 1929, added also a 12, and Marmon introduced a 16-cylinder model to supplement its 8-cylinder line.

Newcomers into the field were the American Austin, a bantam car with 75-inch wheelbase, the Mathis, almost as small, and the DeVaux-Hall, a 112-inch wheelbase.

STATISTICS. The preliminary statement of facts and figures of the automobile industry for 1930, issued by the National Automobile Chamber of Commerce late in December, gave the total production of cars and trucks in the United States and Canada during the year as 3,505,000, of which 2,943,200 were passenger cars and 561,800 trucks. Of the passenger cars 2,688,000, or 91 per cent, were closed models, the largest proportion ever reached. The wholesale value of the cars produced was \$1,771,200,000 and of the trucks, \$388,400,000. The average retail price of cars was \$800 and of trucks \$922. The wholesale value of parts and accessories for replacement and service equipment was \$527,800,000. Tire manufacturers shipped a total of 52,700,000 tires. The wholesale value of those sold to car owners was \$429,000,000. This made the grand total value of

the automotive production for the year, including motor vehicles, accessories, service equipment, and replacement parts and tires, \$3,116,400,000.

From State reports the motor vehicle registration during 1930 reached 26,718,000, a gain over 1929 of only 0.8 per cent, which was the smallest yearly increase to date. The smallest previous increase was 5 per cent in 1927. This does not mean that nearly as many cars were destroyed or permanently taken out of use as were sold in the United States last year, because it was known that many, unable to afford the cost of operating them, temporarily laid up their cars and did not register them. This was borne out by the fact that the truck registration, 3,518,000, was a 10.4 per cent increase, while the passenger car registration, 23,200,000, barely held its own, gaining only 0.3 per cent. With the world registration of motor vehicles estimated at 35,518,000, the United States had 75 per cent of the world's automobiles. Farmers owned 5,700,000 of the motor vehicles registered in the United States during 1930.

The United States at the end of the year had 3,024,233 miles of highways, of which 700,000 miles were surfaced; about 40,000 more than a year before. In the construction and maintenance of streets and highways in the United States last year \$2,200,000,000 was spent—\$200,000,000 more than the previous year. The motor vehicle and allied lines gave employment to 4,700,000 persons, or about one out of every 10 engaged in gainful occupations. Gasoline taxes alone produced a revenue of \$515,000,000 in 1930, and the State and Federal governments collected a total of \$1,010,000,000 taxes on motor vehicles. See **ROADS AND PAVEMENTS.**

How important the automobile industry is to other lines of business may be gathered from the following figures: In 1930 the railroads handled 3,080,000 carloads of automotive freight. The automobile industry used 82 per cent of all the rubber produced in the United States, 55 per cent of the plate glass, 15 per cent of the iron and steel, 14 per cent of the copper, 15 per cent of the lumber and hardwood, 24 per cent of the lead and 80 per cent of the gasoline. The gasoline consumption by motor vehicles in 1930 was 310,000,000 barrels. The crude rubber used by the industry was 686,000,000 pounds, and the cotton fabric used in tires 195,770,000 pounds.

The year saw a still further increase in the use of motor transportation for goods and merchandise. The motor trucks as before mentioned numbered 3,518,000; motor truck owners totaled 2,550,000. Altogether there were 95,000 motor buses in use. Some 17,000 consolidated schools were using 47,500 motor buses. The street railways operated 13,300 more and the steam railroads 3087, there being 385 of the former and 67 of the latter. Seventy-five steam railroads used 7000 trucks as part of their shipping service and the Railway Express Agency used 9940 motor trucks.

The extent of the retail motor vehicle business in the United States was impressive: There were 51,514 car and truck dealers, 50,200 public garages, 100,300 service stations and repair shops, 80,000 supply stores and 350,000 gasoline filling stations.

In 1930 foreign sales reached a total of 561,000 motor vehicles, about one-sixth of the total production in the United States. This included United States exports and the output of United States-owned Canadian plants sold outside of the

United States. The per cent decrease in foreign sales under 1929 was 44. The value of motor vehicles, parts and tires exported from the United States and Canada was \$344,700,000. Motor vehicles imported during 1930 numbered 625.

LEGISLATION. Only nine State legislatures were in session during 1930 and there was little new to report in laws relating to motor vehicles. New legislation was of less concern to the industry and motor vehicle users than existing laws that had not yet been repealed or revised to reduce the severity of taxation and regulation that was particularly retarding more extended use of motor trucks and buses. A notable effort toward correcting a situation that was more responsible than anything else for adverse legislation was the truck driver training campaign launched by the Motor Truck Committee of the National Automobile Chamber of Commerce.

Toward the end of the year the railroads repeated the effort made two years previously to bring trucks and buses doing an interstate business under the regulation of the Interstate Commerce Commission. Hearings were held and were to be continued into 1931, but no conclusions were reached before the year ended. Motor vehicle users themselves were divided, some favoring such regulation and others not, but most of those who consider it at all advisable, felt that it should cover common carriers only and be limited to measures to protect the patrons of the service. See *TAXATION under Vehicle and Gasoline Taxes*.

AVIATION. See *AERONAUTICS*.

AVIATION, NAVAL. See *NAVAL PROGRESS*.

AZERBAIJAN, a'zër-bi-jan'. A Socialist Soviet Republic in Transcaucasia, established Apr. 28, 1920. Consisting chiefly of the two former Russian provinces of Baku and Yelisavetpol, it is bounded on the east by the Caspian Sea, on the west by Georgia and Armenia, on the south by Persia, and on the north by Georgia and Daghestan. Area, about 32,686 square miles and the population (in 1926), 2,313,172, of whom 75 per cent were Moslems. Baku, the centre of the petroleum industry, is the capital and has a population of approximately 452,000. In 1925-26, 134,855 pupils attended primary and secondary schools. The most important industry is the oil industry, which in 1927-28 produced 7,560,000 tons as compared with 6,893,000 in 1926-27. The country is mainly devoted to agriculture, the chief products being grain, cotton, grapes, kitchen and garden produce, and some tobacco and silk. Aluminum deposits, estimated to contain 78,000,000 tons of ore, have been discovered in the Zagliksk region. During the first Transcaucasian Soviet Congress of Dec. 13, 1922, Azerbaijan united with the Armenian and Georgian Soviet Republics to form the Transcaucasian Socialist Federated Soviet Republic. A federal constitution accepted at the congress was published on Jan. 16, 1923. See *RUSSIA*.

BADEN, bā'den. A constituent state of the German Republic, with a republican form of government since Nov. 22, 1918. Formerly a grand duchy in the German Empire, it borders on Alsace-Lorraine and Switzerland on the west and south, respectively. Area, 5819 square miles; population in 1925, 2,312,462, as compared with 2,195,580 in 1919. Capital, Karlsruhe, with 145,694 inhabitants in 1925. The largest city is Mannheim, with 247,486 inhabitants in 1925. The majority of the population is Roman Catholic. Education is free, general, and compulsory, the

schools being under the jurisdiction of the state. For higher education, there are universities at Heidelberg and Freiburg. In 1929 the total area under cultivation was 1,940,414 acres. Among the agricultural products, oats, rye, barley, wheat, potatoes, and vegetables are the most important. In 1928 the wine yield from 35,437 acres of vines was 9,255,126 gallons. In the same year the corn crop totaled 417,396 metric tons and the area planted to tobacco was 25,429 acres. The budget for 1929 fixed the ordinary revenue at 277,800,000 gold marks and the ordinary expenditure at 283,405,000. (1 mark equals \$0.2382 at par.)

The constitution dates from Mar. 21, 1919, and vests the executive power in a cabinet comprising the state President, five ministers, and three state councilors without portfolios, all of whom are elected by the Legislature. Legislative power resides in a single chamber body known as the *Landtag*. The *Landtag* elected on Oct. 27, 1920, for the term ending Oct. 27, 1933, had 88 members, including 34 Centrists, 18 Socialists, 6 Fascists, and 5 Communists. The Cabinet consisted of Dr. F. J. Schmidt (Centrist), President; O. Leers (Democrat), Minister of Finance; Josef Wittemann (Centre), Interior; and A. Remmelle (Socialist), Justice and Religion and Education.

BAGNOLD EXPEDITION. See *EXPLORATION*.

BAHA'MAS. A group of British-owned islands off the southeast coast of Florida, 20 in number, of which 20 are inhabited. They also include 661 keys and over 3000 reefs. The islands, which are of coral formation, have an area of 4404 square miles and a population, according to the census of 1921, of 53,031. The estimated population on Jan. 1, 1929, was 60,367. The important islands with their populations in 1921, are as follows: New Providence, containing the capital, Nassau, 12,975; Andros, 6976; Eleuthera, 6048; Long Island, 4659; Abaco, 3993; Exuma, 3730; San Salvador, 4273. In 1928, 14,581 pupils were enrolled in government and 7060 in aided schools. Declared imports greatly exceed the declared exports, the totals in 1928 being £1,829,939 and £421,085, respectively. Spirits and wines constitute the bulk of the imports, being valued at £724,148 in 1928, as compared with £69,709 for iron and steel manufactures, which ranked second in value. The principal exports were sisal, sponge, lumber, tomatoes, shells, and preserved pineapples. For the fiscal year ending Mar. 31, 1929, revenues totaled £517,211 and expenditures, £673,794. The public debt in 1928 amounted to £176,230. In the same year, 1116 vessels of 732,458 tons entered and 1123 vessels of 729,445 tons cleared the ports. The islands are administered by a governor who is assisted by an executive council and a legislative council, each of nine members, and a legislative assembly of 29 members, the franchise being based on a small property qualification. Governor and Commander-in-chief in 1930, Sir Charles William James Orr.

BAKU. See *AZERBAIJAN*.

BALFOUR, bāl'fūr or bāl'fēr, ARTHUR JAMES, FIRST EARL OF. An English statesman, died Mar. 19, 1930, in Surrey. He was born in the parish of Whittinghame, Scotland, July 25, 1848, and was educated at Eton and at Trinity College, Cambridge. From 1874 to 1885, he was a Conservative member for Hertford in the House of Commons, a part of which time (1878-80) he was also private secretary to his uncle, the Marquis of

Salisbury, then Secretary of State for Foreign Affairs. In this capacity he went on the special mission of Lords Salisbury and Beaconsfield to Berlin in 1878. In 1885 he became president of the Local Government Board and, in 1886, Secretary for Scotland. In the eighties Mr. Balfour came into popular notice as a member of the famous "Fourth Party," organized by certain Conservatives as a protest against certain of that party's measures and led by Lord Randolph Churchill. In 1879 he had published *A Defence of Philosophic Doubt*, and in manner and behavior showed himself to be rather a student and devoted to philosophy than a man of action and political affairs. Therefore, his appointment by his uncle to the post of Chief Secretary for Ireland in 1887 was regarded by many with alarm. The *Annual Register* for that year summarized British opinion thus: "Selection of Mr. Arthur Balfour for the vacant post (secretaryship of Ireland) was interpreted as an act of despair on the part of ruined politicians.—The selection of Mr. Arthur Balfour for the thankless office was regarded with some misgiving on account of his youth and sensitive nature." However, Lord Salisbury's confidence was not misplaced. Mr. Balfour was appointed Mar. 5, 1887, and on March 27 he introduced the Criminal Law Amendment (Ireland) Bill in a speech reported as lasting three hours. His promptness in dealing with crime in Ireland and the firm justice with which he handled the ever-delicate Irish situation established his reputation as a statesman of ability. On his return to England in 1891, he became leader of the House of Commons, where he had represented the Eastern Division of Manchester since 1885. He was also First Lord of the Treasury (1891-92 and, again, from 1895 to 1906). Recognized as leader of the Conservative Opposition, he was chosen Prime Minister in 1902.

Although he remained in office until 1905, his premiership was not a personal success, marked as it was by the partial disintegration of the old Unionist party and by internal disputes. It was during this time, however, that the Committee of Imperial Defence was established and the way paved for the Anglo-French Alliance of the World War. After resigning as Premier, Mr. Balfour represented the City of London in Parliament (1906-22) and resumed his leadership of the Opposition. He resigned the leadership in 1910 and, from then until the outbreak of the World War in 1914, he was engaged in lecturing and writing. In 1913-14 he was Gifford Lecturer at Glasgow University. At the beginning of the World War, he offered his services to the British Government, serving as First Lord of the Admiralty (1915-16) and Foreign Secretary (1916-19).

When the United States entered the War in 1917, Mr. Balfour headed the British War Mission sent to that country with the object of organizing coöperation between England and the United States. On May 5, 1917, he spoke before the House of Representatives, the first time that a British subject had addressed an American Congress. The speech was praised as showing complete sympathy with the spirit in which America entered the War. In 1917, also, he pledged the allegiance of Great Britain in the creation of Palestine as a Home for the Jews. (See **Jews and PALESTINE**.) He was one of the British delegates to the Peace Conference of Paris in 1919 and he headed the British delega-

tion to the Washington Conference for the Limitation of Armaments in the winter of 1921-22, becoming one of the leading figures of the conference and giving expression to a liberal and generous British opinion.

In 1922 he was created Knight of the Order of the Garter and was raised to the peerage as the first Earl of Balfour and Viscount Traprain of Whittingehame. The Order of Merit had been conferred on him in 1916 and the chancellorship of Cambridge University in 1919. After the War, he reentered the Cabinet as Lord President of the Council, serving in 1919-22 and again, during 1925-29. Throughout his long and full life, Lord Balfour retained his early interest in philosophy. By nature reflective, he showed in his writing a skeptical bent of mind which manifested itself as an attitude of tolerance in his work as statesman. In addition to his early *Defence of Philosophic Doubt*, he wrote *Essays and Addresses* (1893); *The Foundations of Belief, being Notes Introductory to the Study of Theology* (1895); *Economic Notes on Insular Free Trade* (1903); *Reflections Suggested by the New Theory of Matter* (1904); *Speeches (1880-1905) on Fiscal Reform* (1906); *Criticism and Beauty* (Romanes Lectures, 1909); *Theism and Humanism* (Gifford Lectures, 1915); *Essays, Speculative and Political* (1920); *Theism and Thought* (1923); *Opinions and Arguments* (1927).

BALI. See **DUTCH EAST INDIES**.

BALKAN CONFERENCE. See **GREECE** under *History*.

BALKAN STATES. The collective term applied to those states which make up the Balkan peninsula in southeastern Europe north and west of the Ægean Sea. See **ALBANIA**, **BULGARIA**, **GREECE**, **JUGOSLAVIA**, **RUMANIA**, and **TURKEY**.

BANANAS. See **HORTICULTURE**.

BANKERS' ASSOCIATION, AMERICAN. The dominant national organization of banks in the United States, having a membership of about 20,000 banks out of a total 24,000, with assets estimated in excess of 90 per cent of the nation's aggregate banking capital funds of \$9,400,000,000 and total resources of \$72,000,000,000. The association has four major divisions, each devoted to the special interests, technical advancement, and general welfare of the following classes of banks: National, savings, State, and trust company. Within the organization there are also two sections devoted to general banking interests: the American Institute of Banking section and the State secretaries section. The American Institute of Banking section, which is the educational arm of the organization, has an enrollment of 43,000 students from banks in all parts of the country and a general membership of 63,000; the State secretaries section forms a link between the national organization and the State Bankers' Association.

The association has a protective department which prosecutes continually a nation-wide campaign of prevention, protection, and investigation for all member banks in respect to criminal operations. It also conducts a legal department which keeps bankers informed on developments in the field of banking law and, in connection with the association's State and Federal legislative committees and councils, watches the interests of banking institutions and the public in both State and Federal banking legislation.

During 1930 the organization gave special attention to maintaining equitable bank taxation.

Through its economic policy commission, it made an extensive research into the group-banking movement, disclosing the existence of 275 bank groups comprising 2000 banks with \$15,000,000,000 in combined resources, together with much theretofore unknown information in this field. This commission also investigated bank failures and branch banking, recommending that the association favor a limited degree of branch banking where economically desirable. The educational foundation of the association, with an endowment of \$500,000 to be employed in the furtherance of scholarships and research in banking and finance in educational institutions, allocated 200 loan scholarships valued at \$250 each to students in American colleges. In addition, its public education commission conducted lectures on banking in business schools and civic clubs throughout the United States, and the bank management commission developed active studies and methods for more scientific bank management.

The association holds its annual convention in the autumn of each year, while the executive council meets in the spring. The latter group is a representative body, proportioned to the membership in all States, and is qualified to take action upon certain association matters. The administrative committee, composed of 15 members, including the national officers, heads of the various divisions and sections, and certain others, acts as the *ad interim* governing authority between meetings of the convention and of the executive council. The 1930 convention was held in Cleveland September 28 to October 2, the chief topics of discussion being branch and group banking and methods for improving bank management.

The general national officers elected for 1930-31 were: President, Rome C. Stephenson, vice president, St. Joseph County Savings Bank, South Bend, Ind.; first vice president, Harry J. Haas, vice president, First National Bank, Philadelphia; second vice president, Francis H. Sisson, vice president, Guaranty Trust Company, New York City; treasurer, Grant McPherrin, president, Central National Bank and Trust Company, Des Moines, Iowa; and secretary, William G. Fitzwilson. The continuing activities of the association are carried on by a permanent staff, functioning at the national headquarters in New York City under the direction of the executive manager, Fred N. Shepherd.

BANK FOR INTERNATIONAL SETTLEMENTS. See REPARATIONS.

BANKS AND BANKING. The year 1930 represented practically a period of continued revolution in American banking, as regards condition, though less pronounced as to form and method. While some of the changes thus indicated can be noted on the surface of things, the more fundamental must be determined as a result of statistical analysis. The year was essentially a period of "house cleaning" after the first convulsion of the panic of 1929, which occupied the months of November and December in the latter year. The striking alterations of the 12 months may be classified under three heads: (1) Elimination of weak banks through a great acceleration of the failure and merger movement, (2) Shifting of immense quantities of credit from the securities markets to the banks, and (3) Continuation of the development of chain and branch banking along lines already indicated during the preceding year or two. The close of the 12 months

did not indicate that these processes had nearly reached their limit, but the experience of the year was sufficient to make it evident that an entirely new turn had been given to affairs by the collapse of 1929 and that the major factors already enumerated had emerged as controlling influences.

NATIONAL BANKS. Structurally speaking, the year 1930 did not bring about any considerable change in the position of the national banks. Notwithstanding the urgent recommendations made by the Comptroller of the Currency at the opening of the year with respect to the desired introduction of branch banking, Congress had done nothing either on that or any other allied subject, although the House of Representatives Committee on Banking and Currency had during the first six months of the year held hearings with reference to the subject. According to the report of the Comptroller of the Currency published soon after the assembling of Congress, the total number of associations existing at the close of the report year (Oct. 31, 1930) was 7218 or about 288 less than a year earlier. There had also been an important change in resources, the aggregate showing a total of \$28,378,683,000, or a gain of about \$454,373,000, equal to 1.63 per cent. Consolidations, failures and combinations had worked together to impair either the strength or the numbers of the national banks, and to weaken the system accordingly. The total number of receivers appointed during the year was 104, as compared with 79 during 1929.

The hearings before the House Committee already referred to, developed more clearly than ever before, the very large percentage of national banks that were actually controlled by other institutions under some chain or group plan, and revealed the fact that but few bankers were definitely well satisfied with the conditions under which the system is being carried on. It further developed a very marked difference of opinion with reference to the application of the branch plan, inasmuch as there were abundant evidences that decided differences of interest were recognized by city bankers in this connection. Had it not been for uncertainty possibly due to the existence of business depression, it is probable that legislation of distinctly far-reaching character would have been introduced with a view to clearing up the position of the national banking system as an element in the financial structure of the country.

Brief analysis of the condition of national banks is furnished in the table on page 84, in which the chief assets and liabilities of the System are contrasted for a series of dates. From this showing, the continuation of tendencies already observable in 1929 is made evident. For the report year 1930, the average earning of national banks (measured by capital and surplus) was approximately 7.11 per cent and the total net addition to profit was \$246,261,000, or about \$55,000,000 less than the increase for the preceding year.

FEDERAL RESERVE MEMBERS. Federal Reserve Member Banks' condition more and more assumed a position of significance as a banking index during the year. It is reflected in the weekly reports from about 600 institutions, located in 100 of the larger cities, reports from which are thought to constitute something near 50 per cent of the entire commercial assets of the country. The figures furnished at the close of the year with respect to the situation of this select body of

CHANGES IN NATIONAL BANK POSITION
[In thousands of dollars]

| | June 30, 1924 | June 30, 1925 | Per cent in- crease (+) or decrease (-) since June 30, 1924 | June 30, 1926 | Per cent in- crease (+) or decrease (-) since June 30, 1925 |
|---|------------------|------------------|---|------------------|---|
| Demand deposits | 9,598,250 | 10,430,254 | + 8.72 | 10,778,608 | + 3.34 |
| Time deposits | 5,259,933 | 5,924,658 | + 12.64 | 6,813,809 | + 6.57 |
| Loans and discounts * | 11,978,728 | 12,674,067 | + 5.80 | 13,417,674 | + 5.87 |
| United States and other bonds, stocks, etc. | 5,142,328 | 5,730,444 | + 11.44 | 5,842,253 | + 1.95 |
| Lawful reserve with Federal Reserve banks | 1,198,670 | 1,326,864 | + 10.69 | 1,381,171 | + 4.09 |
| | June 30, 1927 | June 30, 1928 | Per cent in- crease (+) or decrease (-) since June 30, 1926 | June 30, 1929 | Per cent in- crease (+) or decrease (-) since June 30, 1927 |
| Demand deposits | | 10,923,729 | + 1.85 | 11,003,795 | + 0.73 |
| Time deposits | | 7,315,624 | + 15.87 | 8,296,638 | + 13.41 |
| Loans and discounts * | | 13,955,696 | + 4.01 | 15,144,995 | + 8.52 |
| United States and other bonds, stocks, etc. | | 6,893,218 | + 9.43 | 7,147,448 | + 11.80 |
| Lawful reserve with Federal Reserve banks | | 1,406,052 | + 1.80 | 1,453,383 | + 3.37 |
| | June 29, 1929 | June 30, 1930 | Per cent in- crease (+) or decrease (-) since June 30, 1928 | June 30, 1930 | Per cent in- crease (+) or decrease (-) since June 30, 1929 |
| Demand deposits | | 10,504,268 | - 4.54 | 10,926,201 | + 4.02 |
| Time deposits | | 8,317,095 | + 0.25 | 8,752,571 | + 5.24 |
| Loans and discounts * | | 14,801,130 | - 2.27 | 14,087,752 | + 0.59 |
| United States and other bonds, stocks, etc. | | 6,656,535 | - 6.87 | 6,888,171 | + 3.48 |
| Lawful reserve with Federal Reserve banks | | 1,344,951 | - 7.46 | 1,421,676 | + 5.70 |

* Includes rediscounts and customers' liability under letters of credit.

banks may be presented compactly in the following table:

WEEKLY STATEMENT OF REPORTING MEMBER
BANKS
[Amounts given in millions of dollars]

| | Dec. 31, 1930 | Change from Week before | Year 1929 |
|--|------------------|-------------------------------|--------------|
| Loans and investments ... | \$22,956 | — \$29 | — \$207 |
| Loans, total | 16,263 | + 63 | — 1,386 |
| On securities | 7,814 | + 35 | — 490 |
| All other | 8,449 | + 28 | — 895 |
| Investments, total | 6,693 | — 92 | + 1,179 |
| U. S. Government securities | 2,992 | — 164 | + 399 |
| Other securities | 3,701 | + 72 | + 780 |
| Reserve with Federal Reserve banks | 1,878 | + 106 | + 152 |
| Cash in vault | 287 | — 31 | + 25 |
| Net demand deposits | 13,999 | + 396 | — 119 |
| Time deposits | 7,070 | — 56 | + 283 |
| Government deposits | 204 | + 2 | + 122 |
| Due from banks | 1,617 | + 210 | + 301 |
| Due to banks | 3,539 | + 336 | + 389 |
| Borrowings from Federal Reserve system | 89 | — 171 | — 316 |

The figures thus quoted show that during the year there was a very noteworthy increase in the total amount of security loans and investments. Further analysis shows that loans on commercial paper—the “all other” of the statement—had declined about \$895,000,000; loans on securities were also off about \$490,000,000. On the other hand investments had increased by about \$1,179,000,000, the result being a net increase in the amount of securities and loans on securities, taken together, of approximately \$689,000,000.

This situation merely reflected the great shift of credit that had already taken place during the process of cutting down brokers' loans, accommodation being asked from the banks as brokers' loans declined, so that the amount of bank credit issued continued steadily about the same throughout the year, notwithstanding that brokers' loans fell off and that their place was taken by fresh

advances on the part of the banks. In short, the interesting thing about the member bank statement was found in the fact that despite the general shrinkage of speculative credit all around, there had been a steadily outstanding body of bank credit that showed little or no change.

STATE BANKS AND TRUST COMPANIES. There was not much difference during the year in the situation of State banks and trust companies as compared with that of national banks. Loans on the whole fell off slightly, in all by about 4 per cent, while investments increased in a somewhat corresponding degree. The banks were stronger in cash at the end of the year than at the beginning, while their capital and surplus taken together, represented slight advance. Total resources were almost exactly the same, while individual deposits showed a trifling shrinkage. Altogether, the year had evidently served to arrest the growth that had been taking place in the operation of the State bank and trust companies, just as had been the case with the national banks, although in the main the latter showed a more consistent growth than did the State institutions.

Neither in the national nor in the State banks, was there any success in further reducing the great burden of bonds and other securities which had been carried along as investments. As was shown in the statement of member bank conditions, so also in that of State banks, reductions in commercial loans and accommodations to the business community were promptly offset by advance in the amount of the investment portfolio. The inference, drawn at the close of 1929, that inflation had gone about as far as it was likely to go, was thus set at nought, inasmuch as—although the operations of 1930 did not reveal any decided increase in the total amount of credit issued—they did show a shift from more liquid to less liquid forms of holdings. The following table sketches the principal changes that took place among banks other than national:

PRINCIPAL ITEMS OF RESOURCES AND LIABILITIES OF STATE (COMMERCIAL), SAVINGS, PRIVATE BANKS, AND LOAN AND TRUST COMPANIES
[In thousands of dollars]

| Items | 1926 | 1927 | 1928 | 1929 | 1930 |
|-------------------------------------|------------|------------|------------|------------|------------|
| Loans ^a | 22,623,107 | 28,348,844 | 24,437,341 | 26,621,803 | 25,612,874 |
| Investments | 9,972,888 | 10,861,875 | 11,624,366 | 10,692,203 | 11,056,557 |
| Cash | 636,569 | 643,692 | 572,732 | 521,925 | 523,463 |
| Capital | 1,860,431 | 1,902,325 | 1,931,666 | 2,169,603 | 2,145,445 |
| Surplus and undivided profits | 2,858,653 | 8,180,867 | 3,394,758 | 8,742,523 | 4,046,591 |
| Deposits (individual) | 81,789,884 | 32,893,201 | 33,944,265 | 34,316,418 | 33,885,105 |
| Resources | 39,577,738 | 41,550,615 | 43,066,089 | 44,732,277 | 44,903,585 |

^a Including overdrafts.

FEDERAL RESERVE BANKS. Federal Reserve Banks had already reduced their discount rates to 4½ per cent before the end of 1929, following out the policy of rendering money easier with a view to alleviating the supposed effects of the panic of 1929. The cut in money rates had had no immediate influence and it was believed that the reason was probably that the policy had not been carried far enough. The opening of the year had been characterized by hopeful predictions, many of which asserted that an early recovery might be expected, and most of which assumed the thought that cheap money was probably the most effective and certain method of attaining such recovery. The course of the panic, however, tended

to establish the contrary. There was no recovery in business, but depression maintained itself throughout the year and grew deeper as the year advanced. The cheap money advocates accordingly demanded still further reductions in the rate of discount and eventually received them, the rate being cut first to 4 per cent, then to 3½, then to 3 per cent, to 2½, and finally on December 23 to 2 per cent in New York, while in other reserve cities reductions brought the rate down to 3 to 3½ per cent in all other Reserve institutions. The 2 per cent rate was the lowest in the history of the Reserve System; but it neither stimulated the demand for money, nor did it make rates in general any cheaper; indeed the year as

RESOURCES AND LIABILITIES OF FEDERAL RESERVE SYSTEM

| RESOURCES | Twelve Federal Reserve Banks | | |
|---|------------------------------|-----------------|-----------------|
| | Dec. 31, 1930 | Dec. 31, 1930 | Dec. 31, 1929 |
| Gold with Federal Reserve agents | \$1,730,439,000 | \$1,703,400,000 | \$1,676,918,000 |
| Gold redemption fund with U. S. Treasury | 34,911,000 | 35,450,000 | 73,287,000 |
| Gold held exclusively against Federal Reserve notes ... | 1,765,350,000 | 1,738,850,000 | 1,750,205,000 |
| Gold settlement fund with Federal Reserve Board | 417,740,000 | 437,581,000 | 511,243,000 |
| Gold and gold certificates held by banks | 758,129,000 | 745,636,000 | 595,603,000 |
| Total gold reserves | 2,941,219,000 | 2,922,067,000 | 2,857,051,000 |
| Reserves other than gold | 140,298,000 | 115,499,000 | 153,877,000 |
| Total reserves | 3,081,517,000 | 3,037,566,000 | 3,010,928,000 |
| Nonreserve cash | 79,932,000 | 59,750,000 | 81,909,000 |
| Bills discounted: | | | |
| Secured by U. S. Government obligations | 89,421,000 | 219,422,000 | 353,559,000 |
| Other bills discounted | 161,977,000 | 228,927,000 | 278,862,000 |
| Total bills discounted | 251,398,000 | 448,349,000 | 632,421,000 |
| Bills bought in open market | 363,844,000 | 259,837,000 | 392,209,000 |
| U. S. Government securities: | | | |
| Bonds | 163,785,000 | 127,234,000 | 76,817,000 |
| Treasury notes | 226,473,000 | 195,090,000 | 215,604,000 |
| Certificates and bills | 339,209,000 | 321,352,000 | 218,166,000 |
| Total U. S. Government securities | 729,467,000 | 641,676,000 | 510,587,000 |
| Other securities | 7,143,000 | 6,533,000 | 12,300,000 |
| Total bills and securities | 1,351,852,000 | 1,356,395,000 | 1,547,517,000 |
| Due from foreign banks | 704,000 | 703,000 | 721,000 |
| Uncollected items | 584,783,000 | 570,952,000 | 706,588,000 |
| Federal Reserve notes of other banks | 21,993,000 | 21,019,000 | 42,148,000 |
| Bank premises | 57,843,000 | 59,783,000 | 57,359,000 |
| All other resources | 22,024,000 | 22,525,000 | 11,275,000 |
| Total resources | \$5,200,648,000 | \$5,128,693,000 | \$5,458,445,000 |

LIABILITIES

| | | | |
|--|-----------------|-----------------|-----------------|
| Federal Reserve notes in actual circulation | \$1,663,538,000 | \$1,721,897,000 | \$1,909,723,000 |
| Deposits: | | | |
| Member bank—reserve account | 2,470,583,000 | 2,366,717,000 | 2,355,263,000 |
| Government | 18,819,000 | 46,180,000 | 28,852,000 |
| Foreign bank | 5,761,000 | 5,656,000 | 5,710,000 |
| Other deposits | 21,970,000 | 18,396,000 | 23,850,000 |
| Total deposits | 2,517,133,000 | 2,436,949,000 | 2,413,675,000 |
| Deferred availability items | 564,007,000 | 503,448,000 | 672,922,000 |
| Capital paid in | 169,640,000 | 170,314,000 | 170,973,000 |
| Surplus | 274,636,000 | 276,936,000 | 276,936,000 |
| All other liabilities | 11,694,000 | 19,149,000 | 14,216,000 |
| Total liabilities | \$5,200,648,000 | \$5,128,693,000 | \$5,458,445,000 |
| Ratio of total reserves to deposit and Federal Reserve note liabilities combined | 73.7% | 73.0% | 69.6% |
| Contingent liability on bills purchased for foreign correspondents | \$439,288,000 | \$432,327,000 | \$547,962,000 |

a whole was characterized by an increasing scarcity of loan funds, and by a steadily maintained high rate so far as the general borrower was concerned.

Meantime, the business depression had spread all over the world and in many countries it had been deemed necessary to make foreign payments in gold, thus reducing the balance of that metal in the vaults of central banks. The United States, in the course of the year, after minor ups and downs showed a net balance of about \$300,000,000 gold, but other countries tended to report less and less gold so that maladjustment of specie supply was a constant and serious problem throughout the period. So far as the Federal Reserve banks were concerned, however, the matter did not largely figure, inasmuch as the stock of gold in these banks was at no time in the danger of seriously running down, after the close of the movement which set in at the end of 1928 had once been checked. From time to time, during the year, it was understood that the necessities of various foreign countries had necessitated changes in the buying policy of the reserve banks in the endeavor to maintain their gold reserves as nearly steady as possible and to prevent gold from rushing toward the United States in an unduly large volume. As the year drew to a close, there was a tendency to enlarge the volume of acceptances held and to purchase freely of treasury certificates in the endeavor to render the cheap money policy effective by forcing purchasing power out into the hands of the community.

The gold situation was particularly in need of careful attention during the year 1930 in view of the fact that just before the panic not a few foreign institutions, alarmed at the outlook, had sent for their balances and had withdrawn them, in part at least, from the United States. There was a further development of this same policy during the early months of 1930, but it gradually came to a close. Country after country in all parts of the world felt the depression and in nearly all there was trouble of more or less serious nature. It was not strange that, in such circumstances, bankers who at first were inclined to think their funds safer at home should change their minds and should send the money back to the United States. At the close of the year 1930, in spite of the numerous bank failures of the year, there was a tendency to a renewed flow of capital to the United States from many foreign countries. The volume of endorsed acceptances held by Reserve banks and representing funds held in trust for foreign central and other banks was thus shown to be on the increase. The table on page 85 shows the year-end condition of the System.

BANK CREDIT. Reference already has been made incidentally to the great shift of credit that took place during the year through the substitution of advances by banks for brokers' loans. It is worth while, however, to devote a little more attention to this latter branch of banking business. The loans in question had reached their peak just before the panic of 1929 with a total of about \$3,500,000,000, but had lost more than half of this amount before the end of the year, standing then a little below \$4,000,000,000. Recession during the early part of 1930 was relatively slow, but after the short fictitious boom of the forepart of 1930, withdrawal of funds from the market set in actively and by the close of the year the loan account had fallen below \$1,800,000,000. At

the same time the loans advanced by nonbanking members—the so-called "others" of the bank statements—had been reduced to a nominal figure falling below \$300,000,000.

It was admitted that at the close of the year the brokers' loan account had been reduced to probably less than normal proportions and inasmuch as brokers' loans can be taken as measuring not the amount of bank credit, but the activity of speculative credit—that this reduction represented the retirement from the market of the large majority of sporadic or transitory participants. The following table showing brokers' loans during 1930 as reported by the New York Stock Exchange permits the development during the year to be clearly traced.

BROKERS' LOANS, 1930

| | | Demand | Time | Total |
|-------|----|---------------|-------------|---------------|
| Jan. | 31 | 3,528,246,115 | 456,521,950 | 3,984,768,065 |
| Feb. | 28 | 3,710,563,352 | 457,025,000 | 4,167,588,352 |
| Mar. | 31 | 4,052,161,339 | 604,141,000 | 4,656,302,339 |
| April | 30 | 4,362,919,341 | 700,212,018 | 5,063,131,359 |
| May | 29 | 3,966,873,034 | 780,958,878 | 4,747,831,912 |
| June | 30 | 2,980,284,038 | 747,427,251 | 3,727,711,289 |
| July | 31 | 3,021,363,910 | 668,118,387 | 3,689,482,297 |
| Aug. | 30 | 2,912,612,666 | 686,020,403 | 3,598,633,069 |
| Sept. | 30 | 2,830,259,339 | 651,193,422 | 3,481,452,761 |
| Oct. | 31 | 1,980,639,692 | 569,484,395 | 2,550,124,087 |
| Nov. | 30 | 1,691,494,226 | 470,754,776 | 2,162,249,002 |
| Dec. | 31 | 1,519,400,054 | 374,212,835 | 1,893,612,890 |

BANK FAILURES. Prosperity during the years 1928-29 helped to cut the total number of bank failures quite materially as compared with preceding years. The difficult condition which followed closely upon the collapse of 1929 tended, of course, to drive many banks into a more difficult position and from the very opening of the year, there was a renewed tendency to failure. This tendency continued on a fairly even basis up to the autumn, when it suddenly assumed increased significance, failures during November representing almost as large a total of capital as for all of the year preceding. Heavy failures also took place in December and included the Bank of United States (New York City), the failure of this latter institution being one of the largest for a good many years. In the table on page 87 the gradual development of the bank failure situation is set forth—the general causes being essentially the same as those of former years.

INTERNATIONAL RELATIONS. International relations on the part of American banks underwent few changes during 1930. The Bank of International Settlements which had been provided for at the time of the Paris conference on the Young Plan was duly organized and set in operation, but throughout the year, its dealings continued upon a restricted basis and the relationship between it and the Federal Reserve System was not such as to disturb conditions already established in other years. During the late autumn of 1930 further conferences among central bankers took place in both London and Berlin, bankers on both sides of the Atlantic having become alarmed by reason of the fact that Germany was clearly feeling so much difficulty in the settlement of reparations with corresponding possibilities of trouble in connection with exchange payments between countries participating in the international debt settlements. Nothing was made known concerning the actual results of these conferences up to the close of the year, though it was understood that the general situation had been

brought to the attention of President Hoover and discussed with him. See REPARATIONS; FINANCIAL REVIEW.

BANK SUSPENSIONS, BY CLASS OF BANK
[Amounts in thousands of dollars]

| Month | All banks | | Member banks | | Non-member banks | |
|----------------------|-----------|-----------------|--------------|-----------------|------------------|-----------------|
| | Num-ber | Total de-posits | Num-ber | Total de-posits | Num-ber | Total de-posits |
| Total, 12 mos., 1927 | 662 | 193,891 | 124 | 66,336 | 538 | 127,555 |
| 1928 | | | | | | |
| January .. | 53 | 12,721 | 8 | 3,456 | 45 | 9,265 |
| February .. | 50 | 20,767 | 11 | 10,982 | 39 | 10,685 |
| March | 65 | 19,443 | 9 | 4,373 | 56 | 15,070 |
| April | 44 | 9,910 | 6 | 3,361 | 38 | 6,549 |
| May | 29 | 6,968 | 5 | 2,287 | 24 | 4,681 |
| June | 28 | 15,209 | 2 | 1,699 | 26 | 13,510 |
| July | 24 | 6,076 | 2 | 468 | 22 | 5,608 |
| August | 21 | 6,827 | 4 | 2,493 | 17 | 4,434 |
| September .. | 20 | 8,849 | 4 | 3,806 | 16 | 5,043 |
| October .. | 41 | 9,024 | 3 | 2,803 | 38 | 8,200 |
| November .. | 72 | 24,784 | 9 | 11,021 | 63 | 13,763 |
| December .. | 44 | 11,076 | 10 | 3,919 | 34 | 7,157 |
| Total, 12 mos., 1928 | 491 | 138,642 | 73 | 42,240 | 418 | 96,402 |
| 1929 | | | | | | |
| January .. | 54 | 17,905 | 6 | 10,158 | 48 | 7,747 |
| February .. | 60 | 23,490 | 14 | 4,924 | 46 | 18,574 |
| March | 49 | 8,340 | 8 | 2,490 | 41 | 5,850 |
| April | 29 | 9,182 | 4 | 1,922 | ... | 7,240 |
| May | 110 | 34,219 | 7 | 4,912 | 103 | 29,307 |
| June | 48 | 21,274 | 7 | 3,353 | 41 | 18,371 |
| July | 69 | 70,426 | 11 | 24,136 | 58 | 46,290 |
| August | 17 | 7,912 | 3 | 1,005 | 14 | 6,907 |
| September .. | 39 | 10,242 | 3 | 1,326 | 36 | 8,916 |
| October .. | 43 | 13,964 | 5 | 4,509 | 38 | 9,455 |
| November .. | 69 | 24,609 | 4 | 2,319 | 65 | 22,290 |
| December .. | 50 | 15,451 | 9 | 3,029 | 41 | 12,430 |
| Total, 12 mos., 1929 | 637 | 257,014 | 81 | 64,083 | 531 | 193,377 |
| 1930 | | | | | | |
| January .. | 97 | 30,127 | 13 | 8,677 | 84 | 21,450 |
| February .. | 85 | 33,207 | 19 | 14,794 | 66 | 18,413 |
| March | 75 | 23,709 | 10 | 8,248 | 65 | 15,461 |
| April | 95 | 34,251 | 7 | 3,222 | 88 | 30,929 |
| May | 52 | 18,608 | 3 | 2,220 | 49 | 16,388 |
| June | 67 | 71,029 | 10 | 16,395 | 57 | 54,634 |
| July | 65 | 33,166 | 9 | 10,746 | 56 | 22,420 |
| August | 66 | 21,913 | 9 | 3,561 | 57 | 18,352 |
| September .. | 60 | 24,093 | 9 | 1,940 | 57 | 22,153 |
| October .. | 66 | 26,605 | 10 | 3,926 | 56 | 22,679 |
| November .. | 236 | 204,082 | 31 | 107,548 | 205 | 96,534 |
| December .. | 328 | 407,327 | 57 | 217,383 | 371 | 189,944 |
| 1930 Jan.-Dec. | 1,326 | 903,954 | 188 | 388,799 | 1,138 | 515,155 |

BAPTISTS. In 1930 there were in the United States 14 groups comprised in the denomination known as Baptist, which maintains that baptism should be administered to believers only and generally by immersion. The first Baptist Church in America probably was established by Roger Williams in Providence, R. I., in 1639, although this honor is claimed by the First Baptist Church of Newport, R. I., organized the same year or shortly after. As a result of political differences, and particularly on account of the question of slavery prior to the Civil War, the Southern Baptists withdrew from the national organization in 1845, forming the Southern Baptist Convention, which, since that time, has functioned not as a new denomination but as an organization for the purpose of directing missionary and general evangelistic work in the white Baptist churches of the Southern States. The National Baptist Convention, representing the Negro churches, was formed in 1880. Other divisions

were known as Primitive, General, Regular, and United Baptists.

According to the *American Baptist Year Book*, 1931, there were in the United States in 1930 a total of 53,888 churches of the Northern, Southern, and National (Negro) Baptist conventions, with 49,907 ordained ministers and 2070 local associations. Baptisms during the year numbered 311,404, making the total membership 8,915,785. Sunday schools numbered 46,132, with an enrollment of 5,143,056 pupils. Church property was valued at \$569,091,200, and contributions amounted to \$92,392,175, of which \$76,468,934 was for current expenses and \$15,923,241 for beneficence. The churches are congregational in polity, each church being sovereign as to its own discipline and worship. Applicants for the ministry are licensed to preach by the churches in which they hold membership.

NORTHERN BAPTIST CONVENTION. In 1930 the Northern Baptist Convention, composed of 37 conventions in 35 States, reported 431 local associations, 8193 churches, 8786 ordained ministers, 61,237 baptisms during the year, 1,410,325 members, 7595 Sunday schools, and 1,161,363 Sunday-school pupils. The twenty-third annual meeting of the Northern Baptist Convention was held in Cleveland, Ohio, May 28-June 2, 1930, the general theme being "After Nineteen Hundred Years." The keynote address was given by Dr. Clarence A. Barbour, president of Brown University. In addition to addresses in connection with the presentation of annual reports, other speakers were Prof. William Lyon Phelps of Yale University; the Rev. S. M. Lindsay of Brookline, Mass.; the Rev. W. B. Riley of Minneapolis, Minn.; and the Rev. Harry Emerson Fosdick of New York City. The officers elected for 1930 were: President, Albert W. Beaven, D.D., LL.D., president of Colgate-Rochester Divinity School, Rochester, N. Y.; first vice president, Mattison B. Jones, Esq., of Glendale, Calif.; second vice president, J. L. Kraft of Chicago, Ill.; corresponding secretary, Maurice A. Levy, D.D., of Pittsfield, Mass.; recording secretary, Clarence M. Gallup, D.D., of Providence, R. I.; statistical secretary, Charles A. Walker, D.D., of Dover, Del.; and treasurer, Orrin R. Judd of New York City. The next annual meeting was to be held in Kansas City, Mo., June 3-8, 1931.

In 1930 the Northern Baptist Convention maintained 58 educational institutions, including 13 theological seminaries, 2 training schools, 21 colleges, 6 junior colleges, and 15 academies. These institutions in 1929 had 36,980 students, 2591 instructors, 571 buildings, property aggregating \$83,749,300 in value, endowments valued at \$127,320,022, and an annual income for the year of \$18,007,940. The foreign-mission field of the Northern Baptist Convention included Burma, Assam, South India, Bengal-Orissa, South China, East China, West China, Japan, Belgian Congo, and the Philippine Islands, 712 missionaries working at 126 stations. In 1929 churches numbered 2311 with 276,408 members; native workers, 10,296; schools, 2635, with an enrollment of 115,446 pupils; and hospitals and dispensaries, 94, with a total of 22,949 in-patients and 313,248 out-patients.

The field of the Home Mission Societies included, in addition to the United States and its dependencies, Mexico, the West Indies, Central America, the Canal Zone, and South America. Their greatest activity was among the Negroes,

Indians, and new Americans. The denomination also maintained six hospitals, the largest being the New England Baptist Hospital in Boston and the Northwestern Baptist Hospital in St. Paul; 20 homes for the aged; and 15 children's homes. The official periodical of the Northern Baptist Convention is *The Baptist* (Chicago); other denominational papers are the *Watchman-Examiner* (New York City), *Baptist Observer* (Indianapolis), *Baptist Banner* (Parkersburg, W. Va.), and *Baptist Record* (Pella, Iowa). In addition, most of the State conventions issue monthly bulletins. Headquarters of the American Baptist Publication Society are in Philadelphia.

SOUTHERN BAPTIST CONVENTION. In the *Southern Baptist Handbook, 1930*, there were reported 18 State conventions, 24,010 churches, 23,431 ordained ministers, 175,631 baptisms during the year, 3,770,645 members, 20,972 Sunday schools, 2,776,665 Sunday-school pupils, 24,273 Baptist Young People's Unions with a membership of 500,405. Contributions totaled \$39,337,148, and church property was valued at \$213,327,088. The receipts of the boards of the convention in 1930 were as follows: Southern Baptist Foreign Mission Board (Richmond, Va.), \$1,222,287; Southern Baptist Home Mission Board (Atlanta, Ga.), \$439,754; Sunday School Board of the Southern Baptist Convention (Nashville, Tenn.), \$1,954,109; and Old Ministers' Relief and Annuity Board (Dallas, Texas), \$915,980. The denomination maintained 97 schools and colleges, including 5 theological schools, 31 senior colleges, 30 junior colleges, and 31 academies, with a total enrollment of 34,894 students, 1761 instructors, endowment amounting to \$21,725,429, and property valued at \$41,642,122. It also reported 28 hospitals (two fostered by the Southern Baptist Convention and 26 by the State conventions), valued at \$15,122,740 and accommodating 81,921 patients during the year; 18 children's homes with a property value of \$5,740,971 and accommodating 4588 children; and 3 homes for the aged.

The annual sessions of the Southern Baptist Convention were held in New Orleans May 14-18, 1930. Practically no changes were made in the organization of the work of the convention; but decided enlargement in the work of the Men's Brotherhood of the South was reported, one new feature was added to the work of the Old Ministers' Relief and Annuity Board, and the more difficult and perilous situation confronting the schools and colleges of the convention was plainly pointed out. The following officers were elected: William J. McGlothlin, Ph.D., D.D., LL.D., of Greenville, S. C., president; M. E. Dodd, D.D., of Shreveport, La., vice-president; John E. White, D.D., LL.D., of Savannah, Ga., vice-president; M. P. Love of Hattiesburg, Miss., vice-president; Charles W. Daniel, D.D., of Richmond, Va., vice-president; Hight C. Moore, D.D., Litt.D., of Nashville, Tenn., recording secretary; Henry Burnett of Macon, Ga., recording secretary; Austin Crouch, D.D., of Nashville, Tenn., executive secretary.

NATIONAL BAPTIST CONVENTION (NEGRO). In 1930 there was reported for the National Baptist Convention 1280 local associations and 48 State conventions; 21,712 churches; 18,743 ordained ministers; a constituency of 3,528,528 members, of whom 79,502 were baptized during the year; 20,252 Sunday schools, with an enrollment of 1,448,921 pupils, and contributions from all sources amounting to \$5,237,226. At the annual

meeting of the convention held in New York City Sept. 11-16, 1930, the Lott Carey Foreign Mission Convention and the National Baptist Convention entered into a compact for combining their efforts in the foreign mission field. The work of the home mission department also was extended by the establishment of five stations in the Canal Zone under a resident missionary. The Virginia Theological and Missionary Training School in Lynchburg, Va., received indorsement as a national seminary for the training of ministers and missionaries.

OTHER GROUPS. In addition to several unorganized groups of foreign-speaking Baptists in the United States, there were the following organized bodies: German, Swedish, French-speaking Baptists of New England, Finnish Baptist Mission Union, American Magyar (Hungarian), Italian, Danish, Norwegian, Czechoslovak, Polish, Rumanian, Portuguese, and Russian-Ukrainian conferences. Spanish-speaking (Mexican) Baptists were well organized in some sections, North and South; and there were unorganized bodies of Chinese and Japanese Baptists. Statistics for these bodies in 1930 were as follows: Churches, 957; ministers, 841; baptisms, 4360; membership, 90,991; Bible schools, 938; Bible-school enrollment, 80,012; property valuation, \$12,513,600; and contributions, \$2,711,308.

Smaller branches of the denomination, differing in various respects from the main branches of the church, included the following Baptists: General Six-principle, Seventh-day, Free Will, United American Free Will (Colored), Free Will (Bullockites), General, Separate, Regular, United, Duck River, Primitive, Colored Primitive, Two-Seed-in-the-Spirit Predestinarian, Independent Baptist Church of America, and American Baptist Association. The total number of members, according to the Federal Census of Religious Bodies of 1926, was 429,955. See also BAPTISTS, FREE.

The *British Baptist Hand Book* for 1930 prepared the following statistics of the denomination in 1929:

BAPTIST CHURCHES AND MEMBERSHIP: 1929

| | Churches | Ministers | Members |
|-----------------|----------|-----------|------------|
| America | 58,111 | 52,020 | 8,978,834 |
| Europe | 8,207 | 4,884 | 1,639,656 |
| Asia | 3,464 | 1,640 | 361,800 |
| Africa | 1,295 | 393 | 83,041 |
| Australia | 492 | 416 | 35,113 |
| Total | 71,569 | 59,333 | 11,098,444 |

In the Dominion of Canada there were three conventions: that of Ontario and Quebec; that of the Maritime Provinces, including New Brunswick, Nova Scotia, and Prince Edward's Island; and the Western Baptist Union, composed of Manitoba, Saskatchewan, Alberta, and British Columbia. In these conventions in 1930, there were 1258 churches, with 705 ordained ministers; 133,718 members, 4581 having been baptized during the year; and 1125 Sunday schools with an enrollment of 102,242 pupils. Property valuation, exclusive of Ontario and Quebec, aggregated \$6,612,600; and contributions for the year amounted to \$2,847,307, of which \$2,391,918 was devoted to current expenses and \$455,389 to missionary beneficence. In Mexico, there were 80 churches, 75 ordained ministers, and 6283 members, of whom 537 were baptized during the year.

The Baptist World Alliance, which was organized in 1905, meets every five years. A meet-

ing was held in Toronto, Canada, in July, 1928. The relationship of the World Alliance to the Baptist churches is purely advisory; its purpose is the discussion of interests common to the denomination.

BAPTISTS, FREE. A branch of the Baptist denomination, which by 1930 had practically completed its policy of merging with the Northern Baptist Convention. The General Conference of the Free Baptists, the national incorporated organization, however, still preserved its legal existence and powers. This body is of Northern Free Baptists and is not to be confused with other branches, one centring in North Carolina and known as Free Will Baptists and another centring in Texas and Oklahoma and known as both Free Baptists and Free Will Baptists, although the latter body has been and still is in affiliation with the Free Baptists of the North. Estates in which life interests terminated or other entailments were removed were still coming to its treasury. The majority of Free Baptist ministers, churches, and members were included in the enumeration of the Northern Baptist Convention. Alfred Williams Anthony was serving as corresponding secretary and treasurer. See BAPTISTS.

BAR ASSOCIATION, AMERICAN. A national association, organized in 1878 to advance the science of jurisprudence, the administration of justice, harmony in legislation, and the observance of legal precedents throughout the United States, as well as to uphold the legal profession and promote good understanding among its members. The fifty-third annual meeting was held in Chicago, Ill., Aug. 20-23, 1930, and was attended by more than 2700 delegates. Preceding the meeting there were held on August 18-19 sessions of the following sections: Criminal law and criminology; judicial; legal education and admissions to the bar; mineral law; patent, trade-mark, and copyright law; public utility law; and also the fortieth annual conference of the commissioners on uniform State laws.

The reception to the visiting representatives of the British, Scottish, Irish Free State, French, and Canadian bars was the principal feature of the annual meeting. The address of welcome was delivered by Charles Evans Hughes, Chief Justice of the U. S. Supreme Court, and the responses were made by Viscount Dunedin, a Lord of Appeal in Ordinary, on behalf of the British bar; James S. Leadbetter, King's Counsel, on behalf of the Scottish bar; Henry Hanna, Judge of the High Court, on behalf of the bench and bar of the Irish Free State; Henri Decugis, advocate, for the Paris bar; and Horace Harvey, Chief Justice of Alberta, for the Canadian bar. At the luncheon in honor of the foreign guests the address was given by Sir John Simon, chairman of the Indian Statutory Commission, who spoke on "Some Aspects of the Indian Problem." Other important addresses at the annual meeting were: Henry Upson Sims, the retiring president, on "The Relation of Constitutional Limitations to the Reform of the Law"; George W. Wickersham, chairman of the Federal Commission on Law Observance and Enforcement, on "The Programme of the Commission on Law Observance and Enforcement"; Thomas D. Thacher, Solicitor-General of the United States, on "Bankruptcy Investigation"; N. W. Rowell, member of the Toronto bar, on "Canada's Position in the British Commonwealth of Nations"; and the Rt. Hon. Hugh

Pattison MacMillan, a Lord of Appeal in Ordinary, on "Law and Letters."

Among the important actions taken by the association were authorization of the appointment of a committee on the unauthorized practice of law, and approval of the Uniform Child Labor Law, drafted by the commissioners on uniform State laws, which was to be presented especially to the legislatures of the States which were dilatory in welfare legislation of this character. There also was appointed by the executive committee a special committee to formulate a plan for affiliation between the State bar associations and the American Bar Association, so that the latter organization might become "the means of more accurately expressing the sentiment of the lawyers of the country." The association's medal, for conspicuous service in the cause of American jurisprudence, was presented to Elihu Root at the session on August 22.

On Nov. 18, 1930, the association announced the result of the referendum which it had conducted among its members as to repeal of the Eighteenth Amendment; 13,779 were in favor of the repeal, and 6340 were opposed to it. The total membership of the association in 1930 was 29,649. The officers elected for 1930-31 at the Chicago meeting were: Josiah Marvel of Wilmington, Del., president; John H. Voorhees of Sioux Falls, S. D., reelected treasurer; and William P. MacCracken, Jr., of Chicago, reelected secretary. On account of the death of Mr. Marvel (q.v.) Charles A. Boston of New York City was elected to the presidency on November 1. Headquarters of the association are at 1140 North Dearborn Street, Chicago, Ill. See PROHIBITION; INTERNATIONAL LAW.

BARBADOS. A West Indian island colony of Great Britain, lying to the east of the Windward Islands, with an area of 166 square miles and a population at the census of 1921 of 156,312 (estimated Jan. 1, 1929, 167,953), or more than 1000 to the square mile. The capital is Bridgetown, with a population of 13,486. The movement of population in 1928 was: Births, 5672; deaths, 3993. The average attendance at the 129 primary schools in 1928 was 15,197 out of an enrollment of 23,380.

Sugar and cotton are the staple products, 62,658 tons of sugar, 7,229,181 gallons of molasses, and 14,195 pounds of cotton being exported in 1928. Due to the world depression in sugar prices the island suffered a severe economic crisis in 1930 (see GREAT BRITAIN, under *History*). In the calendar year 1929 imports were valued at £2,337,754 and exports at £1,531,040; imports from United States, \$1,388,000; exports to U. S., \$493,000. For the fiscal year 1928-29 revenues totaled £441,732, expenditures, £459,626; and the public debt, £610,000. Trade is principally with the United Kingdom, the United States, and Canada. A total of 3,981,607 tons of shipping entered and cleared the port of Bridgetown during 1928. A governor administers the affairs of the island with the assistance of an executive council, an executive committee, a legislative council of nine members appointed by the King, and an assembly of 24 members elected annually by about 3600 registered electors. Governor in 1930, Sir W. C. F. Robertson.

BARLEY. The barley production in 1930 of 32 countries representing about 85 per cent of the world's yield was estimated as reported by the International Institute of Agriculture, Rome, at

1,336,130,000 bushels, a decrease of 5.2 per cent below the yield of 1,409,697,000 bushels of the preceding year and an increase of 14.4 per cent above the average production for the five years 1924-28. The barley area of these countries was reported at 58,235,000 acres which was 2.6 per cent below the acreage of 1929 and 13.6 per cent above the five-year average. The Soviet Republics and South American countries were not included in these estimates. The yields of the leading barley-growing countries other than the United States were given as follows: Canada 137,963,000 bushels, Germany 122,942,000 bushels, Rumania 103,094,000 bushels, Spain 100,563,000 bushels, and Japan 72,472,000 bushels. The highest average yield per acre, 32.7 bushels, was recorded for Germany. In the crop year 1929-30 of the southern hemisphere, Argentina, the leading barley-growing country of South America, produced 16,132,000 bushels on a sown area of 1,450,000 acres. For the crop of 1930-31 Argentina sowed 1,411,000 acres of barley which was nearly 35 per cent above the average for the preceding five years. According to the latest figures available the Soviet Republics, European and Asiatic, produced 245,013,000 bushels in 1928 as compared with an average of 418,030,000 bushels for the five years 1909-13.

Estimates published by the Department of Agriculture placed the 1930 barley crop of the United States at 325,893,000 bushels as against 302,892,000 bushels in 1929 and the largest on record excepting the crop of 1928. The area harvested in 1930 was 12,437,000 acres, a decrease of 631,000 acres below the acreage of 1929. As barley is an early maturing crop it was not seriously affected by the drought in the Northern and Western States where most of it is grown. The average yield per acre was 26.2 bushels, or 3 bushels above that of 1929 and 1.2 bushels higher than the average for the preceding ten years. The average farm price as of Dec. 1, 1930 was 39.6 cents per bushel, a reduction of 15.8 cents per bushel from the corresponding price in 1929. On this basis the total value of the 1930 crop was \$129,137,000 as compared with \$166,613,000 the year before.

The production of the leading barley-growing States was reported as follows: Minnesota, 55,830,000 bushels; South Dakota, 42,570,000 bushels; North Dakota, 40,075,000 bushels; California, 35,420,000 bushels; Wisconsin, 20,011,000 bushels; and Nebraska, 22,330,000 bushels. The average yield per acre in these states ranged from 35 bushels in California to 17.5 bushels in North Dakota. For the 35 States reporting yields the range was from 43 bushels in Utah to 16.5 bushels in Montana.

During the fiscal year ended June 30, 1930, the United States exported 24,054,000 bushels of barley, including malt valued at \$18,950,000 or about 33 per cent less in quantity than the average exports for the five years 1925-29. As reported by the International Institute of Agriculture 18 countries exported 136,348,000 bushels of barley during the commercial year ended July 31, 1930.

BARNARD COLLEGE. See COLUMBIA ANNIVERSARY.

BARNES, WILLIAM. An American politician, died in Armonk, N. Y., June 25, 1930. He was born in Albany, N. Y., Nov. 17, 1866, and was graduated from Harvard University in 1888. In the following year he became owner and editor of

the *Albany Evening Journal*, which had been established by his grandfather, Thurlow Weed, in 1830 and which was merged with the *Albany Morning Express* which he had bought previously. He took an aggressive interest in Republican politics, his forceful personality soon making him the leading political figure in Albany County and then in the State of New York. Without being the holder of an elective office, or at any time a candidate for such an office, he was a supreme influence of the Republican party in New York, acting as a member of the Republican State Committee from 1892 to 1911 and as chairman of this committee from 1911 to 1914. In 1912, when the Republican party split into progressive and conservative sections, he identified himself with the conservative wing and, as a delegate to the National Convention, opposed the movement to make Theodore Roosevelt Republican candidate for the presidency. He was Republican National Committeeman from New York from 1912 to 1916, but after 1916 his power gradually dwindled. He lost a libel suit which he had brought against former President Roosevelt in 1914.

BARNETT, GEORGE. Major General, U. S. Marine Corps, retired, died in Washington, D. C., Apr. 27, 1930. He was born in Lancaster, Wis., Dec. 9, 1850, and was graduated from the U. S. Naval Academy in 1881. Commissioned second lieutenant in the U. S. Marine Corps in 1883, he was promoted through the grades to the rank of colonel in 1910. From 1914 to 1920, he served as major general commandant of the Marine Corps, during this time organizing the marines for participation in the World War. For his war services, General Barnett was given the Distinguished Service Medal of the United States and made a member of the French Legion of Honor. He was promoted to the permanent rank of major general in 1921 and placed in command of the Department of the Pacific, U. S. Marine Corps, with headquarters in San Francisco, where he served until retirement in 1923.

BARRY, THE RT. REV. MGR. WILLIAM (FRANCIS). A British Roman Catholic theologian and author, died in Oxford, England, Dec. 15, 1930. He was born in London Apr. 21, 1849, and was educated at Oscott College, near Birmingham, and at the English College and Gregorian University in Rome. After ordination to the Roman Catholic priesthood at the Church of St. John Lateran in Rome, he became in 1873 vice-president and professor of philosophy at the Birmingham Theological College, and in 1877 professor of divinity at Oscott College. In 1883 he assumed charge of the small parish of Dorchester, near Oxford, and devoted his time largely to literary and lecture work. He visited the United States on a lecture tour in 1893, and in 1897 delivered the centenary address on Burke in London and Dublin. In 1908 he was appointed rector of St. Peter's, Leamington, and in 1928 canon of Birmingham. He also was created Notary Apostolic by Pope Pius XI in 1923. Besides numerous articles on metaphysical and historical subjects which he contributed to the *Dublin*, *Edinburgh*, and *Nineteenth Century Reviews*, he was the author of such romantic novels as *The New Antigone*, a powerful study of modern views in regard to marriage (1887); *The Place of Dreams* (1894); *The Two Standards* (1898); *Arden Massiter* (1900); *The Wizard's Knot* (1901); and *The Dayspring* (1903), and of the philosophical biographies, *Newman* (1904) and *Renan* (1905). He also wrote: *The Papal Mon-*

archy from St. Gregory the Great to Boniface, 590 to 1303 (1902); *Heralds of Revolt* (1904); *Traditions of Scripture* (1906); *The Papacy and Modern Times* (1911); *Memories and Opinions* (1926); *Roma Sacra* (1927); *The Triumph of Life, or Science and the Soul* (1928); and *The Catholic Revival* (1929).

BARTON, WILLIAM ELEAZAR. An American clergyman and author, died in Brooklyn, N. Y., Dec. 7, 1930. He was born in Sublette, Ill., June 28, 1861, and was graduated from Berea College in 1885 and from Oberlin Theological Seminary in 1890. Ordained to the Congregational ministry, he first filled several pastorates as a circuit rider in Ohio and Tennessee, then served the Shawmut Congregational Church in Boston (1893-99), and afterward the First Church in Oak Park, Ill. (1899-1924). The Chicago Theological Seminary appointed him in 1905 lecturer on applied practical theology, and in 1911 lecturer on ecclesiastical law. In 1928 he became lecturer on biographical leadership and practical theology at Vanderbilt University and also pastor of the Collegeside Church in Nashville, Tenn., which he had founded. He was editor of the pastors' department of *The Advance* from 1904 to 1912, editor-in-chief from 1913 to 1917, and, on the merger of that paper with *The Congregationalist*, corresponding editor from 1918 until his death. He was also an associate editor of the *Bibliotheca Sacra* and a member of the staff of *The Youth's Companion* (1900-17, 1925-30). He held several important offices in the Congregational Church, including vice-president of the Congregational Sunday School and Publishing Society (1899-1905), director of the Congregational Educational Society (1894-1915), and moderator of the National Council of Congregational Churches (1921-23). From 1899 to 1930 he was a delegate to the decennial meetings of the International Council of Congregational Churches of the World, drafting its constitution in 1920, and in 1927 attended the World Conference on Faith and Order in Lausanne, Switzerland. The D.D. degree was conferred on him by Berea College in 1895; the LL.D. degree by Knox College in 1913 and Drury College in 1923; and the Litt.D. degree by Carleton College in 1924.

For many years Dr. Barton devoted much time to research in the biography of Abraham Lincoln and wrote several authoritative works on that subject, including: *The Soul of Abraham Lincoln* (1919); *Abraham Lincoln and His Books* (1920); *The Paternity of Abraham Lincoln* (1920); *Life of Lincoln* (2 vols., 1925); *A Beautiful Blunder—The True Story of Lincoln's Letter to Mrs. Bixby* (1926); *The Great Good Man* (Young's People's Life of Lincoln, 1927); *The Women Lincoln Loved* (1927); *Abraham Lincoln and Walt Whitman* (1928); *The Lineage of Lincoln* (1929); and *Lincoln at Gettysburg* (1930). His other works include: *Life of the Hills of Kentucky* (1889); *A Hero in Homespun* (1897); *The Psalms and Their Story* (1898); *The Old World in the New Century* (1902); *Jesus of Nazareth, His Life and the Scenes of His Ministry* (1904); *The History and the Religion of the Samaritans* (1906); *Bible Classics* (1911); *The Young Folks Bible Library* (editor, 8 vols., 1911); *Day by Day with Jesus* (1913); *The Law of Congregational Usage* (1915); *Congregational Creeds and Covenants* (1917); *The Parables of Safed the Sage* (1917); *The Life of Clara Barton* (1921); and *The Father of His Country* (a biography of Washington for young people, 1928).

BASEBALL. The Philadelphia Athletics again captured the American League pennant with ease in 1930, while a thrilling National League race between the Chicago Cubs, the Brooklyn Robins, the New York Giants, and the St. Louis Cardinals ended with a victory for the Cardinals. In the world's series, Connie Mack's Athletics won their second successive championship. They won the first two games of the series from the Cardinals, dropped the third and fourth, and then captured the fifth, through Jimmy Foxx's homer in the ninth inning, and the sixth.

While retaining his leadership of the American League, with 49 home runs, Babe Ruth of the New York Yankees was forced to relinquish the leadership of both major leagues to Hack Wilson, of the Chicago Cubs, who batted out 56 circuit clouts. Al Simmons of the Athletics was batting champion of the American League, closely followed by Lou Gehrig of the Yankees. The National League batting crown went to Bill Terry of the New York Giants, whose average for the season was .401. The Giants set a new record for team hitting, with an average of .319. Pitching supremacy of the American League was credited to Lefty Grove, of the Philadelphia Athletics, who with 28 games won and 5 lost, had an average for the year of .848 per cent. The Athletics led the American League in team fielding, their average being .975. National League pitching honors were won by A. C. (Dazzy) Vance of the Brooklyn Robins.

From a business standpoint, baseball experienced its most prosperous year in 1930, when previous attendance records were broken in both the major leagues. Paid admissions to National League games aggregated more than 5,500,000, while the attendance at American League games totaled about 5,300,000. The advent of night baseball in the minor leagues was a notable feature of the season, particularly on the Pacific Coast, where it was reported to have tripled the number of paid admissions. The Rochester Red Wings won the International League race and then defeated Louisville, American Association pennant-winner, for the so-called little world's series. The Hollywood Club won the Pacific Coast League pennant.

Three managerial changes occurred in the major leagues at the end of the 1930 season. Rogers Hornsby succeeded Joe McCarthy as manager of the Chicago Cubs; McCarthy replaced Bob Shawkey as manager of the New York Yankees; and John Collins took the place of Heinie Wagner as pilot of the Boston Red Sox. On Dec. 1, 1930, the dispute over the drafting of players between the major and minor leagues caused the majors to announce that they would engage in no player transactions with the three Class AA leagues—the International, Pacific Coast, and American Association—nor with the Class A Western League and the Three-I League, rated in Class B. Negotiations for a settlement of the difficulty broke down on December 12 at a joint session of the American and National Leagues.

The Eastern Intercollegiate League championship was won by the Dartmouth nine. The majority of the teams in this league agreed to dispense with coaching aid on the field during intercollegiate contests. Wisconsin won the Western Conference intercollegiate pennant.

BASKETBALL. Basketball held its position as the most popular indoor sport in colleges and schools during 1930. St. John's College of

Brooklyn, the University of Pittsburgh, and Syracuse University produced the outstanding teams of the season, the former establishing the remarkable record of 23 victories to one defeat. The Pittsburgh Panthers won 23 victories to two defeats, while Syracuse scored 18 victories and two defeats. The Columbia University five won the Eastern Intercollegiate Basketball League championship, breaking the five-year scoring record with a total of 399 points. Their one defeat out of ten starts was inflicted by Yale. The Purdue team won the Western Conference championship with ten straight victories, while the Pacific Coast Conference crown went to the University of Southern California. The University of Alabama won the Southern Conference tournament.

Forty-one teams from 15 States competed in the national Amateur Athletic Union tournament in Kansas City in March, the championship being won by the Henry Clothiers A. A. of Wichita, Kan. The Olympic Club of San Francisco was the runner-up. The Sunoco Oilers' team of Dallas, Tex., retained the championship in the girls' national A. A. U. tournament held in Wichita, Kan. The eighth annual International Y. M. C. A. tournament at Oak Park, Ill., was won by the Rahway, N. J., team, while the Athens, Tex., high school, repeated its victory of 1929 at the 12th annual interscholastic tournament held by the University of Chicago.

BATES COLLEGE. A nonsectarian college for men and women in Lewiston, Me.; founded in 1864. The enrollment for the autumn term of 1930 was 643, of whom 393 were men and 250 women. In the 1930 summer session there was a total of 251 students, of whom 104 were men and 147 women. The faculty and administrative officers numbered 54. The permanent funds amounted to \$1,847,000; total expenditures for the fiscal year were \$292,970; and the budget involved an appropriation of \$303,700. The library contained 58,716 volumes. President, Clifton Daggett Gray, Ph.D., LL.D.

BATTLE CRUISER. See NAVAL PROGRESS.

BATTLESHIP. See NAVAL PROGRESS.

BAUMES COMMISSION. See CRIME.

BAVARIA. A constituent state of the German Republic; formerly a kingdom within the German Empire. The new state adopted a republican form of government on Nov. 22, 1918. Area, 29,334 square miles; population, according to the census of 1919, 7,055,466; according to the census of 1925, 7,379,594. Chief cities: Munich, with a population of 680,704 in 1925; Nuremberg, 392,494; Augsburg, 165,522; Ludwigshafen, 101,869. In 1928 there were 64,221 marriages, 153,649 living births, and 94,620 deaths. The religious division of the population of Dec. 1, 1925, was: Roman Catholic, 5,165,013; Protestants, 2,110,086; Jews, 49,163. Education is compulsory between the ages of 6 and 16. The yield of the chief crops in 1928 was as follows: Wheat, 550,723 metric tons; rye, 686,411 tons; oats, 616,281 tons; barley, 717,552 tons; potatoes, 5,071,374 tons. The yield of 48,639 acres of vines was 14,637,964 gallons of wine; of 31,458 acres of hops, 6954 metric tons. The livestock census on Dec. 1, 1928, showed 403,548 horses, 3,824,972 cattle, 394,844 sheep, 2,088,539 swine, and 350,107 goats. In 1928 coal production totaled 2,027,769 metric tons; iron ore, 615,589 tons; pig iron, 306,233 tons; cast iron, 213,981 tons; sulphuric acid, 372,609 tons. Savings banks numbered 367.

For the fiscal year 1929, the ordinary budget provided for a revenue of 790,410,613 marks and an expenditure of 834,410,613 marks, while the extraordinary budget balanced at 90,169,007 marks. The public debt at the end of 1928 totaled 1,311,317,600 paper marks and 330,192,194 Reichsmarks. The floating debt on Mar. 31, 1929, was 72,100,000 Reichsmarks (Reichsmark and mark both exchanged at about \$0.2381 in 1929).

The constitution dates from Aug. 14, 1919. Under it, the supreme power is vested in the people, who are represented by the Diet of one Chamber elected for four years. The membership of the Bavarian *Lantag*, as constituted following the election of May 20, 1928, follows: Bavarian People's party, 46; Social Democrats, 34; National Socialists, 9; German Nationalists, 13; Bavarian Peasants' and Middle-Class Union, 17; German People's party, 4; Communists, 5. Dr. Heinrich Held, Premier and Minister of Foreign Affairs for the preceding six years, resigned with his entire Cabinet on Aug. 20, 1930, when the Bavarian Peasants' and Middle-Class Union deserted the government and voted with the Social Democrats and other opposition parties against a tax on cattle slaughtering. The tax was intended to raise about \$2,000,000 annually toward meeting a deficit of \$5,000,000. The Social Democrats were commissioned to form a new government.

BAYREUTH WAGNER FESTIVAL. See MUSIC.

BEAUX-ARTS INSTITUTE OF DESIGN.

A school of fine arts in New York City, planned after the Ecole des Beaux-Arts in Paris. It was organized in 1916 by the Society of Beaux-Arts Architects for the purpose of furnishing "instruction in the arts, under the Regents of the State of New York, at a minimum cost to students; to bring art students under the criticism of artists who are engaged in active practice; to carry students beyond the academic study of the arts into the province of their application and practice; and to bring about coöperation among the various art schools of the country." Working under the auspices of the institute during the year 1929-30 were 2466 architectural students, 197 students of sculpture, and 109 students of mural painting. Except in the case of the Paris Prize competitions, there are no restrictions as to the nationality or age of entrants.

Prizes in architecture, sculpture, and mural painting are offered to students throughout the United States. During the year 1929-30, the committee on education in the department of architecture conducted 38 competitions for the study of architecture and six for the study of archaeology. The most important of the various prizes and scholarships offered to students through the institute is the Paris Prize amounting to \$3600, given by the Society of Beaux-Arts Architects, which affords two and one-half years' study in architecture at the Ecole des Beaux-Arts in Paris. (All the competitors, including the winner, in the final competition receive \$150 each, provided their work is considered satisfactory.) There is also the Paris Prize in Sculpture, representing a scholarship of \$1200 for one year's study in Paris.

The institute issues a monthly *Bulletin* in which are published the results of all contests, with reproductions of the best designs submitted. Officers elected at the annual meeting in November, 1930, were: Director, Whitney Warren; secretary, Henry R. Sedgwick; director of architec-

tural department, Philip A. Cusachs; director of department of sculpture, Edward McCartan; director of department of mural painting, J. Monroe Hewlett; chairman of the board of trustees, Benjamin W. Morris; vice chairman, William Adams Delano. Headquarters are at 304 East Forty-fourth Street, New York City.

BECHUANALAND PROTECTORATE, bech-wā'nā-land. A British protectorate in South Africa. Area, about 275,000 square miles; population (census of 1921), 152,983, including 1743 Europeans. Cattle rearing and primitive agriculture are the chief occupations. Some gold and silver is mined. In 1927-28 revenue totaled £147,911 and expenditure, £119,984. The colony is administered through the native chiefs by a resident commissioner under the High Commissioner for South Africa. Resident Commissioner in 1930, Lieut.-Col. R. M. Daniel. In 1930, Tsakedi, paramount chief of the Bamangwato Reserve, canceled the concession by which the Chartered Company in 1893 obtained the sole right to prospect for precious stones, minerals, and metals in the reserve.

BEEF. See LIVESTOCK.

BEETLES. See ENTOMOLOGY, ECONOMIC; ZOOLOGY.

BEHAVIORISM. See PSYCHOLOGY.

BELGIAN CONGO. See CONGO, BELGIAN.

BELGIAN INTERNATIONAL EXPOSITION. See EXPOSITIONS.

BELGIUM. A kingdom of western Europe, situated between France and the Netherlands. Capital, Brussels; reigning monarch in 1930, Albert I.

AREA, POPULATION, ETC. The total area, including the districts of Eupen and Malmédy, which were ceded to Belgium after the Treaty of Versailles, is 11,755 square miles. The population, according to the official census of 1920, was 7,465,782; estimated, Jan. 1, 1929, at 7,995,558, which represented a density of 680 per square mile. The chief cities with their populations as of Jan. 1, 1929, are: Brussels (with suburbs), 825,783; Antwerp, 300,115; Liège, 169,566; Ghent, 162,627. In 1928, births totaled 146,981; deaths, 105,915; and marriages, 71,485. Emigrants in the same year numbered 28,303 and immigrants, 41,977.

EDUCATION. At the beginning of 1929 there were 8394 primary schools, with 811,077 pupils; 3817 infant schools, with 247,815 pupils; and 1780 adult elementary schools, with 51,717 pupils. For higher education there were 24 royal atheneums, with 7705 pupils; 11 special atheneums, with 641 pupils; four communal and provincial colleges, with 1853 pupils; and 11 private colleges, with 1500 pupils. Also 137 state schools, with 26,380 pupils; 15 communal and provincial schools, with 4591 pupils; and eight private schools, with 1146 pupils. The enrollment of the four universities for 1928-29 was: Brussels, 2051; Ghent, 1655; Liège, 2458; and Louvain, 3755. There is also a Colonial University at Antwerp.

PRODUCTION. Agriculture, mining, and manufacturing are equally important factors in the national economy, enabling Belgium to support one of the densest populations of Europe. Of the total area of 7,519,668 acres, 4,534,920 acres were under cultivation in 1928 and forests covered 18 per cent of the land surface. Cereal production in 1929, in quintals (1 quintal equals 220.4 pounds), with comparative figures for 1928 in parentheses, was: Wheat, 4,353,000 (4,895,150); rye, 5,046,

000 (5,881,459); barley, 1,348,000 (950,074); oats, 7,079,000 (7,043,373). The area and production of the principal crops in 1928 were: Wheat, 430,282 acres, 9,790,300 cwt. (1 cwt. equals 112 pounds); barley, 78,172 acres, 1,900,148 cwt.; oats, 674,770 acres, 14,086,746 cwt.; rye, 579,085 acres, 11,762,918 cwt.; potatoes, 415,847 acres, 3,634,144 metric tons; beets (sugar), 159,595 acres, 1,827,853 metric tons; beets (fodder), 193,447 acres, 4,468,335 metric tons; tobacco, 7842 acres, 140,816 cwt. On Jan. 1, 1929, livestock included 253,314 horses, 1,750,541 cattle, and 1,139,131 swine.

Mineral production in metric tons for 1929, with comparative figures for 1928 in parentheses, was: Coal, 26,931,460 (27,542,780); briquettes, 2,018,500 (1,961,000); coke, 5,991,100 (5,926,600); pig iron, 4,095,940 (3,905,320); steel, 4,011,180 (3,820,910); wrought iron, 163,200 (173,180); wrought steel, 3,556,440 (3,378,490); crude zinc, 201,380 (209,280).

According to the industrial census of 1926, there were 13,082 industrial concerns of more than 10 employees, with a total of 1,080,331 workpeople and 96,567 salaried officials. Artificial silk, motor cars, glass, iron and steel, lace, linen, and gloves are among the principal industries. In 1927 there were 53 sugar factories, 17 refineries, 36 distilleries, 1844 breweries, 15 margarine factories, 56 vinegar factories, and 19 match factories. Unemployment increased during 1930, but not to an alarming extent. On Oct. 31, 1930, the wholly unemployed numbered 23,693, as against 2500 on Apr. 30, 1929, while 61,623 were only partially employed. The diamond-cutting industry of Brussels was hard hit by the American stock exchange slump of October, 1929, and in April, 1930, agreed to reduce the output of cut stones by half.

COMMERCE. An economic union was established between Belgium and Luxembourg in 1922. In 1929, imports into the two countries totaled 35,510,118,000 paper francs, as against 34,140,691,000 francs in 1928, while exports amounted to 32,234,549,000 paper francs, as against 30,954,440,000 francs in 1928. The unfavorable balance of trade increased to 3,275,569,000 francs in 1929 from 3,186,251,000 francs in the previous year (stabilized value of franc was \$0.0278). Of the imports in 1929, raw materials were valued at 18,486,097,000 francs; manufactures at 9,603,899,000 francs; and foodstuffs and beverages at 7,239,089,000 francs. Exports were divided as follows: Manufactures, 18,892,380,000 francs; raw materials, 10,608,508,000 francs; foodstuffs and beverages, 2,526,905,000 francs. The principal sources of Belgian imports, in the order named, were France, Germany, Great Britain, and Holland. Belgian exports went mainly to the same four countries, but in the following order: Great Britain, Germany, France, Holland.

FINANCE. The combined ordinary and extraordinary budget estimates for 1930 decreased, the aggregated revenue being calculated at 10,096,632,000 francs, as compared with 11,510,089,000 francs in 1929, while the expenditures were estimated at 9,755,412,000 francs, as compared with 10,340,695,000 francs in the previous year. Total tax collections for 1929 amounted to 9,835,955,000 francs, an increase of 575,025,000 francs over 1928.

Budget proposals for 1931 estimated total receipts at 11,685,441,000 francs and total expenditures at 12,305,183,000 francs, the anticipated

deficit being 619,742,000 francs. The deficit, to be taken care of by a loan in 1931, was due to the cost of new installations and improvements in the government transport services, posts, telegraph and telephone systems, and road construction.

The public debt on Sept. 30, 1930, totaled 52,977,132,135 francs, of which 25,214,026,286 francs represented the internal debt and 27,762,505,849 francs the external debt. The Finance Commission of the Chamber of Deputies in March, 1930, approved a bill for the advance repayment, beginning in June, of the remaining \$34,500,000 of the 7½ per cent \$50,000,000 loan floated in the United States in 1920.

COMMUNICATIONS. In 1929, the state-owned but privately operated railways reported 2975 miles of main line in operation. There were in addition 189 miles of private railways. Highways aggregated 6422 miles, of which 5424 miles were state roads, and 976 miles provincial roads. The Belgian Air Service (between Brussels, Ostend, and Antwerp), in 1928, carried 33,888 passengers, 1,067,833 kilos of freight, and 92,618 kilos of mail. The Belgian merchant marine on Jan. 1, 1929, consisted of 154 vessels of 318,222 tons, including 139 steamers of 291,184 tons. Vessels entering the port of Antwerp in 1929 numbered 11,477 of 24,285,393 tons and the vessels clearing, 11,516 of 24,261,326 tons. Belgian inland waterways are navigable over 1040 miles and their traffic exceeds 28,000,000 metric tons annually. Work on the new Albert Canal, which will enable boats to move between Liège and Antwerp in 30 hours, instead of the eight days previously required, was commenced on May 31, 1930.

GOVERNMENT. Belgium is a constitutional, representative, and hereditary monarchy. Executive power is in the King, acting through a responsible ministry; legislative power is in the King and two chambers, namely the Senate and House of Representatives. The former is elected partly by the direct and partly by the indirect vote of the people, the number being proportioned to the population of each province. Those elected indirectly are chosen by the provincial councils. Following the election of May 26, 1929, the composition of the Senate was: Catholics, 71; Socialists, 56; Liberals, 23; miscellaneous, 4. The Chamber of Deputies was composed as follows: Catholics, 77; Socialists, 70; Liberals, 28; Frontists (Flemish autonomist party), 11; Communists, 1. The Ministry, as constituted Dec. 4, 1929, included: Prime Minister, Henri Jaspar (Catholic); Foreign Affairs, Paul Hymans (Liberal); Justice, M. Janson (Liberal); Education, Maurice Vauthier (Liberal); Finance, Baron Houtart (Catholic); Agriculture, Home Affairs, and Hygiene, Henri Baels (Catholic); Industry, Labor, and Social Insurance, M. Heyman (Christian Democrat); Railways, Marine, and Aeronautics, M. Lippens (Liberal); National Defense, Comte de Broqueville (Catholic); Colonies, Henri Jaspar (Acting); Posts and Telegraphs, M. Forthomme; Public Works, M. van Caenegem.

HISTORY

The language question, which for some years had estranged the Flemish-speaking regions of Flanders and north Belgium from the French-speaking Walloons in the South, remained the centre of political discussion in 1930. On February

27, after a month's debate, the Chamber of Deputies passed the Government's bill making the University of Ghent, heretofore bilingual, an entirely Flemish institution. Other sections of the bill, subsequently enacted, provided for unilingual regiments in the army, the administration of Flemish and Walloon territories in the language of the respective majorities, and that high government officials should be bilingual. These measures did not dispose of the language question, however. Violent debates in Parliament centred upon the rights of minorities in primary and secondary schools, and Flemish deputies on several occasions threw the Chamber into an uproar by bitter attacks upon France and French-speaking Belgians. Riots ensued at war anniversary ceremonies in Dixmude and Ostend August 24 when pamphlets were distributed from an airplane accusing Flemish ex-service men of cowardice.

The language question was the basis of a Cabinet crisis on Nov. 11, 1930. The five Liberal members of the Liberal-Catholic Coalition Government resigned when the Brussels Liberal Federation adopted a resolution opposing the action of Maurice Vauthier, Liberal Minister of Education, in forbidding professors in Ghent University to teach in other Belgian colleges. Premier Jaspar then offered the resignation of the entire Cabinet to King Albert, but the latter on November 14 induced him to remain in power.

The trial in Brussels in September of Fernando de Rosa, young Italian anti-Fascist who attempted to assassinate Crown Prince Humbert of Italy in the Belgian capital Oct. 24, 1929, attracted wide attention in Europe. He was convicted and sentenced to five years' imprisonment, much to the disappointment of the Italian press, which considered the sentence too lenient. The defense introduced former Premier Nitti of Italy and other well-known anti-Fascists as witnesses in an effort to prove that Fascism had crushed out liberty in Italy and that de Rosa's action was inspired by this alleged repression. The Belgian Senator Louis de Brouckere, president of the Aviation Commission of the League of Nations, testified that his personal investigations, during an official mission, had convinced him that Italy was preparing for war on both sides of the Albanian border, as well as along the French frontier. See *ITALY and FRANCE*, under *History*.

Other political developments of the year included the almost unanimous ratification of the Young Plan by the Senate on April 8, and the adoption of a bill by the Senate in April ending an 11-year controversy with the Chamber as to the manner of selecting jury members. It was provided that they should be chosen first from a list of voters who could read and write and secondly from a list of citizens having university degrees. Extensive tax reductions, retroactive as of January, 1930, were voted by the Chamber.

An important development of the year was the resumption by the Socialist and Flemish parties, under the leadership of Emil Vandervelde, former Minister of Foreign Affairs, of the campaign for the abolition of the military agreement concluded with France in 1920. The agreement provided for the collaboration of the French and Belgian general staffs in time of peace in organizing a common defense against a possible German attack. M. Vandervelde took the position that the European situation which justified the alliance in

1920 had been altered in important respects by the Locarno agreement of 1925. A thick fog which settled in the valley of the Meuse, above Liège, during December 4, 5, and 6 was accompanied by the mysterious deaths of some 70 villagers and of large numbers of cattle. The nature of the phenomenon remained obscure, although various conflicting explanations were advanced. The majority of those affected were of advanced age.

The treatment of colored laborers in the Congo was denounced by the Socialist leader, Emile Vandervelde, before the Chamber on March 25. Assurance was given by Premier Jaspas that an inquiry was under way and that the conditions were being improved. Salary raises for all state officials, in accordance with the increased cost of living, were approved by the Cabinet Council in January. National patriotism was aroused during the year by the celebration of the centenary of the creation of the kingdom in 1830. The King and Queen inaugurated the celebration on April 26 by opening the Maritime, Colonial, and Art Exhibition at Antwerp. (See EXPOSITIONS.) In protest against old age pension rates and the demands of foreign workers in Belgian collieries, 25,000 coal miners went on strike July 4. Protests of the powerful Farmers' Union against large imports of Russian cereals, wines, glue, hides, and pelts, were met by a decree issued October 25 which made it necessary to obtain a license for the importation or transit of these commodities. For a discussion of the language dispute, see Louis Pierard, "Belgium's Language Question: French vs. Flemish," in *Foreign Affairs* for July, 1930. See CONGO, BELGIAN; CELEBRATIONS; and PHILOLOGY, MODERN.

BELIZE. See BRITISH HONDURAS.

BEMIS, EDWARD WEBSTER. An American economist and student of public utilities. Died in Springfield, Mo., Sept. 25, 1930. He was born in Springfield, Mass., Apr. 7, 1860, and was graduated from Amherst College in 1880, later receiving the A.M. degree from that institution in 1884 and the Ph.D. degree from Johns Hopkins University in 1885. He was professor of history and political economy at Vanderbilt University (1889-92), associate professor of political economy at the University of Chicago (1892-95), assistant statistician of the Illinois Bureau of Labor Statistics (1896), and professor of economics and history at the Kansas State Agricultural College (1897-99). In 1899 he turned from theoretical to practical economics, becoming director of the department of municipal monopolies in the Bureau of Economic Research in New York City, and in 1901 superintendent of water works in Cleveland, Ohio, holding the latter position until 1909. In 1910 he was appointed deputy commissioner of water supply, gas, and electricity in New York City, and at the time of his death was a consultant for cities, States, and other public bodies in appraisals and suits relative to the adjustment of rates for water, gas, and electricity. He was also a member of the advisory board of the valuation bureau of the Interstate Commerce Commission from 1913 to 1923. His works include: *Municipal Ownership of Gas Works in the United States* (1891) and *Municipal Monopolies* (1899).

BENSON, LOUIS FITZGERALD. An American hymnologist, died Oct. 10, 1930, in Philadelphia where he was born July 22, 1855. On being graduated from the University of Pennsylvania in 1877, he studied law and was admitted to the

bar, practicing until 1884 when he decided to enter the ministry. He was graduated from the Princeton Theological Seminary in 1887, and after ordination served as pastor of the Church of the Redeemer (Presbyterian) in Germantown, Pa., from 1888 to 1894. He then resigned to devote himself to the subject of hymnology and to editing the *Journal of the Presbyterian Historical Society* from 1903 to 1911. He was a special lecturer in liturgics at the Auburn Theological Seminary in 1902 and a lecturer on the Stone Foundation at the Princeton Theological Seminary in 1907, 1910, and 1926. The D.D. degree was conferred on him by the University of Pennsylvania in 1896. Besides his contributions to reviews and to dictionaries of hymnology, he was the author of *Hymns and Verses* (1897); *The Best Church Hymns* (1898); *Best Hymns—A Handbook* (1899); *Studies of Familiar Hymns* (1903); *The English Hymn—Its Development and Use in Worship* (1915); *Hymns Original and Translated* (1925); and *The Hymnody of the Christian Church* (1927). He also edited *The Hymnal*, published by authority of the General Assembly of the Presbyterian Church (1895); *The Hymnal for Congregational Churches* (1896); *The Chapel Hymnal* (1898); *The School Hymnal* (1899); *The Book of Common Worship of the Presbyterian Church* (with Henry van Dyke, 1906); *The Hymnal Revised* (1911); *A Book of Family Worship* (1916); *A Book of Worship for Soldiers and Sailors* (1917); *Christian Song* (1926); and *The Smaller Hymnal* (1928).

BEREA COLLEGE. A nonsectarian, co-educational institution in Berea, Ky.; founded in 1855 and designed to serve the educational needs of the mountain people of the Southern Appalachian region. The enrollment for the autumn of 1930 was 1774, distributed as follows: College, 467; normal, 185; academy, 473; foundation junior high school, 515; and training school, 125. The enrollment in the summer session of 1930 was 483, of whom 224 were in the college, 163 in the normal school, and 96 in the academy. The faculty numbered 106. The endowment amounted to \$9,218,661, and the income for the year ending June 14, 1930, was \$518,206. The library contained 57,907 volumes. President, William J. Hutchins, D.D., LL.D.

BERMUDA. A British colony in the Atlantic Ocean about 580 miles east of Cape Hatteras, North Carolina, consisting of a group of 360 small islands. About 20 of the islands are inhabited. Because of its picturesqueness and proximity to New York (677 miles), it is a favorite winter resort for American tourists, who number some 30,000 annually. Area, 19.3 square miles; population, according to the census of 1921, 20,127 (7006 white); estimated in 1928, 30,884 (15,556 white). The chief town, Hamilton (population 3000) is an important naval base.

Education is compulsory between the ages of 7 and 13. In 1928, 32 primary schools, with 3550 pupils, and 4 secondary schools, received government aid amounting to £11,109. Potatoes, onions, lily bulbs, and vegetables are the chief products and provisions, clothing, cotton goods, electrical goods, hardware, fuel oil, and woolen goods the leading imported articles. In 1928 imports were valued at £1,587,470 (excluding government stores) and exports at £177,015. Imports from the United States in 1929 were valued at \$4,000,000 and exports to that country at \$773,-

000. Revenues (1928) totaled £336,870; expenditures, £303,642; the public debt, £70,000. In 1927, 3,041,350 tons of shipping entered and cleared the ports. The administration is under a governor, assisted by an executive council of seven members and a legislative council of nine members, both appointed by the Crown, and an elected assembly of 36 members. Governor in 1930, Lieut. General Sir Louis Jean Bols.

BERNHARDI, bērn-hār'dā, GEN. FRIEDRICH VON. A German soldier and author, died in Berlin, July 10, 1930. Born in St. Petersburg, Nov. 22, 1849, he served in the Franco-German War, and from 1891 to 1894 was stationed in Berne, Switzerland, as military attaché. Later he went to Berlin as head of the history department of the Grand General Staff. He was general of cavalry and commander of the 7th Army Corps from 1907 to 1909, retiring in the latter year to write on military subjects. As spokesman of the Prussian militarists, he attracted international attention in 1912 by his book, *Germany and the Next War*, which advocated the highest degree of preparedness. At the outbreak of the World War he again received command of an army corps and served with distinction on the eastern front. In 1918 he was transferred to the western front and took part in the battle of Armentières. Translations of his works into English include: *Cavalry and Future War* (1910); *On War of To-day* (1914); *Britain as Germany's Vassal* (1914); *Germany and England* (1915); *The War of the Future in the Light of the Lessons of the World War* (1920); and *Germany's Heroic Struggle, 1914-18* (1922).

BERRIES. See HORTICULTURE.

BERYLLIUM. See CHEMISTRY, INDUSTRIAL.

BESSARABIA. A former province of the Russian Empire, joined on Apr. 11, 1918, to Rumania, whose title was confirmed by the Peace Treaties of 1919, but has never been conceded by the Soviet government of Russia. Area, 17,146 square miles; population, 2,344,800. See RUMANIA.

BETTELHEIM, bētt'l-hīm, ANTON. An Austrian author, died Mar. 29, 1930. Born Nov. 18, 1851, he was educated in Vienna and in Munich. He devoted himself almost exclusively to biographical writing, editing the collection *Führende Geister*, to which he contributed the notable biography of *Anzengruber* (1891). He also edited the *Allgemeine Deutsche Biographie* from 1907 to 1909. His principal works are: *Baumarchais* (1886); *Deutsche Geisteshelden* (1895); *Louise von François und Conrad F. Meyer* (1905); *Berthold Auerbach* (1907); *Prince Hohenlohe* (1910); and *Karl Schönherr und das österreichische Volksstück* (1926).

BHOPAL, H. H. NAWAB SULTAN JAHAN BEGUM, BEGUM OF. A former ruler of Bhopal, a state in the Central India Agency, died May 12, 1930. She was born July 9, 1858, and was married to Ahmed Ali Khan in 1874. As eighth in the dynasty founded by Dost Mohammed Khan in 1723, she succeeded her mother, H. H. Nawab Shah Jahan Begum, in 1901. In 1926 she abdicated in favor of her only surviving son, H. H. Haji Nawab Hamidulla Khan. The 25 years of her rule were characterized by progress in Bhopal. An enlightened ruler, Sultan Jahan Begum instituted reforms in government, made improvements in education, and advanced the position of women in the state.

BIBLE SOCIETY, AMERICAN. Organized in 1816, this society has steadily carried forward its specific purpose of "circulating the Holy Scrip-

tures without note or comment." This service is rendered without discrimination as to class, color, or creed. Bibles, Testaments, and Portions are sold without purpose of profit, and below cost or donated free when circumstances justify. The work in the United States is carried on through 10 home agencies and some 100 auxiliary, State and local Bible societies. Twelve additional agencies cover all Latin America and countries in the Near East and the Far East, correspondents helping the work in other countries, especially in Europe and Africa. During 1929 the society issued 11,102,664 volumes in 179 languages. Engaged in this work were 330 colporteurs, 1713 correspondents, and 2594 volunteers. The number of volumes issued in the United States by 1418 persons was 4,062,908, and in foreign lands by 3083 persons was 7,039,756. During the 114 years of its existence the society has issued 216,198,915 volumes of Scriptures and participated in the translation, publication, and distribution of the Scriptures in more than 300 languages, dialects, and versions.

The Scriptures in the languages of the Hopi Indians and of the Kuskokwim Eskimos were published for the first time and translations of the New Testament in Cakchiquel and the Gospel of John in Valiente in Central America were completed. In South America, the Psalms were translated into Bolivian Quechua; the Gospel of Mark was published in Aymara; the modern version of the Spanish Bible was reissued with corrections; and the increasing Japanese population in Brazil led to the issuing of a Japanese-Portuguese edition of the Scriptures. For use in Africa the revised edition of the four Gospels and the Acts in Benga and the New Testament in Tswa were issued; and new translations were published of the New Testament in Luragoli, the Gospel of Matthew in Shilluk, and First Corinthians through Jude (with the exception of Hebrews) in Olunyo. In the Near East progress was made in correcting the Turkish version, substituting Roman for Arabic characters to conform with the new Turkish law. In the Far East an improved translation of the Scriptures in Siamese was under way as well as translations in the Ilocano, Tagalog, and Samareno languages of the Philippines.

The income of the society for 1929 from all sources totaled \$1,055,413, while the expenditures totaled \$1,051,584. The officers were: E. Francis Hyde, president; the Rev. Eric M. North, Ph.D., and the Rev. George William Brown, M.A., general secretaries; the Rev. Lewis B. Chamberlain, D.D., recording secretary; Gilbert Darlington, treasurer; and Charles W. Fowle, assistant secretary.

BIBLIOGRAPHY. See PHILOLOGY, MODERN; LIBRARY PROGRESS.

BICYCLING. See CYCLING.

BILLIARDS. Titles to the world's pocket billiard championship and the 18.1 balkline crown both changed hands in 1930. Erwin Rudolph of Chicago dethroned Ralph Greenleaf at the 11-day pocket-billiard tournament in New York in December, overcoming a 45-ball lead in the final night of the contest. Willie Hoppe, the 18.1 balkline champion, went down to defeat before Welker Cochran, who during the course of play established a high-run record of 106. Cochran's grand average was 33 69-107. There was no competition for the 18.2 balkline championship, won by Jake Schaefer of San Francisco in Jan-

uary, 1929. Johnny Layton, of Sedalia, Mo., retained his three-cushion professional championship. His closest rival among a field of eight was Otto Reisel, of Philadelphia. The national amateur Class A 18.2 balkline title was regained by Edgar T. Appleby, of New York, while Joseph R. Johann, a former champion, regained the Class B amateur 18.2 title. Other new amateur titleholders of the year were: J. Howard Shoemaker, of New York, national pocket billiard title; Nelson B. Mayo, Class C pocket billiard title; James Henry, national 14.2 balkline title; Frank L. Grey, national straight rail championship; and Robert B. Harper, of Denver, national three-cushion title.

BIMILLENNIUM VERGILIANUM. See VERGIL BIMILLENNIUM.

BIOGRAPHY. See LITERATURE, ENGLISH AND AMERICAN; FRENCH LITERATURE; GERMAN LITERATURE; etc.

BIOLOGICAL CHEMISTRY. See CHEMISTRY.

BIOLOGY. See BOTANY; ZOÖLOGY.

BIOPHYSICS. See PHYSICS.

BIRDS. See ZOÖLOGY.

BIRKENHEAD, FREDERICK EDWIN SMITH, FIRST EARL OF. A British barrister and statesman, died in London, Sept 30, 1930. He was born in Birkenhead, Cheshire, England, July 12, 1872, and was educated at Wadham College, Oxford, being elected a Vinerian law scholar in 1895. He was fellow and lecturer of Merton College, Oxford, in 1896; lecturer of Oriel College in 1897; and extension lecturer in modern history for Oxford University in 1898 and for Victoria University in 1900. In the latter year he was called to the bar at Gray's Inn, and his success as a barrister soon was recognized by his appointment in 1908 as King's Counsel and Bencher of Gray's Inn. He entered politics in 1906, being elected Unionist member of the House of Commons for the Walton division of Liverpool and holding this seat until 1919 when he was raised to the lord chancellorship. In Parliament he distinguished himself by his brilliancy as an orator and by his wide knowledge of public questions, coming to be considered one of the leaders of the Conservative as well as the Unionist party. At the outbreak of the World War he served in France with the Indian corps, but was recalled in 1915 to become Solicitor General and then Attorney General in Asquith's coalition cabinet. He also was knighted in that year. In 1917, on America's entry into the War, he was head of a special mission to the United States. On his appointment as Lord High Chancellor in 1919 he was created a baron and entered the House of Lords where he served until the fall of the coalition government in 1922. His outstanding achievement as Lord High Chancellor was the codification of the laws relating to property. On surrendering that office he was created First Earl of Birkenhead. In 1924 he reentered the government as Secretary of State for India, filling this post until 1928 when he resigned to become a director of Imperial Chemical Industries, Ltd., and other commercial concerns. The D. C. L. degree was conferred on him by Oxford University in 1922, and in the same year he was elected Lord Rector of Glasgow University and High Steward of Oxford University. In 1926 he became Rector of Aberdeen University, and in 1928 was made a Knight Commander of the Star of India. His works include: *Newfoundland*

(1906); *Toryism until 1832* (1907); *The Licensing Bill* (1908); *International Law in the Far East* (2d ed., 1908); *International Law* (4th ed., 1911); *Speeches, 1906-09* (2d ed., 1912); *The Destruction of Merchant Ships* (1917); *My American Visit* (1918); *The Indian Corps in France* (1919); *Points of View* (1922); *Contemporary Personalities* (1924); *America Revisited* (1924); *Fourteen English Judges* (1926); *Famous Trials of History* (1926); *Law, Life and Letters* (1927); *More Famous Trials* (1928); *The Speeches of Lord Birkenhead* (1929); and *Last Essays* (1930) published posthumously.

BIRMINGHAM-SOUTHERN COLLEGE. A coeducational institution for higher learning in Birmingham, Ala.; founded in 1856. The enrollment for the autumn of 1930 was 874, and for the summer session 803. There were 67 faculty members. The endowment amounted to \$780,000, and the income for the year was \$312,500. There were 25,000 volumes in the library. During the year a new woman's building costing approximately \$100,000 was under construction. President, Guy Everett Snively, Ph.D., LL.D.

BIRTH RATE. See CHILD WELFARE; VITAL STATISTICS; and the various countries under *Area and Population*.

BISMARCK ARCHIPELAGO. See NEW GUINEA.

BISMUTOTANTALITE. See MINERALOGY.

BLISS, GEN. TASKER HOWARD, U. S. A., RET. An American soldier, died in Washington, D. C., Nov. 9, 1930. He was born in Lewisburg, Pa., Dec. 31, 1853. On graduation from the U. S. Military Academy in 1875, he was commissioned a second lieutenant in the 1st Artillery. In 1884 he was recorder of the board appointed by President Arthur to report on the military value of the interior waterways of the United States, and from 1885 to 1888 was professor of military science at the Naval War College. He later saw special duty with the Secretary of War (1895-97) and spent two years as military attaché at the American Legation in Madrid (1897-98). In the Spanish-American War, he served during the Porto Rican campaign, and at its close was made collector of customs at the Port of Havana and chief of the Cuban Customs Service. In 1902 General Bliss was appointed special envoy to Cuba to negotiate the treaty of reciprocity between Cuba and the United States. He was commandant of the Army War College in 1903, and from 1903 to 1905 was a member of the Joint Army and Navy Board and of the General Staff of the United States Army. Until 1909 he commanded the departments of Luzon and Mindanao in the Philippines, and on his return to the United States was elected president of the Army War College. In the early part of 1911 he commanded the provisional brigade on the southern California border during the Mexican insurrection, after which he was for a short time commander of the Western division. He was placed in command of the department of the East in 1911 and of the Southern department and the cavalry division in 1913. In 1915 he became assistant chief and on Oct. 6, 1917, chief of staff of the United States Army, with the rank of general. Although he reached the legal age of retirement on December 31 of that year he remained on active duty by order of President Wilson and was appointed to membership in the Allied Conference (1917) and on the Supreme War Council in France where his genius for organization and

administration was demonstrated. He was also a member of the American Commission to Negotiate Peace in Paris during 1918-19. He was appointed a brevet general by Act of Congress in 1918, and in 1920 was detailed by the President as governor of the United States Soldiers' Home, which office he held until 1927. The LL.D. degree was conferred on him by Bucknell University in 1916, Western Reserve University in 1923, and Harvard University in 1927. He was also a recipient of the Distinguished Service Medal.

BLISTER RUST. See FORESTRY.

BOHEMIA. A constituent member of the State of Czechoslovakia since the defeat of the Central Powers in 1918; formerly a crownland of Austria; situated in the northwestern part of the former Austro-Hungarian Empire, with Saxony and Silesia on the north, Moravia on the east, and Lower and Upper Austria on the south. Area, including the small Austrian and German territories which were added by the peace treaty to Czechoslovakia, 20,102 square miles; population, Feb. 15, 1921, 6,670,582; estimated population, Jan. 1, 1929, 6,976,909. Bohemia is represented in the Czechoslovak Legislature by nine Deputies and five Senators. See CZECHOSLOVAKIA.

BOILERS. According to statistics issued by the U. S. Department of Commerce the number and rating of boilers built in the United States during the twelve months of 1930, as compared with a like period for 1929, were as follows:

| | <i>Number</i> | <i>Sq. ft. heating surface</i> |
|-----------------------|---------------|--------------------------------|
| Jan.-Dec., 1929 | 18,526 | 19,468,534 |
| Jan.-Dec., 1930 | 13,166 | 13,470,390 |

The shrinkage in the number of boilers and their combined rating was due not appreciably to a decline in power capacity but rather to the fact that more boilers were being operated at higher outputs than formerly and also because practice in the distribution of heat absorbing surface in the steam generating unit was allocating more to air preheaters, water walls and economizers and less to the boiler proper.

The trend was still toward fewer and larger units, which, instead of being the exception, had become quite general. In 1929 the record for capacity of a single boiler unit was a million and a quarter pounds of steam per hour. While this record held through 1930, designs were under way for units of a million and a half pounds of steam per hour. A compelling reason for these large boilers was the urge to reduce unit investment costs and get a greater amount of capacity concentrated in a given space. This was especially important in localities where land values are high. At the Kips Bay heating plant in New York City, the latest boiler had double the capacity in the same floor area as was occupied by boilers installed in 1926.

Coincident with these increased capacities come larger stokers and pulverizers. While the largest boilers were fired with pulverized coal there were under construction boilers of 530,000 pounds of steam per hour, each of which was to be fired by a single under-fed stoker 69 tuyeres long. The largest pulverizing mills in use had a capacity of 40 tons of coal per hour.

According to the U. S. Department of Commerce the sales of stokers and pulverizers during 1930 were approximately in the ratio of 3 to 2, based on boiler capacity served. While indicating

that the stoker was holding its own in the competition with pulverized coal, many of these stokers were for heating boilers. The smoke-abatement agitation in many cities has had a favorable influence on stoker installations in place of hand firing in smaller plants. To the end of 1930 the installation of pulverized coal equipment in central stations served approximately 600,000 boiler horse power and in industrial power plants 500,000 boiler horse power. This represented a three-fold increase in pulverized coal firing in five years.

Because of the extensive construction of natural gas pipe lines over various sections of the country many power plant boilers were being fitted to operate on gas. Also many were operating on a combination of solid, liquid, gaseous, and waste fuels.

An experimental boiler designed to operate at 3200 pounds pressure recently was built for Purdue University. This was the first boiler for this pressure to be installed in the United States although some were in operation in other countries. In Europe high-pressure boilers were of relatively small capacity and of special design, whereas in the United States high-pressure boilers (1200 to 1400 pounds) were of large capacity and followed the same general designs as those for low and medium pressures with increased drum, header, and tube thickness.

In central station practice 1200 to 1400 pounds pressure continued as the limit in the United States and the number of such installations was on the increase. Besides the stations already operating at this pressure, high-pressure boilers were under construction for five more such plants. In the industrial power plant field one plant at the end of the year was about to go into service at 1800 pounds, two were installing 1200-pound boilers, several were operating at 600 to 800 pounds, and 400 pounds was becoming general for the newer and larger plants, especially in the process industries.

The advent of high pressures and large capacities necessitated increased attention to boiler feed water. Many had found it desirable to pre-treat water fed to evaporators with zeolites or the lime-soda process, and phosphate treatment was widely used.

While pressures increased, the upper limit in steam temperatures in the United States remained at around 750 degrees F. In 1930, however, several stations were laid down to operate at 825 to 850 degrees. This was in consequence of metallurgical advance resulting from research in the creep of metals at such temperatures. It led to the production of alloy steels for piping, valves, and fittings that would stand up under such service. The 1000-degree experimental installation of the Detroit Edison Company was not in operation at the end of the year.

One of the most important contributions to boiler practice during 1930 was the advance in welded construction. The U. S. Navy Department approved the use of fusion welding for 32 boilers that were to go in new scout cruisers, and for stationary practice several boiler manufacturers had developed effective welded production techniques in anticipation of a revision of the American Society of Mechanical Engineers Boiler Code to sanction the welding of fired pressure vessels. In fact, a tentative revision of the code along these lines had been prepared and circulated for comment among members of the society.

Water walls had become accepted practice for large boilers in central stations and their use was increasing in industrial plants. This applies to both stoker and pulverized-coal-fired boilers. For pulverized coal installation the slag bottom furnace was becoming popular. In this type of furnace the ash is maintained in a molten state in the furnace well and is tapped off and sluiced away periodically. Forty-six such furnaces were in service and 23 more were under construction.

Among the special types of boilers the mercury boiler holds interest. The latest installation of a 1000-kilowatt boiler and turbine unit at the Hartford Electric Light Company had been in regular service since February, 1930, and had operated at an average net heat consumption of 10,300 B.t.m. per kilowatt-hour. The General Electric Company had commenced plans for a 20,000-kilowatt installation in its own power plant at Schenectady, N. Y.

Many large steam boilers were operating regularly at efficiencies of 84 to 87 per cent and higher efficiencies were reported for short periods and on tests.

Aside from fuel-fired boilers, the electric boiler found wide application among many large paper mills in Canada. These mills are usually located at large water power sites or take hydro power from nearby streams. Surplus or low cost hydro power is employed in the electric boilers to generate steam for process in the manufacture of paper. Under these conditions the steam is generated at less cost than if it had to be produced from coal. As the demand for electricity for industrial power increases in these sections this surplus power will undoubtedly command a higher price and it will then be more economical in some cases to produce the required steam in fuel-fired boilers. See POWER PLANTS.

BOK, bok, EDWARD WILLIAM. An American editor, author, and philanthropist, died at Lake Wales, Fla., Jan. 9, 1930. He was born Oct. 9, 1863, in Helder, the Netherlands, and with his parents, forced by financial reverses to emigrate, went to the United States at the age of six. He attended the public schools at Brooklyn, N. Y., and after working as a reporter for the Brooklyn *Eagle*, at the age of 19, he became editor of the Brooklyn *Magazine*. Selling the magazine, he entered the advertising department of Charles Scribner's Sons of New York City. Meanwhile, he was manager for the Bok Syndicate Press (1886-91). This press sold the sermons of Henry Ward Beecher and Mr. Bok in 1887 edited the *Beecher Memorial*. In 1889 he became editor-in-chief of *The Ladies' Home Journal*, published in Philadelphia, and soon was able to make this magazine one of the most widely read periodicals in the United States. In 1919 he retired from its editorship to devote his entire time to civic welfare. He wrote his autobiography, *The Americanization of Edward Bok* (1920); *Two Persons* (1922); *A Man from Maine* (1923); *Twice Thirty* (1924); *Dollars Only* (1926); *Perhaps I Am* (1928). He had previously written *Successward* (1895), *Keys to Success* (1900), and *Why I Believe in Poverty* (1915). In 1923 he offered the American Peace Award, a prize of \$100,000 for the best practicable plan by which the United States could cooperate with other nations to achieve and to preserve world peace. He also established in 1923 the Harvard Advertising Awards, eight money prizes and a gold medal for the best examples of layout, typography, and

general excellence in American advertising. He made generous gifts to the Philadelphia Orchestra and gave several civic prizes in that city. In 1928 he dedicated to the United States his bird sanctuary, the Singing Tower near Lake Wales in Florida. He was buried in a crypt at the base of this tower.

BOKHARA, bô-kâ'râ. The name applied to a former central Asian state, and also to its capital city. The Bokharan People's Socialist Republic established in August, 1920, was incorporated in the newly formed Uzbek Soviet Socialist Republic, Dec. 5, 1924. See SOVIET CENTRAL ASIA under *Uzbekistan*.

BOLITHO (RYALL), WILLIAM. A British journalist, died in Avignon, France, June 2, 1930. He was born in Cape Town, South Africa, in 1891 and attended Oxford University. He served with the British army in France during the World War and was the only person to escape when buried alive with 15 others in a trench cave-in on the Somme in 1916. At the close of the war he joined the staff of the *Manchester Guardian*, and in 1923 became special European correspondent for the New York *World*. He visited the United States during 1928-29 and contributed a tri-weekly column to the *World* in which he brilliantly interpreted events of the day. His books include: *Italy under Mussolini*; *Leviathan*; *Cancer of Empire*; *Murder for Profit*; *Twelve against the Gods*; and *Camera Obscura* (posthumous). A play, *Overture*, was produced posthumously in New York in December, 1930.

BOLÍVAR CENTENARY. The centenary of the death of Simon Bolívar, Venezuelan patriot, soldier, and statesman, who liberated from Spanish rule of the territories now known as Venezuela, Colombia, Ecuador, Panama, Peru, and Bolivia, was observed on Dec. 17, 1930. Special ceremonies were held in the capitals of the six republics, in most of the other Latin American countries, and in various cities of North America and Europe. In Washington, exercises were held under the auspices of the Pan-American Union and addresses on Bolívar were delivered before the Senate by Senator Hiram Bingham of Connecticut and before the House of Representatives by Representative Temple of Pennsylvania. In London, the diplomatic corps attended a solemn requiem high mass at Westminster Cathedral and a tablet was unveiled by Foreign Secretary Henderson at Apsley House where Bolívar was received by the Duke of Wellington in July, 1810. Similar ceremonies were held in Paris, Rome, Genoa, Naples, Brussels, and Hamburg. The *Bulletin of the Pan American Union* for December, 1930, was a special number in commemoration of the Bolívar centenary. See SPANISH AMERICAN LITERATURE under *Venezuela*.

BOLIVIA. A republic in central South America, bounded by Brazil and Paraguay on the east, by Argentina on the south, by Chile and Peru on the west, and by Brazil on the north. Sucre is the seat of the supreme court and is historically regarded as the capital, but the actual seat of the Government and the largest city is La Paz.

AREA AND POPULATION. The area is 514,155 square miles; the population was estimated in 1928 at 2,861,212, including about 1,624,111 Indians, 496,042 whites, and 558,152 of mixed race. The census of 1910 showed a population of 1,766,451. The chief cities, with their populations in 1928 (estimated), were: La Paz, 142,549; Cocha-

bamba, 35,574; Potosi, 34,083; Sucre, 33,983; and Oruro, 40,000.

EDUCATION. Elementary education is free and nominally compulsory. In 1927 there were 70,228 pupils in public elementary schools, 15,019 pupils in private schools of various grades, and 5082 students in secondary and superior schools. The eight institutions offering university instruction had 107 teachers and 802 students. At Sucre and La Paz are the only two universities which possess more than one faculty.

PRODUCTION. Tin mining is the all-important factor in Bolivia's national economy, the metal constituting nearly 90 per cent of the value of the annual exports. The downward trend in tin prices commencing toward the end of 1927 was reflected in an increasingly severe business depression. The average price per ton fell from \$1555 in 1927 to \$1103 in 1928, \$986 in 1929, and a low point of \$534 in 1930. Bolivia's output of tin rose from 31,610 long tons in 1924 to 43,932 in 1929, an increase of 23.3 per cent, while world production rose from 140,783 tons to 190,163 tons. The cost of production in Bolivia was estimated at over \$632 a ton, as compared with less than \$486 in the Federated Malay States, the principal producer (see **TIN**). Other minerals produced are copper, silver, lead, zinc, bismuth, wolfram, gold, and borate of lime. Next to China, Bolivia is the world's chief source of antimony. Important petroleum resources are indicated and the Standard Oil Company in 1929 had 16 wells in production at Chaco Oriental. There is virtually no coal, and of the water-power resources, estimated at 2,500,000 horse power, only 13,500 horse power were developed in 1926.

Agriculture is primitive and relatively unimportant, although about 4,940,000 acres were under cultivation in 1930. The principal crops are potatoes, coffee, cacao, barley, highland rice, and rubber. Livestock in the country in 1929 was estimated at 1,854,915 cattle, 5,552,5074 sheep, 747,581 goats, 1,882,000 llamas and alpacas, and 375,738 equines. Forest resources are abundant, rubber being the chief product. American investments in Bolivia, largely in mining and public utilities, increased from \$10,000,000 in 1913 to \$133,000,000 in 1929 and British capital, from \$2,000,000 in 1913 to \$13,000,000 in 1929. The business situation in 1929 and 1930 was distinctly unfavorable, increased mineral production being more than offset by price reductions. The imposition of heavier taxes met with general opposition, particularly from merchants, whose profits had been small for some time.

COMMERCE. In 1929, imports totaled approximately \$25,706,000, as compared with \$23,187,000 in 1928, and exports amounted to about \$45,000,000, as against \$41,786,000 in 1928. Total mineral exports in 1929 amounted to 24,524,000 pounds, valued at 123,407,744 bolivianos (about \$43,809,749), of which tin was valued at 102,590,522 bolivianos (about \$36,419,635). In 1928, tin exports were valued at 89,710,121 bolivianos. The value in bolivianos of other mineral exports in 1929, with comparative figures for 1928 in parentheses, was: Copper, 5,336,927 (5,205,697); lead, 3,644,392 (2,820,483); silver, 7,076,679 (8,755,721); and antimony, 1,445,224 (1,375,891).

FINANCE. According to the national bureau of financial statistics, the ordinary budget for 1930 balanced at 47,580,108 bolivianos (1 boliviano exchanged at \$0.3555 in 1929), as compared with

estimated receipts of 46,983,073 bolivianos and estimated expenditures of 46,927,457 bolivianos in the 1929 budget. The chief items of expenditure in the 1930 budget were the service of the public debt, for which 18,769,728 bolivianos were appropriated, and the Ministry of War, which received an appropriation of 8,702,540 bolivianos. The first report of the National Economic Council established by the new provisional Government (see below under *History*) estimated (in September) that the budget deficit for 1930 would approximate 25,000,000 bolivianos.

The public debt in October, 1929, totaled \$63,885,128, of which \$61,904,000 represented the external debt, held mainly in the United States. Interest and amortization payments on the external debt were regularly effected during 1929, but the service of the internal debt and Government salaries fell in arrears. Out of a normal annual income of about \$16,000,000, the country had to pay approximately \$6,000,000 for amortization of and interest on foreign loans. On July 1, 1930, the total debt aggregated 190,419,299 bolivianos (about \$64,435,000). By November, 1930, Bolivian bonds on the New York market had fallen from \$100 to about \$60.

COMMUNICATIONS. There were 1309 miles of railway in operation in Bolivia in 1929 and an additional 225 miles, from Cochabamba to Santa Cruz, were projected. The linking of Bolivian and Argentine railways during the year reduced the traveling time from La Paz to Buenos Aires to 72 hours, from La Paz to Arica to 20 hours, and from La Paz to the Peruvian port of Mollendo to 32 hours. In 1928 there were 1125 miles of main highways and about 6843 miles of cart roads. Commercial air lines connected a number of the leading cities. Fortnightly air service between La Paz and Rio de Janeiro was inaugurated July 30, 1930.

GOVERNMENT. The Constitution of 1880 vests executive power in a President, elected for four years by direct popular vote and ineligible for re-election. Two vice presidents are similarly elected. There is a Congress of two chambers, the Senate of 16 members elected for six years, and the Chamber of Deputies of 78 members, elected for four years. One-third of the Senate and one-half of the Chamber retire every two years. The President selects a Cabinet of six members. President at the beginning of 1930, Dr. Hernando Siles, who assumed office Jan. 1, 1926, for the term ending Aug. 6, 1930.

HISTORY

Two important developments marked the history of Bolivia during 1930—a swift and largely spontaneous revolution which overthrew the régime of President Hernando Siles in June, and the peaceful settlement in May of the quarrel with Paraguay arising from frontier clashes in the disputed Chaco region in 1928.

THE REVOLUTION. The uprising against President Siles, which unquestionably enlisted the sympathies of the bulk of the population, came to a successful climax with the capture of La Paz on June 27. It had its roots in numerous grievances, the most pressing of which were the increasing burden of taxation (see above under *Production*), the suffering caused by the acute economic depression, and the apparent efforts of the President to perpetuate his thinly veiled dictatorship beyond the expiration of his term of office on Aug. 6, 1930. Political mismanagement of the Na-

tional University, dissatisfaction in the army at the régime of General Hans Kundt, German military expert made chief of staff by President Siles, and the resentment aroused among the Spanish elements at the influence exercised by Indians at La Paz were other factors contributing to the national unrest.

For the last two years of his rule, President Siles had exercised a "limited dictatorship." He governed without the aid of Congress and numerous political opponents, including the Vice President, Abdon Saavedra, were sent into exile or imprisoned. The resignation of the Cabinet on Mar. 2, 1930, was one of the signals of the impending storm. A new Cabinet was constituted March 13. On April 9 it was officially announced that the Presidential elections, normally scheduled for June, had been indefinitely postponed in order that a Presidential campaign might not obstruct the Government's efforts to relieve the economic depression. Some 300 army officers signed a manifesto protesting against this violation of the Constitution. On May 16, the Cabinet again resigned and the third Cabinet of the year was formed on the following day.

President Siles himself resigned on May 28, because of "grave reasons of state." He turned over the Government to his Cabinet, which called an election for June 29 to choose members of a constitutional convention, scheduled to meet July 28. This maneuver was generally regarded as paving the way for a change in the Constitution to permit the reelection of President Siles. Vice President Abdon Saavedra, in exile in Buenos Aires, immediately declared the assumption of power by the Cabinet a violation of the Constitution, announced that he would return to Bolivia to assume the Presidential office, and demanded that in the interim the Cabinet vest executive power in the President of the Senate, as provided by the Constitution. His statement aroused only derision among Dr. Siles' supporters in La Paz.

The first open revolt occurred June 16 at Villazon, near the southern border, where Roberto Hinojosa rallied a small force in support of a semi-communistic programme. He was defeated by Government troops June 20. Two days later students and workmen demonstrating in La Paz against the continuance of the dictatorship were fired upon by the police and several were killed. The enraged populace broke into Government armories, armed themselves, and attacked Government troops, but General Kundt quelled the uprising temporarily after street fighting in which 100 or more were killed. The garrisons at Oruru and Cochabamba rose in revolt June 25 under the leadership of Gen. José Blanco Galindo. On June 27 La Paz capitulated, after revolting cadets at the Military Academy there had won over a large part of the local garrison and bombed the loyal police forces with airplanes captured at the Government's aviation field. A military junta, headed by General Blanco Galindo, took over the Government, while President Siles and General Kundt, who had sought refuge in the Brazilian and German legations, respectively, were allowed to leave the country.

The military junta immediately restored order, freed all political prisoners, invited all exiles to return to aid "in the restoration of Bolivia," and enlisted the services of leading Bolivians as civilian advisers. It established freedom of the press, autonomy for the National University, a National Council of Education to supervise public educa-

tion, and an economic council to seek remedies for the economic crisis. Various other reforms were pledged. Early in August, the junta announced that elections for President, Vice President, and Congress would be held Jan. 4-6, 1931, and on August 22 a coalition Presidential ticket representing the three principal political parties was nominated by a committee of 12 designated by the junta. The candidates were: for President, Daniel Salamanca, head of the so-called Genuine Republican party and one of the most influential critics of President Siles; First Vice President, Ismael Montes, former President and head of the Liberal party; Second Vice President, Bautista Saavedra, a leader of the Government Republican party and a former President. Montes and Saavedra had returned from exile earlier in the month. On July 21, the junta expelled from its ranks Col. José Ayoroa, who had been ordered to England to investigate the Siles Government's contracts with the Vickers armament concern, but who left his ship at Antofagasta, Chile, and was reported planning a revolution at Uyuni.

Despite the energetic steps taken by the Provisional Government, the country plunged more deeply into economic depression. There were strikes and riots in the mining districts and on September 9 the junta again proclaimed martial law throughout the country, expressing fear that the general state of unrest might lead to further trouble. On September 10 and again on November 18, the Government reported the discovery of conspiracies against it by the followers of former President Siles.

The coalition ticket adopted in August for the January elections, split apart on November 29, when Ismael Montes resigned his nomination as First Vice President. He charged that there was a conspiracy in the army, supported by politicians, to give greater power to Señor Saavedra, the candidate for Second Vice President. Montes' place on the ticket was taken by José Luis Tejada Sorzano. Later the junta decided to eliminate the office of Second Vice President, which had been established to include all the leading political figures on the ticket. Both the Republican and Liberal parties having nominated Salamanca for President, the campaign developed into a contest between Tejada Sorzano and Bautista Saavedra for the office of Vice President. Electoral registrations, closed on November 20, showed a total of enrolled voters less than half of the figure under the Siles régime. The difference was attributed to previous fraudulent registrations on a large scale.

The National Economic Council, in its report forecasting a deficit of 25,000,000 bolivianos in 1930, recommended an immediate reduction of 30 per cent in all administrative expenditures and the reduction of service on the floating debt. The junta dispatched a financial mission to New York on November 21 to negotiate with American bankers for either a new foreign loan or the funding of existing loans under less onerous conditions. An internal "patriotic" loan of \$2,500,000 was floated in September, of which \$1,800,000 was covered. The proceeds were used to pay salaries of public employees, which had remained unpaid for several months.

CHACO SETTLEMENT. The quarrel between Bolivia and Paraguay arising from armed clashes between frontier patrols in the disputed Chaco region in December, 1928, was peacefully terminated July 23, 1930, with the formal exchange

of Fort Vanguardia and Boqueron. The capture of Fort Vanguardia by Paraguayan forces and the subsequent assault on Fort Boqueron by Bolivian troops led to the severance of diplomatic relations and the serious threat of war. With the transfer of the forts, under the supervision of two Uruguayan military officers, the situation in the Chaco reverted to the same status as before the clashes of December, 1928. The fundamental question of the ownership of the area and Bolivia's demand for an outlet to the sea remained to be settled. See PARAGUAY.

Settlement of the Fort Vanguardia incident was due largely to the mediation of the Uruguayan Minister of Foreign Affairs, Rufino T. Dominguez. A second armed clash between frontier forces of the two countries on Jan. 16, 1930, complicated the negotiations. Paraguay lodged a formal protest against Bolivia with the Secretariat of the League of Nations on January 23. Bolivia, in reply, denied any aggressive action. A Uruguayan mission, which was in Asunción at the time endeavoring to mediate the dispute, was forced to return home unsuccessful. Foreign Minister Dominguez continued his efforts, however, and on April 4 induced both countries to sign a protocol putting into effect the recommendations of the Commission of Neutrals for the restoration of the *status quo* in the Chaco. In accordance with this agreement, diplomatic relations between Bolivia and Paraguay were resumed on May 21.

The improvement in the relations of the two countries was indicated in September, when the Paraguayan Minister of War mistakenly attributed to Bolivians an attack made by Indians on Fort Falcon on the Rio Verde river on August 22. There was no recrudescence of the war fever manifested following the Fort Vanguardia incident and the War Ministry retracted its charge.

BOLL WEEVIL; BOLL WORM. See ENTOMOLOGY, ECONOMIC; COTTON.

BOOTLEGGING. See PROHIBITION.

BOOTS AND SHOES. The U. S. Bureau of the Census, in its report on manufactures in 1929, stated the production of boots and shoes and slippers other than rubber, in the United

The U. S. Department of Commerce stated the production of leather boots and shoes for the year 1930, at 304,169,748 pairs, which may be compared with 361,402,183 pairs in 1929. Massachusetts led with 69,510,470 pairs, followed by New York with 69,041,978; Missouri, 40,424,040; Illinois, 21,392,976; New Hampshire, 20,743,332; Wisconsin, 16,007,089; Maine, 14,616,311; Pennsylvania, 13,211,846; Ohio, 11,280,099; and all other States, 27,941,007.

There was also a considerable decline in the number of pairs of boots and shoes exported to foreign countries but this tendency already had begun in 1926; the 1925 exportation, totaling 6,875,000 pairs, dropped in 1926 to 6,047,000 pairs, and continued to decline since, the 1930 exports totaling 3,684,113 pairs.

Shoe manufacturers in the United States in 1930 shipped 2,073,046 pairs valued at \$3,715,528 to the noncontiguous territories of Alaska, Hawaii, and Porto Rico. In other words, in 1930, 5,757,159 pairs of leather footwear, valued at \$12,006,397, were supplied countries outside Continental United States, as compared with 6,935,756 pairs, valued at \$15,803,764 in 1929. The peak of the trade with the noncontiguous was recorded in 1927 (2,366,000 pairs valued at \$4,544,000). The trade in 1928 and 1929 was slightly more than 2,100,000 pairs, and shows the slight decline to 2,073,046 pairs in 1930.

The tariff of 1930 which came into effect June 18, imposed on leather boots and shoes a duty of 20 per cent ad valorem. As a result, during the first six months of 1930, 3,236,149 pairs of leather boots and shoes valued at \$8,734,583 were imported, and in the last six months only 437,005 pairs, valued at \$1,386,092. During the the last six months of 1929 imports of leather boots and shoes totaled 3,034,532 pairs, valued at \$8,049,021.

Of the leather boots and shoes imported during 1930, 88.5 per cent were for women and misses, 7.2 per cent for men and boys, and 4.3 per cent for children. Czechoslovakia supplied the larger portion of the imported leather boots

EXPORTS OF LEATHER FOOTWEAR FROM THE UNITED STATES

| Foreign countries | 1929 | | 1930 | |
|----------------------------------|-------------------|--------------|-----------|-------------|
| | Quantity | Value | Quantity | Value |
| Boots and shoes: | | | | |
| Men's and boys' | pairs.. 1,863,263 | \$ 5,581,107 | 1,145,894 | \$3,333,994 |
| Women's | do... 1,731,865 | 4,703,584 | 1,599,335 | 3,992,139 |
| Children's | do... 686,251 | 763,726 | 381,913 | 419,780 |
| Slippers | do... 470,731 | 499,032 | 528,302 | 488,884 |
| Athletic and miscellaneous | do... 55,102 | 100,134 | 28,669 | 56,072 |
| Total | 4,807,212 | \$11,647,583 | 3,684,113 | \$8,290,869 |
| <i>Noncontiguous Territories</i> | | | | |
| Alaska | pairs.. 50,000 | 185,000 | 55,000 | 184,000 |
| Hawaii | do... 330,000 | 992,000 | 301,000 | 895,000 |
| Porto Rico | do... 1,749,000 | 2,979,000 | 1,717,000 | 2,637,000 |
| Total | 2,129,000 | \$ 4,156,000 | 2,073,000 | \$3,716,000 |

States for that year as 363,168,013 pairs valued at \$939,487,444, or including only leather boots and shoes 320,991,861 pairs valued at \$890,866,795. The distribution by kinds and values was as follows: Men's, 97,933,920 pairs, \$312,510,718; youths and boys, 22,596,403 pairs, \$49,091,184; women's, 131,487,446 pairs, \$420,860,686; misses' and children's, 42,981,005 pairs, \$75,333,371; infants, 23,160,144 pairs, \$24,239,195; athletic and sporting, 2,842,943 pairs, \$8,831,641; Canvas and other textile fabrics, 3,625,423 pairs, \$11,632,546.

and shoes, or approximately 70 per cent (2,575,529 pairs). The grand total for 1930 of boots and shoes imported was 3,673,154 pairs, valued at \$10,120,675, distributed as follows: Men's and boys', 265,783 pairs, \$1,325,492; Women's and misses, 3,249,634 pairs, \$8,487,488; Children's 157,737, \$307,695. See LEATHER.

BORNEO. An island in the Malay Archipelago. See BRITISH NORTH BORNEO, BRUNEI, SARAWAK, and DUTCH EAST INDIES.

BOSNIA AND HERZEGOVINA, hër'tsā-gō-vē-na. Formerly provinces in the Turkish

Empire, which were incorporated in the Austro-Hungarian Empire in 1908. In 1918, after the collapse of Austria-Hungary, they became provinces of the newly established state of Yugoslavia. They were obliterated as administrative units by the law of Oct. 3, 1929, which redivided Yugoslavia into nine new provinces. The area was 19,768 square miles and the population, at the census of Jan. 31, 1921, 1,889,929. See JUGOSLAVIA under AREA and POPULATION.

BOSTOCK, HEWITT. A Canadian statesman, died in Monte Creek, B. C., Apr. 28, 1930. He was born in Walton Heath, Epsom, England, May 31, 1864, and was educated at Trinity College, Cambridge University. Although called to the bar by Lincoln's Inn in 1888, he did not practice law. Buying a fruit farm and cattle ranch in British Columbia, Can., he went there to live in 1893. The following year he founded *The Province*, a weekly newspaper in Victoria, which was later moved to Vancouver and published daily. From 1896 to 1900, he was a Liberal member for Yale-Cariboo, B. C., in the Dominion Parliament. He became a member of the Senate from British Columbia in 1904 and Liberal leader in 1914. In 1921-22 he was Minister of Public Works, resigning in 1922 to become speaker of the Senate.

BOSTON, MASSACHUSETTS. See MASSACHUSETTS, and under CELEBRATIONS.

BOSTON MUSEUM OF FINE ARTS. See ART MUSEUMS.

BOSTON UNIVERSITY. A nonsectarian institution of higher education in Boston, Mass.; founded in 1869. The enrollment for the summer and autumn sessions of 1930 was 12,593, distributed as follows: College of liberal arts, 733; college of business administration, 3375; college and extension courses, 700; college of practical arts and letters, 802; college of music, 265; school of theology, 278; school of law, 506; school of medicine, 223; school of education, 3290; school of religious education, 185; and graduate school, 523. The faculty numbered 557. The productive funds of the university exceeded \$4,373,557. Important gifts for the year approximated \$69,805. In the 10 libraries of the university there were 139,814 volumes, the liberal arts library alone containing 49,503 volumes. During the year the Sargent School of Physical Education, assessed at \$82,900, became a part of Boston University. In addition, the Sargent School camp, covering 250 acres at Peterboro, N. H., was purchased by the university. The Institute of Homemaking and Related Vocations was made a part of the School of Education so as to give students who wish to specialize along these lines a cultural background. President, Daniel L. March, A.M., S.T.B., Litt.D., L.H.D., LL.D.

BOTANY. The quinquennial meeting of the International Botanical Congress at Cambridge, England, during the week of August 10 to 23 inclusive, was an event of importance to botanists in all parts of the world. Professor A. C. Seward, of Cambridge University, presided, and the various sections, with their presidents, were as follows: Bacteriology, Prof. R. E. Buchanan, Iowa State College; Phytogeography and Ecology, Prof. H. C. Cowles, University of Chicago; Genetics and Cytology, Prof. O. Rosenborg, Botaniska Institutet, Stockholm; Morphology and Anatomy, Prof. J. C. Schoute, Groningen, Holland; Mycology and Plant Pathology, Prof. L. R. Jones, University of Wisconsin; Plant Physiology, Dr. F. F. Blackman, Cambridge University; Paleobotany,

Dr. D. H. Scott; Taxonomy and Nomenclature, Prof. L. Diels, Berlin-Dahlem.

In his introductory address Professor Seward directed attention to the difficulties experienced by paleobotanists in bridging the gap between the plant forms of the late Paleozoic and those that appear abruptly in the Mesozoic. He believes that the central Asian region, which has enriched our knowledge of the dinosaurs, may possibly supply some of the evidence now lacking in the evolutionary series. Of the many papers presented at the sectional meetings only brief mention can be made. Dr. T. W. Woodhead discussed in detail the results of his studies in the phytogeography of the southern Pennines, in England, to which reference was made in the YEAR BOOK for 1929 (p. 110). He exhibited a series of scale model maps illustrating the various stages of forest development and decline. Dr. J. H. Craigie, of the Dominion Experimental Farms at Winnipeg, Canada, discovered some time ago that the black stem rust of wheat exhibits a sexual phase in its life cycle, and had demonstrated that it follows the Mendelian ratios with respect to the inheritance of certain characters when hybridized. There are many different physiological strains of the rust, attacking varieties of wheat, and in some cases, as Dr. Craigie pointed out, the hybrid strain is more virulent than either parent strain. Professor C. H. Ostenfeld, of the University of Copenhagen, discussed problems of reforestation in Denmark, a country in which the original mixed forests, owing to years of selected cutting, have lost their valuable oak and pine timber, and now consist of almost pure stands of beech. Efforts were being made, Professor Ostenfeld stated, to increase the forest area by plantations of evergreens. Dr. William B. Briery, of Rothamsted, England, in the course of experiments with the grape fungus, *Botrytis cinerea*, found that the offspring of a single spore might exhibit both continuous and discontinuous variations, and that modifications could be produced at will by altering the culture medium.

The Congress gave consideration in its plenary sessions to the various suggestions and amendments offered to the tentative code of nomenclature adopted at the Congress of Vienna in 1905 and at Brussels in 1910. The principle of retaining lists of *nomina conservanda*, to include plant names established by long usage or for other cogent reasons, was accepted. It was decided that in the descriptions of new forms, a brief Latin diagnosis should be required to accompany the full description. An advisory committee was established to interpret the code and to consider further proposals for modification.

PATHOLOGY. Prolonged periods of drought and excessively high temperatures in many parts of North America during the summer of 1930 resulted in many losses by disease as well as by physical injury to crops. Thus bacterial soft rot was very prevalent among all vegetables; a severe outbreak of fireblight damaged the eastern apple crop, especially in New York; mosaic disease was abundant and destructive in the tobacco fields; and rose mosaic or infectious chlorosis caused much injury to propagating stocks on the Pacific coast. Commercial mushroom growers suffered considerable loss from the rose-comb and the truffle disease. The former produces an abnormality in the mushroom, and is probably the result of exposure to fumes or other oxidation products of mineral oil. The latter is caused by a truffle

which invades the beds, and which was described as a new species by Diehl and Lambert (*Mycologia* 22: 223-226. 1930) under the name *Pseudohalsamia microspora*. It apparently acts as a fungus weed rather than as a parasite.

Taubenhaus and Ezekiel (*Phytopathology* 20: 761-786. 1930) studied the overwintering of the cotton root rot (*Phymatotrichum omnivorum*), the control of which has heretofore been considerably impeded by incomplete knowledge of the life history of the fungus. Carrying out experiments in soil reaction (loc. cit. 803-816), the same authors found that the results indicate that acidification of the soil is inclined to diminish susceptibility of the cotton plant to attack. The banana wilt disease, *Fusarium cubense*, more generally called the Panama disease, was discussed by C. W. Wardlaw (*Ann. Bot.* 44: 741-766. 1930). It is a parasitic soil organism, attacking the suckers and roots. Apparently variable water supply is an important factor in root infection, but acidity or alkalinity of the soil are not.

The various mosaic diseases of cultivated plants continued to be a fertile subject for investigation by pathologists. F. G. Fajardo (*Phytopathology* 20: 469-494. 1930), writing on the mosaic disease of the bean, suggested control by the use of early maturing varieties and the production of uninfected seeds. F. M. Clara (*ibid.* 691-706) reported a new leaf disease of tobacco in the Philippines, caused by a bacterium described as a new species under the name *Phytomonas polycolor*. Damage to the crop is apparently reduced by seed disinfection with silver nitrate. Manila hem or abaca has been seriously injured in the Philippines by the disease known as bunchytop, which became destructive about seven years ago, and has since caused the abandonment of cultivation of this valuable plant in many regions. It is highly infectious, and is spread by an aphid, *Pentalonia nigronervosa* Coq. The disease was described in detail by Gerardo O. Ocfemia (*Am. Journ. Bot.* 17: 1-18. 1930). Some interesting results of studies in the physiology of parasitism were reported by R. Sahai Vasudeva (*Ann. Bot.* 44: 557-564. 1930), who found that the presence of one parasite or saprophyte in the inoculum of another markedly reduces the vigor of attack on the host. Experiments were made upon apples, using *Botrytis allii* in the inoculum of *Monilia fructigena*. A destructive disease of lima beans in Cuba and Porto Rico was described by Anna E. Jenkins (*Plant Disease Reporter* 14: 96-97. 1930). It is caused by the fungus *Elsinoe canavaliae*, which attacks leaves, stems, and pods, but does not seem to injure the seeds. The Dutch elm disease, *Graphium ulmi*, made its appearance in Ohio, as announced by May (*science*, n.s. 72: 142-143. 1930). Cultures from infected elms in Cleveland and Cincinnati were submitted to Dr. Christine Buisman of the University of Utrecht, who predicted last year that the disease would invade the United States.

Dr. R. J. Haskell, plant pathologist of the U. S. Department of Agriculture, stated that plant diseases cause annual damage to cultivated crops to the amount of \$1,500,000. English authorities estimate that diseases take toll of 10 per cent of the plant products of that country. It is natural, therefore, that phytopathology and physiology are the leading subjects of botanical investigation at the present time.

PHYSIOLOGY. Researches of plant physiologists centred largely around such subjects as the

toxicity of certain chemicals upon seeds or other plant tissues, the effect of artificial physical conditions upon growth, the chemical requirements of various plants, etc. Interest also developed in a new field of inquiry sometimes called plant morphogenesis, which may be defined as a study of the process whereby genetic entities become differentiated into cells and tissues with specific shapes and functions. It seems well established that the plant develops hormones or organ-forming substances analogous to those already known to exist in animals. The actual chemical constitution of these is unknown, though Hammett has shown that the sulphhydryl ion, SH, exerts a specific influence upon nuclear division. Physical factors, as light, gravity, moisture, etc. are also important, while evidence is also accumulating that there may be actual differences in electrical potential between two ends of a cell.

In a contribution from the Boyce-Thompson Institute for Plant Research (*Am. Journ. Bot.* 17: 416-482. 1930) Arthur, Guthrie and Newell described an elaborate series of experiments on the effects of artificial climates upon growth. The plants under observation were subjected to varying light intensity, increased or decreased length of day, etc. It was found that tuber production in potatoes was favored by low temperature in combination with increased length and intensity in light. The tomato proved to be the most sensitive to light of all the plants utilized in the experiments. The authors remarked that a practical application of these facts in crop production would be to supplement winter daylight with from 3 to 6 hours of artificial illumination.

Discussing the physiological importance of various mineral elements in plant tissues, W. O. James (*Ann. Bot.* 44: 173-198. 1930) showed that one significant effect of potassium is an increase of catalytic activity, leading to greater efficiency in starch production, his experiments also tended to show that loss of potassium is a causal factor in the aging or yellowing of leaves. According to Le Van (*Am. Journ. Bot.* 17: 381-395. 1930) certain toxic substances, notably the salts of various metals, cause a stimulation of carbon dioxide production, highest in the case of copper salts. F. E. Denny (*Am. Journ. Bot.* 17: 602-613. 1930) found that the freshly harvested corms of several varieties of gladiolus treated with the vapor of ethylene chlorhydrin, responded with rapid growth, some in about a week. Not more than one-half of these artificially accelerated corms furnished blooms, although this may have been partly due to unfavorable light conditions. Macht (*Am. Journ. Bot.* 17: 572-578. 1930), noting the different degrees of toxicity of 23 isomeric octyl alcohols on seedlings of the white lupine (*Lupinus albus*), emphasized the importance of using pure chemicals in pharmacological research.

Norwood C. Thornton (*Am. Journ. Bot.* 17: 614-626. 1930) found that cut roses, placed in carbon dioxide storage, had their life prolonged under certain conditions. Opening of the buds was also retarded, but storage for too long a period resulted in discoloration of the flowers. A series of experiments conducted by Dexter, Tottingham, and Graber (*Plant Phys.* 5: 193-214. 1930) indicated that the degree of resistance to cold weather injury in plants may be measured by the diffusion of electrolytes and other substances from chilled or frozen tissues into water after such tissues have been thawed. In this connection Smith and Bressman (*Journ. Agric. Res.* 40:

25-26. 1930) proved at the Oregon Experiment Station that germinating wheat grains survived twelve days of constant freezing at -12°C . Black, Eggleston and Kelly (*Journ. Agric. Res.* 40: 917-920. 1930), continuing their investigations on the toxicity of alkaloids obtained from various species of *Bikukulla*, reported that the western *B. formosa* yields from the dried tops an alkaloid producing convulsions and death in mice. J. B. McNair (*Am. Journ. Bot.* 17: 662-668. 1930) pointed out a possible relationship between the climatic distribution of oil and starch in seeds and their physical and chemical properties. As oil conducts heat less readily than starch, it may be of service in the seed as a protection against excessive cold in temperate climates or excessive heat in the tropics.

Cultural experiments by Lewis Knudson (*Bot. Gaz.* 89: 192-199. 1930) proved that the symbiotic condition in orchids is not obligatory either for germination or for growth and flower production.

AGRONOMY. J. S. McHargue and O. M. Shedd (*Journ. Am. Soc. Agron.* 22: 739-746. 1930) found that oats grown in purified sand cultures to which small amounts of compounds containing manganese, copper, zinc, boron or arsenic were added gave markedly increased yields. Copper and zinc produced a larger quantity of both grain and straw than manganese, while boron and arsenic gave more straw and less grain, this being especially noticeable in the case of arsenic. Hulbert, Remsburg, and Spence (*Am. Journ. Agron.* 22: 423-433. 1930) discussed methods of controlling perennial weeds with chlorates. Sodium chlorate first received attention as a herbicide in Idaho in 1927. Calcium and magnesium chlorates have also been found effective. The plants treated included Canada thistle, wild morning glory, quack grass, etc. According to Harper, sodium chlorate in spray is especially effective in killing Johnson grass.

Sulphur as a fertilizer produced striking increases in yield of alfalfa, as reported by Powers (*Journ. Am. Soc. Agron.* 22: 37-373. 1930), and Johnson and Fisher have found boron essential to the growth and fruiting of the tomato. W. D. Kimbrough (*Plant Phys.* 5: 373-386. 1930) discovered no apparent influence of fertilizer treatment on either the flavor or the keeping quality of watermelons.

GENETICS. J. W. Gregor and F. W. Sansome (*Journ. Genetics* 22: 373-388. 1930) conducted a series of experiments on timothy (*Phleum pratense*) and the related *P. alpinum* at the Scotch Plant Breeding Station, and discovered that there are two distinct forms of this well known pasture grass occupying different ecological areas and apparently intersterile. Hybrids were obtained between *P. phleum* and *P. alpinum*, but the latter is probably nevertheless distinct. Cecil Yampolsky (*Journ. Hered.* 21: 65-72. 1930) made some interesting graft experiments on the euphorbiaceous weed *Mercurialis annua*. This is a dioecious plant, and reciprocal grafts between male and female individuals indicated that the two sex elements can exist side by side in the same graft without influencing the morphological expression of either stock or scion. On the other hand, striking examples of sex reversal were obtained as the result of severe pruning (*Bull. Torr. Bot. Club* 57: 51-58. 1930).

T. H. Kearney investigated at length the genetics of the cotton plant. The taxonomic relations

between wild and cultivated species of cotton (*Gossypium*) have always been obscure, and most of them are probably the result of hybridization. It is due to this fact that comparatively few examples of simple Mendelian inheritance have been recorded. Professor H. K. Hayes (*Am. Naturalist* 64: 15-36. 1930) emphasized the importance of knowledge of the genetic nature of disease organisms in the study of disease resistance inheritance. The development of stem rust resistant wheats and wilt resistance varieties of flax are examples of practical work which have been carried on along this line.

An intergeneric hybrid between the sugar cane and cholam (*Andropogon sorghum*) has been successfully raised at the Imperial Cane Breeding Station at Coimbatore, India. The only other three intergeneric plant hybrids of possible economic value now known are maize-teosinte, wheat-rye, and cabbage-radish.

ECOLOGY AND TAXONOMY. Winifred E. Brechley and Katherine Warrington (*Journ. Ecol.* 18: 235-272. 1930), in the course of a numerical estimation of viable weed seeds found in soil examples from English grain fields, noted that comparatively few species germinate freely through the year, and that many have a natural period of dormancy. Some species also show a preference for certain manures. John Phillips (*Journ. Ecol.* 18: 193-234. 1930) has been engaged in a comprehensive study of the plant communities of Tanganyika, with special reference to their importance in the tsetse fly investigations. There are two definite formations in the central province, the deciduous scrub of the lowlands and the sub-tropical evergreen forest of the uplands above 1400 meters. G. A. Pearson, Director of the Southwest Forest Experiment Station, U. S. Forest Service, has initiated an extensive series of investigations of soil and air temperature, precipitation, soil moisture, and evaporation in various forest types.

Lucy E. Boothroyd (*Am. Journ. Bot.* 17: 678-693. 1930) made a critical study of the inflorescence in *Platanaceae*, the fundamental nature of which has been very obscure. She considers that the inflorescence is primarily a panicle, the main branches of which have been reduced to form a head, and the ends of the inflorescence also reduced to heads. This had led also to reduction of the bracts and flower parts. The family may well have been derived from some primitive rosaceous type. Professor D. H. Campbell (*Ann. Bot.* 44: 311-332. 1930), discussing at length the phylogeny of monocotyledons, remarked that while the majority of students considered them to have been derived from the dicotyledons, their dominantly herbaceous structure and aquatic habits might well indicate a primitive character, derived from ancestral Protangiosperms of Filicinae. In this connection J. W. Bews has offered evidence showing that angiosperms probably originated at a time when the climate was similar to that of the existing lowland tropics. Frère Marie-Victorin (*Journ. Bot.* 68: 161-171. 1930) examined the evidences of evolution in the flora of northeastern America and concluded that it diverged from that of the western part of the continent through isolation by an arm of the sea in Cretaceous times. From the European flora it became separated through isolation by disappearance of the North Atlantic land bridge during the Tertiary era. The paper also contained a discussion of the various endemic species found in the so-called "nuna-

taks" centring around the Gulf of St. Lawrence. These areas escaped the Wisconsin ice sheet and retained the flora of the previous period.

An event of significance during the year was the retirement of Dr. A. B. Rendle from the post of Keeper of Botany in the British Museum, which he had held since 1906, his total period of service in the Museum having reached forty-two years. See **HORTICULTURE**.

BIBLIOGRAPHY. Botanical works of importance published during the year include: H. H. W. Pearson, *Gnetales* (Cambridge Univ. Press); Lewis Hanford Tiffany, *The Oedogoniaceae*—a monograph, pub. by author; R. J. Pool, *Flowers and flowering plants—an introduction to the nature and work of flowers and the classification of flowering plants* (New York); E. C. Barton-Wright, *Recent Advances in Plant Physiology* (Philadelphia); W. J. Robbins and H. W. Rickett, *Botany* (New York); Arthur Bliss Seymour, *Host Index of the Fungi of North America* (Oxford Univ. Press).

BOULDER CANYON DAM. See **DAMS** and **ARIZONA** under *Political and Other Events*.

BOUNDARY DISPUTES. See **BOLIVIA**, **BRAZIL**, **GUATEMALA**, **HONDURAS**, under *History*.

BOWDOIN COLLEGE. An institution of higher education for men in Brunswick, Me.; founded in 1794. The enrollment of the autumn session of 1930 was 563. There were 52 faculty members. The productive funds of the college amounted to \$5,500,000, and the income for 1929-30 was \$476,000. There were more than 150,000 volumes in the library. President, Kenneth Charles Morton Sills, LL.D.

BOWLING. The American Bowling Congress tournament at Cleveland in the spring of 1930 attracted 2443 five-man teams. The champions were: Individual, Larry Shotwell, Covington, Ky., 774; doubles, Jim Devine and George Heup, Beloit, Wis., 1339; five-man team, D. Graff & Sons, Kalamazoo, Mich., 3100; all-events, George Morrison, Chicago, 1985. Joe Falcara of New York City continued as world's match-game champion. According to figures compiled by the American Bowling Congress, about 6,000,000 people in the United States bowl regularly on 160,000 alleys.

BOXING. Nine boxing titles in various classes changed hands during 1930. The most important of these—the heavyweight championship of the world—went to Max Schmeling of Germany, who won on a foul from Jack Sharkey in the fourth round of a scheduled 15-round bout in New York City, June 12. Up to the time when he fouled Schmeling, Sharkey appeared to be leading by a comfortable margin. The New York Boxing Commission subsequently abolished the punch below the belt, whether intentional or not, as a means of winning or losing a bout. The Sharkey-Schmeling fight was witnessed by 74,163 persons, who paid gate receipts of \$711,068. In February, Sharkey received credit for a knockout over Phil Scott of England at Miami, Fla. On Dec. 16, 1930, the New York State Athletic Commission picked Sharkey as leading contender for the heavyweight title.

The world's light-heavyweight title passed to Maxie Rosenbloom after being unclaimed for a year. Jakie Finkelstein, otherwise known as Jackie Fields, lost the world's welterweight title to Young Jack Thompson, who in turn was defeated by Tommy Freeman. With equal rapidity the world's lightweight championship passed

from Sammy Mandell to Al Singer and then to Tony Canzoneri. The world's featherweight champion, Christopher Battalino, turned back two challengers, Ignacio Fernandez and Kid Chocolate. Al Brown, Panama Negro, appeared the leading claimant to the bantamweight crown and Frankie Genaro and Midget Wolgast to the flyweight title, both of which were in dispute. Genaro and Wolgast battled to a draw in New York December 27. Mickey Walker still held the world's middleweight title, having met no challenger in his class during the year.

Jack (Kid) Berg, English lightweight, was considered by many the year's outstanding boxer. He won a verdict over the spectacular Cuban, Kid Chocolate, at the Polo Grounds, New York, August 4, and outpointed Billy Petrolle at Madison Square Garden on October 10. The huge and much publicized Italian heavyweight, Primo Carnera, ended his boxing career in the United States after a defeat in Boston at the hands of a second-rate contender, Jimmy Maloney. Later (November 10) he defeated Paulino Uzeudun, the Basque, before a record European fight crowd of 80,000 at Barcelona, Spain. William L. (Young) Stribling knocked out Phil Scott in the second round at Wimbledon Stadium, London, on July 28. George Godfrey, Negro heavyweight, who fouled Primo Carnera in a bout at Philadelphia, June 24, was ruled out as a heavyweight contender by the Pennsylvania State Athletic Commission and deprived of his boxing license in that State, and half of his purse. Another important fight of the year was that between Kid Chocolate and Fidel La Barba, former world's flyweight champion, the decision going to the latter. Jimmy McLarin, one of the leading welterweights, unexpectedly met defeat at the hands of Billy Petrolle at Madison Square Garden, November 21.

BOY-ED, KARL. Former German naval attaché in Washington, died in Hamburg, Sept. 15, 1930. In December, 1915, he was recalled at the request of President Wilson for alleged secret and hostile activities in the United States, Canada, and Mexico. The charges against him included plots to get German naval reservists into England as spies by supplying them with false passports from the Department of State and to provision German cruisers at sea through vessels leaving American ports with fraudulent papers.

BOY SCOUTS OF AMERICA. An organization incorporated in 1910 and chartered by Congress in 1916 to develop the character of boys and train them for the duties of adult life by influence brought to bear in their work and play. Its national constitution declares the intention to "promote the ability of boys to do things for themselves and others, to train them in scout craft, and to teach them patriotism, courage, self-reliance, and kindred virtues." Each boy, on joining the organization, takes the scout oath, admonishing him to keep himself "physically strong, mentally awake, and morally straight." The scout law requires him to exert such qualities as trustworthiness, loyalty, helpfulness, friendliness, courtesy, kindness, obedience, cheerfulness, thrift, bravery, cleanliness, and reverence. The movement is nonsectarian and without military or political connection.

The membership in October 1930, numbered 832,240, of whom 605,752 were boys and 226,488 scout leaders. There were 12 regional scout districts under the direct supervision of the national

scout executives and subdivided into 624 local councils. The boys are organized into troops consisting of 32 members, each troop being made up of patrols of eight or less members under a boy leader. A scoutmaster, commissioned by the national council, is provided for each troop; he must be an adult citizen of proved fitness for boy leadership. Troops are commonly formed in connection with schools, churches, or other existing bodies, and each must be sponsored by a troop committee of three or more adults, who select the scoutmaster and supervise the execution of the programme. In small areas, a farm or home scout patrol may be formed with as few as two boys; and a boy who lives in an area so isolated that he cannot join a troop or patrol may become a lone scout.

Among the foremost scout activities are camping and hiking, nature study, sea scouting, and many kinds of athletics and crafts, such as swimming, first aid, signaling, knot-tying, and bridge making. Successive ranks in membership—tenderfoot, second, and first class—are achieved by passing tests, graded in difficulty. Merit badges, 91 in number, may be attained by the scout of first class rank by meeting requirements for each; they cover proficiency in pursuits both of the useful and the hobby type. By earning a certain number of merit badges a boy may rise to the higher ranks of star, life, and eagle scout. In 1930 the organization provided opportunity for 300,000 boys to spend a week or more in Boy Scout camps. There were 652 camps conducted by local councils and more than 2400 troop camps. In its community service the Boy Scout movement coöperates with the U. S. Forestry Department in fighting and preventing forest fires and in conserving wild life, and planting trees. It also renders services in local campaigns of various sorts, such as clean-up and safety-first campaigns, and coöperates with many national societies and movements.

The official magazine for boys is *Boys' Life* and for scout leaders, *Scouting*. The organization also publishes merit-badge pamphlets, handbooks, and other material pertaining to the movement. The national officers in 1930 were: President, Walter W. Head; treasurer, George D. Pratt; national commissioner, Daniel Carter Beard; international commissioner, Mortimer L. Schiff; chief scout executive, James E. West; deputy chief scout executive, George J. Fisher. Headquarters of the national council, the governing body, are at 2 Park Avenue, New York City.

BRANCKER, AIR VICE MARSHAL SIR (WILLIAM) SEFTON. A British soldier and aviation expert, died in the R-101 disaster near Beauvais, France, Oct. 5, 1930. He was born Mar. 22, 1877, and attended the Royal Military Academy in Woolwich, being commissioned in the Royal Artillery in 1896. He served during the Boer War with the horse and field artillery, and from 1903 to 1912 was stationed in India in artillery and various staff appointments. In 1913 he was transferred to the War Office in London, and the following year, on the outbreak of the World War, became Deputy Director of Military Aeronautics and in 1916 Director of the Air Organization. He was commander of the Royal Flying Corps, Middle East, during the latter part of 1917, and in 1918 was appointed major-general in the Royal Air Force, serving as controller-general of equipment and master-general of personnel on the Air Council. In 1919 he retired from the army so as to aid in

the development of commercial aviation in England, and became affiliated with the Aircraft Manufacturing Company. Regular London-to-Paris airplane service was established by these interests. In 1922 he was appointed Director of Civil Aviation in the Air Ministry, and two years later flew to India to survey a projected airship route. He was also British representative on the International Commission of Air Navigation, and during 1928-29 was president of the Institute of Transport. He was created a Knight Commander of the Bath in 1919, and in 1924 was gazetted Air Vice Marshal.

BRANDES, MARTHE. A French actress, died Apr. 27, 1930, in Paris, where she was born in 1862. In 1884 she played at the Vaudeville, making her début in *Diane de Lys*. She entered the Comédie-Française in 1887, leaving in 1890 to return to the Vaudeville. Going again to the Comédie-Française in 1893, she was elected an associate in 1896. In 1903 she began to play at the Renaissance, the following three years marking the highest point in her career. Her acting was characterized by subtlety of interpretation, both of joy and of suffering. The rôles which she played included Dominique Brienne in *Le Passe*, the Queen in *Ruy Blas*, the Countess in *Le Mariage de Figaro*, and Suzanne d'Ange in *Le Demi-Monde*. Her final appearance on the stage was in 1914 at the Porte Saint-Martin in Hervieu's *Le Destin est maître*. Although a musician, painter, and author, as well as actress, after her retirement from the stage, she devoted her entire time to hospital and educational work for blind soldiers. She was awarded the Cross of the Legion of Honor.

BRĂTIANU, VINTILĂ. A Rumanian statesman, died in Micaesti, Dec. 22, 1930, at the age of 63. He was the third son of Ion C. Brătianu, the great Rumanian Liberal leader. Educated as an engineer in France, he practiced his profession for several years, then entered politics. When his brother, Ionel, assumed the leadership of the Liberal party in 1909, he was appointed adviser on financial and economic matters. Later during the World War he acted as Minister of War and Ammunition. When his brother returned to power in 1922, he was appointed Minister of Finance, and for six years put into practice his economic theories. The object of the Brătianus was to make Rumania self-sufficient through the creation of a number of new industries by means of protective tariffs and the help of the National Bank. The most disastrous part of their policy was their hostility to foreign capital, with the result that certain industries, such as agriculture, were starved of credit and their condition gradually grew worse. Vintilă served for a year as Prime Minister after his brother's death, but was forced at the end of 1928 to let the National Peasant party, under Iuliu Maniu, take the helm. Like his brother, he had been a staunch opponent of Prince Carol, advising King Ferdinand to exclude his son from the succession and stoutly opposing proposals for the return of the prince after the king's death. See RUMANIA under *History*.

BRAZIL. A federal republic, constituting the largest of the South American states, situated in the northern and eastern part of the continent. Capital and largest city, Rio de Janeiro. A site for a new federal capital has been selected in the State of Goyaz.

AREA AND POPULATION. The area is approximately 3,275,510 square miles, or more than 250,-

000 square miles greater than that of continental United States, and the total estimated population on Jan. 1, 1930, was 40,272,650, as compared with 30,635,605 at the census of 1920. The population in 1930 was divided among 20 states, one federal district, and one territory as follows: Alagoas, 1,189,214; Amazonas, 433,777; Bahia, 4,135,894; Ceará, 1,626,025; Espírito Santo, 661,416; Federal District, 1,468,621; Goyaz, 712,210; Maranhão, 1,140,635; Matto Grosso, 349,857; Minas Geraes, 7,432,243; Pará, 1,432,401; Parahyba, 1,322,069; Paraná, 974,273; Pernambuco, 2,809,814; Piahy, 809,508; Rio de Janeiro, 1,996,899; Rio Grande do Norte, 738,889; Rio Grande do Sul, 2,959,627; Santa Catharina, 948,398; São Paulo, 6,399,190; Sergipe, 547,965; Acre Territory, 113,725.

Immigration into Brazil, after declining from 121,569 in 1926 to 82,061 in 1928, increased in 1929 to 100,424. The 1929 arrivals were divided into national groups as follows: Portuguese, 38,879; Japanese, 16,648; Poles, 9095; Italians, 5288; Lithuanians, 4781; Spaniards, 4565; Germans, 4228. A concession of 3975 square miles of land in the State of Pará was granted in May, 1930, to the Japanese Company of Plantations, jointly managed by Brazilians and Japanese. The area, four times that of Switzerland, was to be settled by Japanese immigrants, 500 of whom arrived during the first year of the company's existence.

The chief cities, with their populations in 1920, are: Rio de Janeiro, 1,157,873; São Paulo, 579,033 (estimated at 1,000,249 in 1928); São Salvador (Bahia), 283,422 (estimated at 335,000 in 1930); Recife, 238,843; Belém, 236,402; Porto Alegre, 179,263.

EDUCATION. Education is free but not compulsory, except in seven States where it is both free and compulsory. In 1926 there were in the various States 30,650 primary schools with 1,470,000 pupils, 212 secondary schools, and 367 professional schools with more than 37,000 pupils. There are also 76 schools which train teachers, 97 industrial schools, 41 agricultural, and 48 commercial schools, besides one official university, the University of Rio de Janeiro, and two private universities.

PRODUCTION. Coffee is the outstanding factor in the economic well-being of this predominately agricultural nation, generally constituting 75 per cent or more of the total exports. The coffee crop normally represents about 78 per cent of the world supply; in 1929, 14,280,815 bags were exported, while the world consumption was estimated at about 22,000,000 bags. Of the total cultivated area of about 14,880,000 acres, a large part is devoted to coffee.

Other leading agricultural products are cacao, tobacco, rubber, balatá (gum), cotton, rice, sugar, yerba maté, silk cocoons, fruits and nuts, cereals, and mandioca (cassava). Brazil produces about 13 per cent of the world's supply of cacao, being surpassed only by British West Africa. Nearly half of the tobacco crop is grown in the State of Bahia. East India rubber plantations since 1912 have replaced Brazil as the chief source of supply, but trees indigenous to the Amazon Valley continue to produce the finest quality. There were 15,359,000 orange trees in 1930. The area devoted to cotton is estimated at 1,500,000 acres, the production in 1928-29 being estimated at 113,881 tons. Silk production increased from 3,620,100 kilos in 1925 to 18,837,100 in 1928 (kilo

equals 2.2 pounds avoirdupois). The forested area, estimated at 1,000,000 acres, produces woods of great variety, including rosewood, Paraná pine, and eucalyptus. The country has great potentialities as a producer of vegetable oils.

Livestock in the country at the census of 1920 included 40,000,000 cattle, 5,253,699 horses, 1,865,259 asses and mules, 7,933,437 sheep, 5,086,655 goats, and 10,168,549 swine. One-third of the cattle and most of the sheep are in the southern State of Rio Grande do Sul.

The mineral resources are important, the iron ore deposits comparing in size with those of the United States and constituting about one-fourth of the total world supply. Deposits of low-grade coal estimated at 2,000,000,000 tons have been discovered in the basins of Santa Catharina and Rio Grande do Sul. Gold also occurs in low-grade quartz veins. Manganese ore, the most valuable mineral product, is mined chiefly in Minas Geraes and for the most part exported to the United States. Diamonds, emeralds, and other precious stones are found.

Industrial development in Brazil has been fairly rapid in recent years, particularly in the State of São Paulo, where heavy customs duties protect local manufactures. Trade returns published in 1929 placed the number of cotton mills at 357, with 2,584,050 spindles, 78,383 looms, and 128,613 operatives. In São Paulo State there were 40 silk mills. Sugar mills in the country totaled 216, with an annual output of 850,000 tons of sugar and 121,000,000 liters of alcohol. Woolen, jute, and paper mills, packing houses, and some 2000 tobacco factories, comprise the other principal industries.

Power is derived mainly from imported coal, as the developed coal deposits are of inferior quality and far from the industrial centres. The potential water power available in more than 300 large waterfalls is estimated at about 60,000,000 horse power, but at the end of 1928 only 640,000 horse power, or about 5 per cent of that available, had been developed.

Foreign investments in Brazil at the beginning of 1930 were unofficially estimated at \$2,274,000,000, of which \$1,385,000,000 represented British capital, \$500,000,000 American, and \$549,000,000 investments from other countries.

A crisis in the textile industry, with numerous mercantile failures, and a serious world-wide depression in coffee, made 1929 and 1930 years of exceptional difficulty from the business viewpoint. In addition to the huge stock held in storage, the 1928-29 coffee crop totaled more than 28,000,000 bags, as compared with an average world consumption of about 22,000,000 bags. Other South American countries produce about 9,000,000 bags annually. This great overproduction was attributed to the artificial price maintained by the national coffee valorization policy adopted in 1926. In 1930 the valorization policy was drastically modified. A \$100,000,000 loan was floated by the State of São Paulo in New York and London to allow the gradual liquidation of accumulated stocks of coffee and the current marketing of future crops. Commercial difficulties were reflected in the fall of the exchange value of the milreis, which on Aug. 20, 1930, reached 10.50 to the dollar, the lowest point in seven years, and in a material reduction of the normal surplus of exports over imports.

COMMERCE. The total foreign trade in 1929 amounted to 7,388,220,000 milreis paper (\$871,-

457,890, computed at the average exchange rate for 1929 of \$1 for 8.478 milreis), of which 3,527,738,000 milreis (\$416,104,977) were imports and 3,860,482,000 milreis (\$455,352,913) were exports. Comparative figures for 1928 were: Imports, 3,694,990,000 milreis (\$441,825,899); exports, 3,970,273,000 milreis (\$474,742,076); total, 7,665,263,000 milreis (916,568,575). The visible favorable balance of trade for 1929 was 332,744,000 milreis (\$39,245,936), as compared with 275,283,000 milreis (\$32,916,777) in 1928. Brazil's annual foreign obligations total over \$170,000,000, leaving a deficit in 1929 of over \$130,000,000.

The United States strengthened its position as the chief source of Brazil's supply in 1929, furnishing imports valued at \$125,395,140, as against \$116,387,301 in 1928. Other leading sources of imports were: United Kingdom, \$79,943,029 (\$95,118,737 in 1928); Germany, \$52,787,685 (\$55,083,702 in 1928); Argentina, \$45,491,271 (\$50,981,346 in 1928); France, \$22,099,905 (\$28,046,394); Belgium, \$18,578,320 (\$17,409,900); Italy, \$13,456,357 (\$16,407,389). Brazil's exports to the United States decreased in 1929 to \$192,239,561 from \$215,764,916 in 1928 but constituted over one-third of the total exports. French purchases of Brazilian produce in 1929 totaled \$50,653,456 (\$43,519,789 in 1928), while German purchases fell to \$39,882,283 from \$53,160,588 in 1928. The United Kingdom, Argentina, and the Netherlands ranked next in the order named.

Of the total exports in 1929, \$408,393,607 consisted of vegetable products, \$41,604,741 of animals and animal products, and \$5,354,565 of minerals and mineral products. Imports were divided by classes as follows: Manufactures, \$249,879,924; primary materials, \$83,421,797; alimentary substances, \$81,900,213; and live animals, \$903,043. Chief export items in the order of importance in 1929 were coffee, hides and skins, raw cotton, frozen and chilled meats, yerba maté, and cacao. Leading imports, in order of importance, were machinery, wheat, wheat flour, iron and steel manufactures, automobiles, gasoline, coal and coke, cotton piece goods, wheat flour, trucks, cement, and kerosene.

FINANCE. In the budget for 1930, revenues were calculated at 2,281,505 contos and expenditures at 2,256,176 contos, respectively, leaving an estimated surplus for the year of 25,331 contos (all figures are for paper contos). In 1929, according to the President's message to Congress of May 3, 1930, revenues totaled 2,399,600 contos (about \$283,152,800 at the average exchange rate of \$118 for 1929), and expenditures amounted to 2,224,617 contos (about \$262,504,806). The surplus for the year was 174,983 contos (about \$20,648,000). The revenues included the surplus from the previous year, amounting to 198,354 contos, while expenditures included an "extra budgetary" sum of 206,923 contos.

On Jan. 1, 1930, the external debt amounted to £104,285,735, \$148,003,280, and 331,762,179 French francs. This represented a reduction during the year of £2,682,858, \$4,797,147, and 1,814,907 francs. The internal funded debt at the beginning of 1930 totaled 2,381,292 contos as compared with 2,392,746 contos at the beginning of 1929. The Permanent Court of International Justice at The Hague decided in 1929 that Brazil would have to pay the principal and interest of three outstanding franc loans in pre-war gold francs, instead of in paper francs, as claimed by Brazil.

COMMUNICATIONS. The railways of Brazil are theoretically vested in the state and are operated either directly by the State or Federal governments or by private companies on concession or lease. In 1930, the single track railway mileage was 19,787 miles, an increase of 75 per cent since 1907. In the same year highways extended 33,480 miles, of which 4340 miles represented first class roads and 29,140 second class. Road construction under way in 1930 included a 372-mile stretch between Rio de Janeiro and Bello Horizonte, capital of the State of Minas Geraes. The length of telephone lines in 1930 totaled about 570,000 miles. A ten-year concession for the operation of an international radio telegraph and radio telephone service from Brazil was granted a subsidiary of the International Telephone and Telegraph Corporation in 1930. On June 25, 1930, direct air-mail service between Rio de Janeiro and the United States was opened by Pan American Airways under contract with the Brazilian government.

GOVERNMENT. The executive power is vested in the President, who with the Vice President is elected directly by the people for four years and is ineligible for reelection; and the legislative power in the National Congress which consists of the Chamber of Deputies and the Senate, the former having 212 members elected for three years by popular vote on the basis of minority representation, and the latter, 63 members elected for nine years by direct vote, one-third being retired every three years. The Vice President presides over the Senate. President at the beginning of 1930, Dr. Washington Luis Pereira de Souza (assumed office Nov. 15, 1926); Vice President, Mello Vianna.

HISTORY

THE REVOLUTION. Brazil was the fourth South American country to experience a successful revolution in 1930. The revolt broke out October 3 in the southern states of Rio Grande do Sul and Minas Geraes and simultaneously in the extreme north of the Republic. Ten days of fighting gave the rebels control of 10 of the 20 states of the federation. Their triumphant advance from the South against São Paulo and from the North against Rio de Janeiro was retarded by the increasing opposition of government forces and a long-drawn-out civil war was in prospect. Then, with unexpected suddenness, the struggle was terminated October 24, when a junta of army and naval officers headed by General Fragozo deserted the government and seized control of Rio de Janeiro. A proclamation explained their action as intended to prevent the useless shedding of blood and destruction of property. President Washington Luis Pereira de Souza was forced to abdicate, and with the consent of the junta Dr. Getulio Vargas, leader of the rebellion, was inaugurated as Provisional President on November 3. The new régime was recognized by the United States on November 8 and by Great Britain and other leading Powers soon afterward.

The revolution had its immediate political origin in the presidential election of Mar. 1, 1930, in which Dr. Julio Prestes, Governor of the State of São Paulo and candidate of the Republican Conservative party, was elected. He received 1,093,027 votes as against 666,152 for Dr. Vargas, the Liberal candidate, who was also Governor of the State of Rio Grande do Sul. In the contest for the vice presidency, the Republican Conserva-

tive candidate; Dr. Vital Soares, Governor of Bahia, won by about the same majority over Dr. Joao Pessoa, Governor of Parahyba. Dr. Prestes and Dr. Soares, who enjoyed the support of President Washington Luis, carried 17 of the 20 Brazilian states, as well as the Federal district of Buenos Aires.

While the election itself was held peacefully, the year's campaign which preceded it was marked by considerable disorder (see 1929 YEAR BOOK). On Feb. 7, 1930, an assassin fired on the retiring Vice President, Mello Vianna, while the latter was addressing a political meeting at Montes Claros in Minas Geraes, wounding him in the neck and shoulder. Several persons were killed in rioting which followed. The unsuccessful candidates charged that President Washington Luis had insured the defeat of Dr. Vargas by illegal pressure on voters—particularly on public servants—by perverting the courts to serve the interests of his political followers, and by violating the autonomy of the individual states. There was resentment at the abrogation of an inter-party understanding under which the Presidency had been alternated between the two states of São Paulo and Minas Geraes. President Washington Luis, himself a Paulista, was accused of favoring the coffee and other interests of São Paulo, while neglecting industries in other states. Discontent with oligarchy was widespread and the economic situation contributed greatly to the political unrest. Financial maladministration, unduly large foreign loans (floated in New York for the most part), and the failure of efforts of the São Paulo Coffee Institute to maintain the world price of coffee, aggravated the economic depression resulting from overproduction and declining prices of Brazilian exports.

An immediate result of the political animosities aroused during the presidential campaign was the revolt led by Deputy José Pereira, a Republican Conservative, against the authority of President Joao Pessoa in the State of Parahyba. Pereira, with a force of over 1000 cowboys, made his headquarters at Princeza and repulsed with heavy loss efforts of the state police to disperse his following. On May 4, President Washington Luis recommended Federal intervention in Parahyba to insure "individual political rights." As the President of Parahyba was the Opposition candidate for Vice President in the March election, the Liberals charged that the President had intervened from partisan motives and that he had illegally authorized Federal troops to enter the disturbed area.

The assassination of State President Pessoa on July 26 at Recife, capital of the State of Pernambuco, by a political opponent, Joao Dantas, further embittered the Liberals. With the outbreak of the revolution against the Federal government, the army and naval officers sensed that the populace was overwhelmingly in favor of a change of government and acted at the critical moment to end the civil war. The *coup d'etat* in Rio de Janeiro was accompanied by lively street fighting and a brief counter-revolutionary outbreak, but casualties were slight. In São Paulo, where the Federal commander joined in the coup and was proclaimed Provisional President of the State, there was disorder and some looting. Through a tragic mistake, the German Hamburg-American steamship *Baden*, which sought to leave Rio de Janeiro harbor in the midst of revolutionary excitement, was fired upon from the Federal for-

tress of Santa Clara. Twenty-seven passengers were killed and 71 were seriously injured.

Only two days previous to the triumph of the revolution, the President of the United States, on request of the Brazilian Minister in Washington, declared an embargo on shipments of arms from the United States to the revolutionary forces. One week before, Secretary of State Stimson had announced that as an act of friendship for the Federal government of Brazil, the United States would permit that government to purchase war equipment from North American firms. This was the first time the United States had declared an arms embargo in the case of a revolution in South America. Yet the United States was the first of the great Powers to recognize the new government.

THE VARGAS RÉGIME. The Cabinet named by Provisional President Vargas consisted of: Foreign Minister, Dr. A. de Mello Franco; Interior and Justice, Osvaldo Aranha; Finance, José Maria Whitaker; Agriculture, Assis Brasil; Public Works, General Juarez Tavora; War, General Leite Castro; Navy, Admiral Isaias Noronha; Public Instruction, Francisco Campos; Labor, Lindolfo Collor. A few days after his appointment General Tavora resigned from the Cabinet and returned to the northern part of the Republic to consolidate the authority of the new government. He was succeeded by Americo de Almeida. Dr. Vargas announced November 1 that his first step as Provisional President would be to dissolve Congress and to reorganize the courts of justice. On November 5, the Provisional government invalidated all laws passed by Congress after October 3. The decree dissolving Congress and assuming absolute powers for himself and his government was issued by Dr. Vargas November 11. Legislative and deliberate assemblies of all states and municipalities were also dissolved, constitutional guarantees were suspended, a National Consultative Council and a special tribunal to try political crimes were established, and the fulfillment of all obligations assumed by the nation, states, and municipalities previous to the outbreak of the revolution was guaranteed. The decree provided further that the new Constitution to be drawn up must retain the federated, republican form of government and the provisions of the existing Constitution guaranteeing the rights of cities or municipalities and those of individuals. No great liberal reforms were expected from the new government, the leaders of which belonged to the Republican party in Rio Grande do Sul. The dominating figure in the party was Dr. Borges de Medeiros, ruler of his state for many years, but who in 1930 was living in comparative retirement at Cachoeira, Rio Grande do Sul.

Freedom was granted all political and military prisoners as they chose. Dr. Prestes later joined decree issued by the Minister of the Interior November 19, provided they were willing to accept ten years of exile. The following day former President Washington Luis, former Vice President Mello Vianna, and Carvalho de Britto, former head of the Bank of Brazil, sailed from Rio de Janeiro for Lisbon. São Paulo and the other Federal States were allowed to dispose of their prisoners as they chose. Dr. Prestes later joined Dr. Washington Luis in France.

Of the many complex problems facing the new Government, the currency situation was particularly serious. With the Treasury depleted by



Photo Keystone View Co., N. Y.

DR. ENRIQUE OLAYA HERRERA

Inaugurated President of Colombia, Aug. 7, 1930



Photo Keystone View Co., N. Y.

DR. GETULIO VARGAS

Inaugurated Provisional President of Brazil,
Nov. 3, 1930



Wide World Photos, N. Y.

GEN. JOSÉ FRANCISCO URIBURU

Inaugurated Provisional President of Argentina,
Sept. 8, 1930



Wide World Photos, N. Y.

COL. LUIS M. SÁNCHEZ CERRO

Inaugurated Provisional President of Peru,
Aug. 27, 1930

PROMINENT FIGURES IN SOUTH AMERICAN POLITICS IN 1930

illeged mismanagement of the former régime, the Government was unable to reopen the money exchange closed at the outbreak of the revolution and likewise continued the moratorium to the end of the year. While these measures maintained the milreis quotations, fear that the currency would depreciate greatly with the resumption of free exchange made a new foreign loan essential and negotiations were opened with British and American bankers for about \$75,000,000. The banks of Rio de Janeiro and São Paulo oversubscribed within two days a domestic bond issue of \$36,000,000 announced on November 21. Among steps taken to reduce expenditures were the discharge of the French military and American naval missions to Brazil and the reduction from \$24,000 to \$12,000 of the President's salary. Business grew steadily worse toward the end of the year, the unemployed being estimated at 50,000 in São Paulo alone. Communists were reported active in connection with numerous strikes.

OTHER EVENTS. In June, previous to the revolt which deprived him of his office, President-elect Prestes paid an official visit to the United States, returning the visit paid to Brazil by President-elect Hoover early in 1929. He visited London also. Ratifications of the boundary signed by Brazil and Colombia in 1928 were exchanged on Jan. 9, 1930. The Brazilian-Paraguayan frontier was marked by a mixed commission in accordance with the boundary treaty ratified in 1929.

BRETHREN, CHURCH OF THE. A church established in the United States in 1719 in Germantown, Pa. It originated in Schwarzenau, Germany, in 1708 and is the largest of the five branches of the denomination formerly known as the German Baptist Brethren or Dunkers. Other churches of this group are: The Church of God (New Dunkards); Brethren Church (Progressive Dunkers); German Seventh-day Baptists; and Old Order German Baptists Brethren. The policy of the Church of the Brethren corresponds more nearly to the Presbyterian than to any other specific ecclesiastical form. It comprises 49 district conferences and holds a general conference annually. In 1930 there were 1029 churches, with a membership of 138,173, and 1160 Sunday schools, with an enrollment of 125,831 pupils. Foreign missionary work was carried on in India, China, and Africa, the total membership in the mission field being 5469. Expenditures for the year ending Feb. 28, 1930, totaled \$274,659. The denomination maintained eight colleges, one academy, and one theological seminary and training school, with an enrollment of 4138 students. The *Gospel Messenger* is the official organ.

Officers of the general conference in 1930 were: Moderator, the Rev. James M. Moore of Chicago; reading clerk, the Rev. John A. Robinson of Johnstown, Pa.; and writing clerk, J. E. Miller of Elgin, Ill. The Rev. J. W. Lear of Elgin, Ill., was executive secretary of the council of boards; the Rev. Otho Winger of North Manchester, Ind., president of the general mission board; the Rev. C. Ernest Davis of Mt. Morris, Ill., president of the board of religious education; the Rev. S. J. Miller of La Verne, Calif., president of the general ministerial board; and the Rev. Paul H. Bowman of Bridgewater, Va., president of the general education board. With the exception of the general education board, which is located at 3635 Ordway Street, N. W., Washington, D. C.,

the headquarters of all the boards are in Elgin, Ill.

BRETT, REGINALD BALIOL. See **ESHER, SECOND VISCOUNT.**

BREUER, PETER. A German sculptor, died in Berlin, May 2, 1930. He was born in Cologne May 19, 1856. After serving an apprenticeship as a carver in his native city, he studied modeling at the Munich and Berlin academies of art. In 1892 he became an instructor in sculpture at the Berlin Academy; in 1905, professor; and in 1909, a member of the academy's Senate. His first great work was "Spring," a charming young girl's figure, which he exhibited at the International Art Exposition in Berlin in 1891 and for which two years later he received a first class medal at the Columbian Exposition in Chicago. In 1894 he created "Adam and Eve," an expressive group which he exhibited at the Universal Exposition in Paris in 1900 and which was favorably compared with Rodin's "Kiss." "Let Little Children Come unto Me," one of his earliest Christ-groups, was awarded the gold medal at the Berlin Academy of Art in 1897. In 1902 he created "Jesus, the Children's Friend," and during the World War an especially beautiful conception of the compassionate Christ called "Christ on the Battlefield." Breuer's greatest fame was acquired through his monumental works, which include the Suarez and Bismarck monuments, in Breslau; the Kaiser Friedrich Memorial, in Cologne; the Kaiser Wilhelm Monument, in Halle; the Lillenthal Monument, on the bank of the Teltow Canal; and the National Monument, in Memel. Among his heroic statues are: Charlemagne, in the Reichstag Building, Berlin; Kurfürst Johann Sigismund, on the Siegesallee, Berlin; and the Beethoven Memorial. His work was characterized by action, simplicity, and nobility of thought.

BRIAND MEMORANDUM. See **LEAGUE OF NATIONS; INTERPARLIAMENTARY UNION; INTERNATIONALISM; UNITED STATES OF EUROPE.**

BRIDGES. The year 1930 was notable for the number of important bridge openings which had taken place during its twelve months. In France Freyssinet's Brest Bridge of three 612 ft. concrete arch spans, by far the longest concrete spans in the world, was opened on October 9. In America a concrete highway bridge, over the Raritan River below New Brunswick, N. J., a notable and beautiful work, but not a record breaking structure, was dedicated in December, 1929. The huge Columbia-Wrightsville multiple arch bridge (24 main and 20 approach arches) was opened late in 1930. Among cantilever spans may be noted the opening of the Vicksburg span over the Mississippi (the first bridge above the mouth of the river) on May 20, the Longview Bridge, over the Columbia River between Longview, Wash., and Ranier, Ore., with a 1200-foot span, on March 29, and the South Shore-Montreal cantilever on May 24. Also the opening of the Mid-Hudson Suspension bridge at Poughkeepsie on August 25, as well as the completion of two unique suspension spans in the West, the Royal Gorge, and the Kaibab bridges.

The change toward public ownership of toll bridges was noted in the 1929 YEAR BOOK. A survey made on August 1 showed, however, that while there were 296 toll bridges in the United States (compared with 233 on Oct. 1, 1929 and 287 on July 1, 1929) only 31 per cent of these structures were publicly owned. Several States had passed legislation which would insure public

ownership for all such constructions in the future.

The above figures would seem to indicate a very considerable decline in toll bridge building in the period July 1, 1929 to Aug. 1, 1930, when only 9 such bridges were opened. Yet recent years have been truly remarkable in the number and importance of bridge works. No less than seven bridges had been built over the Mississippi in the last two years, for example. At the end of 1930 bridge activity showed no signs of diminishing. Six new bridges were planned to cross the Mississippi, 51 toll bridges were under construction, and some State programmes were of considerable magnitude.—Kentucky, for example, where \$11,000,000 in bridge bonds had been issued to build 17 bridges, including one over the Ohio, on 13 road projects.

An apparently new idea in bridge financing and operation was inaugurated by the Alabama State Bridge Corporation during the year. This quasi-public organization purchased what amounted to multiple risk insurance on all its 15 toll bridges. The insurance covers damage from fire, lightning, winds, tornadoes, earthquakes, floods, ice, collision on or under the bridge, collapse, riot, or malicious damage. Such insurance would undoubtedly protect the Alabama Corporation from the fate which overtook the new Arkansas River Highway Bridge at Garland City, one span of which was dynamited by persons unknown on September 3. On the other hand it might be questioned whether even this broad policy would cover the unusual conditions which wrecked the Burrard Inlet Bridge over the Second Narrows at Vancouver, B. C., in September. The log carrier *Pacific Gatherer* drifting under the bridge with the rising tide lifted one 300-foot span and dumped it into the river. This was the twentieth accident to this work and insurance companies would probably decline the risk.

WELDING. During the year the first all-welded bridge in Europe was completed at Lowicz, Poland. It is a highway truss with a span of only 88½ ft. and was built for the Polish government. In the United States considerable progress was made in developing forms for welding and in reducing this new process of fabrication to standard practice. The highest welded building in the world, a 19-story steel frame 246 ft. high, was completed using arc-welded shop and field connections. In Boston, Mass., a 14-story welded steel frame building was also completed. While plans were prepared by one engineer to illustrate the application of welding to a building one mile high, and showing a 10 per cent saving over riveted connections, it seemed probable that this important process would develop slowly as suitable economic uses were found for it.

The desire to secure more beautiful bridges resulted in an annual award by the American Institute of Steel Construction which was given in 1930 to the Mt. Hope Suspension Bridge, the Lake Champlain Arch, and the Mt. Pleasant (N. Y.) rigid frame structure. In concrete bridges the Raritan River Arch was awarded a prize during the year.

The year also witnessed a new type of truss construction in the 256-foot span at Dueren, Germany. This is a double track railroad truss, 44 ft. wide and 47½ ft. high, and the two side trusses were inclined inward so as to meet in a common top chord over the centre of the bridge. Although the connection details may possibly prove difficult to fabricate it was possible that this new

triangular truss form might find wider application in the future.

TRUSS BRIDGES. It was interesting to note that of the seven highway bridges over the Mississippi built in the previous two years three were continuous trusses. A new highway bridge over the Tennessee River at Scottsboro, Ala., completed during the year, with a 700-foot continuous span over the main channel and four 200-foot simple spans, appeared to be the nearest approach to Lindenthal's record—775-foot spans over the Ohio at Sciotoville. The new 1257-foot highway continuous truss, with spans of 627 ft., at Quincy, Ill., was another notable example of this type of bridge and also of the extensive use of silicon steel in these modern structures.

SUISUN BAY BRIDGE. Rapid progress was made in the construction of this \$12,000,000 double track simple truss bridge to replace the railroad car ferry at the junction of Carquinez Strait and Suisun Bay, San Francisco. The unique "sand-island" scheme for constructing the deeper foundations (described in the 1929 YEAR BOOK) proved successful and the bridge was practically completed as the year closed.

MARTINEZ-BENICIA BRIDGE. This large simple truss bridge on the Southern Pacific Railroad at Martinez, Calif., replacing car ferries, was opened on November 1.

ARCH BRIDGES. Progress on the two greatest arch bridges in the world, at Sydney, Australia, and Kill van Kull, New York Harbor, continued to attract the attention of the bridge world during the year. The Sydney Arch was closed on August 18 and the New York Arch on October 4, thus marking the finish of the most difficult and dangerous phase of construction. It will be remembered that the spans of these two arches are almost identical (Sydney 1650 ft. centre to centre of end pins and Kill van Kull 1652 ft. 1 in.), while the Sydney arch is designed for much heavier loads than the New York work and therefore involves a far greater tonnage of steel (37,000 compared with 16,000). Both bridges were scheduled to reach completion during the year 1931.

CANTILEVER BRIDGES. The opening of the important cantilever bridges at Longview, Wash., and at Montreal, Canada, as well as plans for several bridges of this type, emphasized the fact that the cantilever holds its own in this Highway Era for spans intermediate between those of the truss and suspension types. The Louisville cantilever, recently completed, illustrates this point as its span of 820 ft. (with anchor arms of 500 and 362 ft.) is greater than even any continuous truss span and is about at the lower range of most modern suspension bridges. Another cantilever completed at Pittsburgh, Pa., over East Street Ravine illustrates the use of this type for even smaller spans. This bridge has its deck 220 ft. above the streets and has a main span of 545 ft. with side spans of 190¾ ft. each.

HERO-HACKETT BRIDGE. After refusing approval for a suspension bridge over the Mississippi at New Orleans, the U. S. War Department finally approved plans for a cantilever structure to connect New Orleans with Gretna, La. A channel span of 1760 ft. is involved with a vertical clearance over the river of 175 ft. According to the plans a novel type of spiral ramp will be used to reach the bridge level, from the low ground at either end of the bridge, instead of the long approach ramp customary in bridges of this nature.

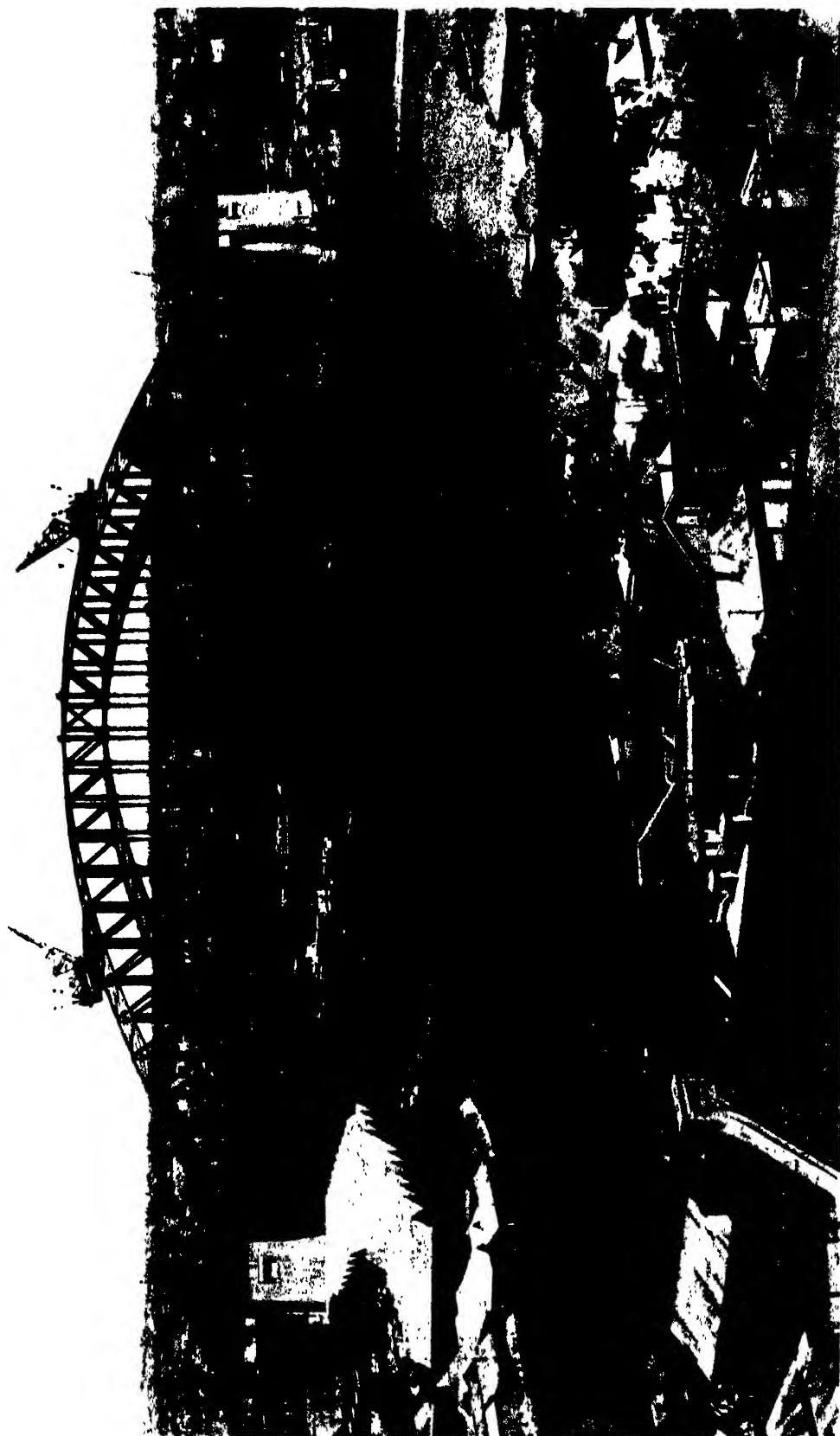


Photo from Irving Gallouay, N. Y.

SYDNEY HARBOR BRIDGE, SYDNEY, AUSTRALIA

The arch shown, 1650 feet centre to centre was closed August 18, 1930

SUSPENSION BRIDGES.—*Hudson River Bridge.* Bridge engineers were watching with great interest the construction of the great Hudson River Suspension Bridge at New York. The cable spinning (see 1929 YEAR BOOK) for this bridge was completed during the summer, whereupon the hangers, which support the floor system, were rapidly placed, and, when the year closed the floor beams had all been put in place and the steel erectors from New York and New Jersey clasped hands over the Hudson. The web and lower chord members of the stiffening truss were to be put in place during 1931. In the meantime the contract was let and rapid progress made on the massive concrete arch which spans Riverside Drive and on the other works of the complicated New York approaches.

GOLDEN GATE BRIDGE. While the Hudson River Bridge was nearing completion, final plans for an even greater structure were approved in August. As pointed out in previous YEAR BOOKS the Hudson Span of 3500 ft., although almost twice as great as that of any bridge yet built, was considered by bridge engineers as simply a step in the evolution of suspension bridges—even longer spans were sure to come if natural and economic conditions demanded them.

The Golden Gate Bridge at San Francisco with its span of 4200 ft. will exceed that of the Hudson Bridge by 700 ft. The U. S. War Department demanded the remarkable channel clearance of 220 ft. which would require the towers, supporting the cables, to be about 740 ft. high—about the height of the Woolworth Building in New York City. Numerous borings for the foundations of this huge structure had been taken and showed depths to rock varying from 80 to over 300 ft. It was evident from these tests that the foundation problem at the Golden Gate was going to be an extremely difficult one—indeed it was possible that some changes in plan might be necessary.

WALDO-HANCOCK BRIDGE. Contract was let late in the summer for a new State highway suspension bridge over the Penobscot River at Bucksport, Me. The span was to be 700 ft. with a channel clearance of 135 ft.

KAIBAB TRAIL BRIDGE. A new suspension bridge, small in size but erected under unusual requirements as to transportation of materials, was completed late in 1929 to replace an old structure where the Kaibab Trail crosses the Colorado River, just above the mouth of Bright Angel Creek, in Grand Canyon National Park. Some 122 tons of material had to be carried down 7½ miles of steep, zigzag pack trail to the canyon bottom where the bridge crosses about 75 ft. above water level. This limited the length of stiffening truss members to 10 ft. and their weight to 200 lbs. The old bridge may be described as a one-mule-and-rider suspension, and, due to strong wind currents in the canyon, frequently swayed dangerously. The new bridge is designed for a continuous load of pack animals with a 40 per cent allowance for impact. The stiffening truss is 440 ft. long and there is but one span; the cables hung from pockets or anchorages cut into the steep sides of the canyon. The main cables weighing one ton each, were carried down to the site on the shoulders of 42 Indians. Special lower "wind cables" were provided to prevent swaying.

ROYAL GORGE SUSPENSION BRIDGE. This 880-foot span, crossing the Royal Gorge of the Arkansas River about six miles west of Canyon City, Colo., was opened in December, 1929. As noted in

the 1929 YEAR BOOK this bridge was the highest in the world. Due to the fact that its deck, only 18 ft. wide, is 1053 ft. above the tracks of the Denver & Rio Grande Western Railroad, supported on the famous hanging bridge in the canyon bottom, tourists have found the crossing a very thrilling experience and have gone out of their way to cross on this structure. In the one month of July last the toll collections exceeded \$20,000. The bridge is unique in that no truss is used to stiffen the floor system. Stay cables under the bridge, similar to those used by Roebling in his famous Niagara suspension, hold the floor down to anchorages in the lower canyon walls and prevent the swaying which might be caused by wind.

CONCRETE BRIDGES. There was apparently considerable activity in this field during the year and a number of notable works were under construction or planned. The opening of the greatest concrete arch bridge in the world at Brest, France, on October 9 has already been noted. Other notable concrete spans completed in 1929 and 1930 include the beautiful Raritan River Bridge, N. J., the Soldiers' and Sailors' Memorial Bridge at Harrisburg, Pa., dedicated on August 22, the Washington multiple arch, 2407 ft. long, over the Seekonk River at Providence, R. I., and the great concrete bridge over the Susquehanna at Columbia, Pa. A bridge of 12 arch spans of 120 ft. also was building over the North Susquehanna River between Wilkes-Barre and Kingston, Pa., and a new bridge, the Cedar Avenue concrete arch, with two main spans at 265½ ft. each, was erected at Minneapolis, Minn.

ROGUE RIVER. In a multiple, open spandrel, reinforced-concrete arch bridge under construction by the Oregon State Highway Commission, the so-called Freyssinet system of arch construction was being used for the first time in America. This well-known French concrete expert had developed methods of construction (see previous YEAR BOOKS) which reduce to a large extent the so-called secondary stresses in concrete-arch construction; those due to the shortening of the arch rib due to temperature changes, shrinking of concrete in setting, river pier movements and the elastic compression of the arch rib. In some cases the stresses caused by these items may be very large and a material saving with increased stability is claimed for this method of construction. The Rogue River bridge consists of seven 230-foot spans, with concrete viaduct approaches and is typical of the many multiple-arch spans which have followed from the highway construction of this motor age.

THE GEORGE WESTINGHOUSE BRIDGE. Contract was let for this work, which was to carry the Lincoln Highway over Turtle Street and the Pennsylvania Railroad freight yards at Pittsburgh, Pa. Named after the famous American financier, inventor, and engineer, it will contain the longest concrete arch span in America. Five arches will span the crossing and the central arch of 420 ft. will exceed by just 20 ft. the present record span—that of the Capellen Memorial Arch at Minneapolis, Minn., built in 1923. See also FOUNDATIONS; CALIFORNIA; LOUISIANA; and NEW YORK, under *Political and Other Events*.

BRIDGES, ROBERT (SEYMOUR). Poet Laureate of England, died in Oxford, Apr. 21, 1930. He was born in Walmer, Isle of Thanet, Oct. 23, 1844, and was educated at Eton and at Corpus Christi College, Oxford. He then studied medicine at St.

Bartholomew's Hospital, London, and in 1867 began practice in London. During the fifteen years that he was active as a physician he was casualty physician at St. Bartholomew's Hospital, assistant physician at the Children's and Great Ormonde Street Hospitals, and physician at the Great Northern Hospital. In 1882 he abandoned medicine and retired to the village of Yattendon near Oxford, where he devoted himself to the writing of poetry and the study of prosody. Six years previously he had published *The Growth of Love*, a noteworthy collection of sonnets. In 1883 appeared *Prometheus, the Fire-Giver*, and in 1885, *Nero*. These tragedies were followed by six other plays: *Palicio*; *Ulysses*; *Christian Captives*; *Achilles in Scyros*; *Humours of the Court*; and *Fest of Bacchus*, all favorably received. *Demeter*, a mask, was written for the undergraduates at Somerville College, Oxford, and was acted by them in 1904. Other works of this period include *Eros and Psyche*, which many critics considered the greatest narrative poem since Keats's *Lamia*, and *Shorter Poems* (1890), in which his unusual talent as an adapter of classical meters to English verse was revealed.

Dr. Bridges succeeded Alfred Austin as Poet Laureate in 1913, his appointment being followed by the publication the next year of *The Poetical Works of Robert Bridges* (excluding the dramas) in one volume. It was not until his elevation to the laureateship that his work found popular appreciation. In 1916 he compiled *The Spirit of Man: An Anthology in English and French*, which, together with *Yattendon Hymnal* and *Ibant Obscuri* (1917), achieved a great effect in raising the morale of the nation during the World War. His collected war poems appeared in *Britannia Victrix* (1919); and *October and Other Poems* (1920). In *The Chiswell Book of English Poetry* (1924) and *New Verse* (1925) he continued his early experiments with quantitative and accentual verse and neo-Miltonic syllables. The crowning event of his career was *The Testament of Beauty* (1920), which won acclaim in every English-speaking country for the beauty of its philosophic conception and its artistic restraint. His critical works include: *Milton's Prosody* (1893); *John Keats, A Critical Essay* (1895); and *The Necessity of Poetry, An Address* (1918). Honorary degrees were conferred on him by Oxford, St. Andrews, Harvard, and Michigan Universities, and in 1923-24 he held the honorary fellowship in creative arts at the University of Michigan. He received the Order of Merit in 1929. His successor as Poet Laureate was John Masefield.

BRIGGS, CLARE A. An American cartoonist, died in New York City, Jan. 3, 1930. He was born in Reedsburg, Wis., Aug. 5, 1875, and studied at the University of Nebraska in 1894-96. In 1896 he became a newspaper artist on the St. Louis *Globe-Democrat* and, in 1898, a cartoonist on the St. Louis *Chronicle*. He was with the New York *World* (1898-99), the New York *Journal* (1900), the Chicago *American and Examiner* (1900-07), the Chicago *Tribune* (1907-14), and, after 1914, with the New York Tribune Syndicate. His cartoons, social in tone and portraying everyday incidents and feelings, were widely appreciated. They included "Skin-nay," "The Days of Real Sport," "When a Feller Needs a Friend," "Ain't It a Grand and Glorious Feeling?" "Mr. and Mrs.," "Somebody Is Always Taking the Joy out of Life," "How to Start the Day Wrong," "There's

at Least One in Every Office," "A Handy Man around the House," "That Guiltiest Feeling." He was also the author of *When a Feller Needs a Friend* (verses by Wilbur D. Nesbit, 1914); *Oh Man* (collection of cartoons, 1919); *How to Draw Cartoons* (1926).

BRIGHAM YOUNG UNIVERSITY. A co-educational institution in Provo, Utah, founded in 1875 and maintained under the auspices of the Church of Jesus Christ of Latter-day Saints. It comprises a graduate school; colleges of arts and sciences, education, commerce, applied science, fine arts; and a division of research and extension. In the 1930 summer session, 461 students were enrolled; the autumn session enrollment was 1200. The faculty numbered 106 members. The library contained 60,000 volumes and 50,000 pamphlets. The budget for the year was \$305,000. President, Franklin Stewart Harris, Ph.D.

BRITISH ASSOCIATION FOR THE ADVANCEMENT OF SCIENCE. An association founded in 1831 in York, England, incorporated by Royal Charter in 1928, and composed of 13 sections representing all branches of pure and applied science. The annual meeting for 1930 was held in Bristol, September 3-10, under the presidency of F. O. Bower, Sc.D., LL.D., F.R.S., Regius Professor of Botany at the University of Glasgow. The total membership in attendance was 2639.

At the opening session the president limited his address to his own specialty, the title of his paper being "Size and Form in Plants." The presidential addresses to the sections were as follows: Section A (Mathematics and Physics), "The Theories of Terrestrial Magnetism" by F. E. Smith; Section B (Chemistry), "The Chemical Research Laboratory at Teddington" by Prof. G. T. Morgan; Section C (Geology), "The Geological History of the Bristol Channel Region" by Prof. O. T. Jones; Section D (Zoölogy), "The Taxonomic Outlook in Zoölogy" by Dr. W. T. Calman; Section E (Geography), "The Scope and Aims of Human Geography" by Prof. P. M. Roxby; Section F (Economics), "Rationalization and Technological Unemployment" by Prof. T. E. Gregory; Section G (Engineering), "The Interdependence of the Engineer on the Physiologist, Bacteriologist, Economist, and Financier" by Sir Ernest Moir; Section H (Anthropology), "Evolution in Material Culture" by Dr. H. S. Harrison; Section I (Physiology), "The Synthetic Activities of the Cell" by Prof. H. S. Raper; Section J (Psychology), "Child Psychology" by Prof. C. W. Valentine; Section K (Botany), "Problems in Taxonomic and Economic Botany" by Dr. A. W. Hill; Section L (Education), "A Policy of Higher Education" by Lord Eustace Percy; Section M (Agriculture), "Veterinary Science and Agriculture" by Dr. P. J. Du Toit.

Important discussions at the section meetings included such subjects as the position of the British dye-stuff industry in Section B, to which many well-known industrial chemists contributed, and the relation between past pluvial and glacial periods, which Sections C, E, and H discussed jointly under the chairmanship of Prof. Herbert John Fleure. Considerable interest also was shown in the theory advanced by Dr. P. A. M. Dirac of Cambridge University that the space of the universe is full of electrons of minus or negative energy, and the announcement of Sir Ernest Rutherford regarding the complexity of the form and structure of alpha particles.

The centenary meeting of the British Association for the Advancement of Science was to be held in London, Sept. 23-30, 1931, under the presidency of Lieut.-Gen. the Rt. Hon. Jan C. Smuts, P.C., F.R.S. The other officers elected for 1930-31 were: General secretaries, Prof. J. L. Myres, O.B.E., F.B.A., and Prof. F. J. M. Stratton, D.S.O., O.B.E.; general treasurer, Sir Josiah Stamp, G.B.E.; and secretary O. J. R. Howarth, O.B.E. Headquarters of the association are in Burlington House, London, W. 1, England.

BRITISH COLUMBIA. A Canadian Province on the Pacific Ocean, bounded by Alaska, Yukon, and the Northwest Territories on the north, Alberta on the east, and the State of Washington on the south. Capital, Victoria.

The area is 355,855 square miles and the population was estimated at 597,000 on June 1, 1930 (524,582 at census of 1921). The chief cities, with their estimated populations in 1929, were: Victoria, 67,000 (37,728 at 1921 census); Vancouver, 300,000 (117,217); New Westminster, 18,000 (14,495). In 1928, births totaled 10,312; deaths, 5901; marriages, 4940. In the same year there were 1011 elementary schools, with 91,820 pupils; 76 high schools and 5 junior high schools, with 15,771 pupils; and 31 superior schools, with 588 pupils. The Provincial University had 1741 students in 1928-29 and there were 234 more at Victoria College.

Lumbering, mining, agriculture, manufacturing, and fishing are the principal occupations. Timber land is estimated at more than 100,000,000 acres. The products of forests, mines, farms, and fisheries in 1929 were valued at about \$244,000,000, or \$2,000,000 more than in 1928. The timber cut was 3,346,144,287 board feet, valued at \$93,301,000 (\$93,787,000 in 1928). Mineral production rose to \$68,245,443 (\$64,496,351 in 1928), and the dividends paid by mining companies totaled \$13,743,308. The gross value of mineral production in 1930 was estimated at \$55,164,515, a 19 per cent decline. The 409,369 acres devoted to field crops in 1929 yielded a return of \$20,398,000. The salmon pack in 1930 totaled 1,813,604 cases. The fish catch in 1928, principally salmon but including 305 whales, was valued at \$26,502,727. In the same year the output of manufactures, including the Yukon, totaled \$270,851,000, an increase of 10 per cent over 1927, while in 1929 the industrial payroll of the Province was estimated at \$192,000,000, or nearly \$9,000,000 more than in 1928. Copper, lead, coal, zinc, silver, and gold are the principal minerals produced. In 1928-29, 10,667 sea-going vessels of 12,238,749 tons entered the ports.

For the fiscal year 1928-29, ordinary revenues totaled \$21,094,427 and ordinary expenditures, \$22,825,520 (preliminary figures). The budget for 1930-31 estimated revenues at \$28,115,546 and expenditures at \$28,072,715. In 1930 the Legislature raised the gasoline tax from 3 to 5 cents per Imperial gallon. The gross funded debt on Mar. 31, 1929, was \$97,642,736 and sinking funds totaled \$18,568,711. Government is under a lieutenant-governor and legislative assembly of 48 members elected for five years. In the Dominion Parliament the Province is represented by 6 Senators and 14 members of the House of Commons. Lieutenant-Governor in 1930, Robert R. Bruce; Premier and Minister of Railways, S. F. Tolmie. In the Dominion general election of July 28, 1930, the Province returned 7 Conserva-

tives, 5 Liberals, 1 Laborite, and 1 Independent to the House of Commons. See CANADA.

BRITISH EAST AFRICA. A British possession covering a large area of Africa, and comprising KENYA Colony and Protectorate, UGANDA Protectorate, and ZANZIBAR. See these articles.

BRITISH EMPIRE. An empire consisting of: (1) GREAT BRITAIN and NORTHERN IRELAND. CHANNEL ISLANDS, and ISLES of MAN, (2) THE IRISH FREE STATE, INDIA, and the various British Dominions, Colonies, Protectorates, and Dependencies. See these articles.

BRITISH GUIANA, *gē-ā-nā*. A British colony on the northeastern coast of South America, including the settlements of Berbice, Demerara, and Essequibo; bounded on the east by Dutch Guiana, on the south by Brazil, and on the west by Venezuela. Area, 89,480 square miles; population, according to the census of 1921, 297,691, excluding about 9700 aborigines. Population in 1928, 307,784, including 126,964 East Indians. In the same year births totaled 8702 and deaths, 8575. The capital, Georgetown, had a population of 57,302.

Agriculture is the chief industry, with sugar constituting the principal crop and main source of revenue. Sugar production is about 117,255 tons annually from 50,050 acres. With the price of sugar in 1929 averaging \$57.18 per ton, as compared with \$70.66 in 1928, the colony suffered a severe economic depression in 1930, when the price went even lower (see GREAT BRITAIN under *History*). Other crops are rice, copra, coffee, coconuts, rubber, and limes. The forest area of 78,000 square miles produces timber and balata. Diamonds and gold are leading exports; bauxite, manganese, and mica deposits have been found. In 1929, exports totaled \$12,272,000 (\$14,926,000 in 1928) and imports, \$9,179,475 (\$11,860,000 in 1928). Canada and the United Kingdom were the leading markets. In 1928, revenues totaled £1,185,811 and expenditures, £1,159,139. The public debt (funded) on Jan. 1, 1929, was £2,618,424. Due to the sugar crisis budgetary deficits were considered certain for 1930 and 1931. Vessels entered and clearing the ports of the territory in 1928 numbered 3407, totaling 1,290,119 tons. There are 97 miles of railway, 450 miles of navigable rivers, 39 miles of canals and 427 miles of highway.

The colony is administered by a governor, assisted (since July 18, 1928) by an executive and a legislative council. Governor at the beginning of 1930, Brigadier General Sir Gordon Guggisberg, who was succeeded in June by Sir Edward Brandis Denham, formerly Governor and Commander-in-Chief of Gambia. According to the *London Times Weekly*, of May 15, 1930, the idea of transferring British Guiana to the United States in return for some concession on the American debt was "being freely discussed" in certain British circles.

BRITISH HONDURAS, *hōn-dōo-ras*. A British Crown colony on the Caribbean coast of Central America, east of Guatemala, and 700 miles west of Jamaica; sometimes referred to as Belize. Area, 8598 square miles; population, according to the census of 1921, 45,317; estimated, Jan. 1, 1929, 50,286. Chief town, Belize (population, 1921, 12,661). In 1928 there were 76 primary schools with 7601 pupils and five secondary schools with 544 pupils. The chief pursuits are agriculture and forestry, although only a small

part of the land is cultivated. In the higher lands, good pasturage is to be found.

The principal exports are bananas, mahogany, logwood, and other forest products, plantains, coconuts, and chicle. The bulk of the colony's trade is with the United States. In 1929, the foreign trade totaled \$9,933,548, the largest on record and 16 per cent greater than in 1928. Exports were valued at \$4,876,875 (including re-exports of \$2,951,666) and imports at \$5,056,673. For the fiscal year 1928-29 revenues totaled £213,923; expenditures, £215,406; and the public debt, £363,656. Shipping entering the ports in 1928 totaled 291,451 tons. There are 25 miles of railway. Wireless communication is maintained with New Orleans and Jamaica. Planes used in the daily air mail and passenger service between Miami, Fla., and Cristobal, Canal Zone, stop overnight at Belize. The administration is under a governor assisted by an executive council of six members and a legislative council of six official and seven unofficial members. Governor and Commander-in-Chief in 1930, Sir J. A. Burdon.

BRITISH INDIA. See INDIA.

BRITISH MALAYA. British Malaya includes the Straits Settlements, the Federated Malay States, and the Non-Federated Malay States. The total area is 56,603 square miles; the total population was estimated at 3,864,413 in 1928 (3,358,054 at census of 1921). Three other British protectorates in Malaysia—British North Borneo, Brunei, and Sarawak—are seldom included in the term British Malaya and are never covered by British Malayan statistics. See STRAITS SETTLEMENTS, FEDERATED MALAY STATES, NON-FEDERATED MALAY STATES, BRITISH NORTH BORNEO, BRUNEI, and SARAWAK.

BRITISH NEW GUINEA. See PAPUA.

BRITISH NORTH BORNEO. A British protectorate, comprising the northern part of the island of Borneo. Area, about 31,106 square miles; population, at the census of 1921, 257,804, most of whom were Mohammedan settlers in the coast regions and aborigines in the interior. Europeans numbered only 533. The chief towns are Sandakan, with a population of 11,936, on the east coast, and Jesselton, on the west coast. Statistics of finance and trade for 1928, with figures for 1927 in parentheses, were: Revenue, £453,167 (£454,588); expenditure, £261,370 (£256,440); imports, £1,186,262 (£1,224,705); exports, £1,523,057 (£1,978,596). The territory is under the jurisdiction of the British North Borneo Company and is administered by a governor in Borneo and a board of directors in London. Governor in 1930, A. F. Richards (appointed February, 1930).

BRITISH SOMALILAND. See SOMALILAND, BRITISH.

BRITISH SOUTH AFRICA. See SOUTH AFRICA, UNION OF.

BRITISH WEST AFRICA. The general name given to the following British colonies in West Africa: Nigeria (colony and protectorate); Gambia (colony and protectorate); Gold Coast (comprising the Gold Coast colony, Ashanti, and the Northern Territories); Sierra Leone (colony and protectorate). British mandated territories in Togoland and the Cameroons are included.

BRITISH WEST INDIES. A number of scattered island possessions of the British Empire in the West Indies, including (1) the Bahamas, (2) Jamaica and small adjacent islands, and (3) the islands along the east of the Caribbean Sea and near the coast of South America, in-

cluding the Leeward group, the Windward group, Trinidad, Tobago, and Barbados. See under separate articles.

BROADCASTING. See RADIO.

BROKERS' LOANS. See BANKS AND BANKING.

BROOKINGS INSTITUTION. An organization devoted to public service through research and training in the social sciences; established in Washington, D. C., in 1927. Its purposes are: To aid constructively in the development of sound national policies, and to offer training of a super-graduate character to students of the social sciences. It maintains, as operating units, the Institute of Economics, the Institute for Government Research, and a division of training in which only those who have already received the Ph.D. degree, or an equivalent training, are accepted as research fellows. It also provides headquarters for visiting scholars who come to the national capital to make use of the material available there on economic, political, historic, social, administrative, and legal problems, as found in the library collections and in the records of the various government departments.

By charter provision the investigations of the institution are conducted "without regard to the special interests of any group in the body politic, whether political, social, or economic." During 1930 the following studies were completed: *Porto Rico and Its Problems*; *International Control of Raw Materials*; *Bulgaria's Economic Position*; *Credit Policies of the Federal Reserve System*; *Birth Registration and Birth Statistics in Canada*; *Central Banks and the Control of Credit*; *Post-War Stabilization of Exchanges*; *The League of Nations as a Political Organization*; and *Japan's Economic and Financial Position*, which was undertaken on the invitation of the Finance Minister of Japan. The institution also published the following service monographs of the United States government: *The Forest Service*; *The Plant Quarantine and Control Administration*; *The Bureau of Entomology*; *The Aeronautics Branch, Department of Commerce*; and *The Bureau of Home Economics*.

The institution is supported from endowment funds and annual grants. The board of trustees, a self-perpetuating body, has general responsibility for determining the institution's policies and its programme of work, but does not assume responsibility for each particular investigation, its position in this respect being defined as follows: "The primary function of the trustees is not to express their views upon the scientific investigations conducted by any division of the institution but only to make it possible for such scientific work to be done under the most favorable auspices." The officers of the board of trustees for 1930-31 were: Chairman, Robert S. Brookings, founder of the institution; vice chairman, Leo S. Rowe; treasurer, Frederic A. Delano; and president, Harold G. Moulton. Headquarters are at 722 Jackson Place, Washington, D. C.

BROOKLYN INSTITUTE OF ARTS AND SCIENCES. An institution in Brooklyn, N. Y., composed of four divisions—education, museum of arts and sciences, children's museum, and a botanic garden. It was founded in 1824 and incorporated in its present form in 1890. Membership is open to all who are interested in any branch of science or art. The education division is divided into the following departments, composed of members interested in a particular field: Agriculture,

astronomy, botany, dramatic art, electricity, fine arts, geography, geology, home economics, music, pedagogy, philology, philosophy, photography, physics, political science, psychology, and sociology. These departments conduct courses and sponsor addresses, lectures, and concerts. A forum conducted by the departments of political science and sociology provides for the discussion of current problems. The enrollment in the school of pedagogy in 1930 was 1200, with an attendance at lectures of 284,762. The institute's museums contain collections in the fields of art, ethnology, and natural science; its botanic garden comprises more than 50 acres. Attendance at the museums during the year was 762,005 and at the botanic garden, 1,127,475. The library contained more than 27,000 volumes. In 1930 the permanent funds of the institute amounted to \$3,025,282: the funds to meet current expenses totaled \$876,337. The president of the board of trustees was Edward C. Blum; director of the division of education, Charles D. Atkins; of the museum of arts and sciences, William Henry Fox; of the children's museum, Anna Gallup; and of the botanic garden, C. Stuart Gager. Headquarters are at the Brooklyn Academy of Music, Brooklyn, N. Y.

BROWNE, THE RT. REV. GEORGE FORREST. A British prelate, died in Bexhill, Sussex, June 1, 1930. He was born Dec. 4, 1833, and was educated at St. Catharine's College, Cambridge. On taking orders in 1858, he became chaplain and lecturer of St. Catharine's College, and in 1863 was elected fellow. Two years later he went to Scotland as theological tutor at Trinity College, Glenalmond, and in 1862 was Bell lecturer of the Scottish Episcopal Church. His only pastoral experience was as rector of Ashley, near Newmarket, from 1869 to 1875. In 1869 he also was chosen secretary of the Local Examination Syndicate at Cambridge University, and served two terms as member of the Council of the university's Senate, 1874-78 and 1880-92. As a result of his researches in the field of runic archaeology he was elected Disney professor of archaeology at Cambridge in 1877. These researches were later embodied in *The Ham Crosses* (1889); *The Ancient Cross Shafts of Bewcastle and Ruthwell* (1917); *Antiquities near Dunecht, Aberdeenshire* (1921); and *Dunecht and Birse Titles and Notarial Signs* (1923). In 1891 he was nominated to a canonry of St. Paul's Cathedral, London, and four years later was consecrated Bishop of Stepney. In 1897, on the separation of the bishopric of Bristol from that of Gloucester, he was nominated to the new see and served as Bishop of Bristol until 1914. He was an able organizer and administrator and was especially active in church extension. The D.D. degree was conferred on him by Cambridge and Oxford and the D.C.L. degree by Durham University. In addition to his works on archaeology, he was the author of several volumes on early church history. Among these are: *The Venerable Bede* (1879); *Lessons from Early Church History* (1893); *The Church at Home before Augustine* (1894); *Augustine and His Companions* (1895); *Conversion of the Hierarchy* (1896); *Theodore and Wilfrith* (1897); *Alcuin of York* (1908); *The Venerable Bede, Life and Writings* (1919); and *King Alfred's Books* (1920). He also wrote *Ice Caves of France and Switzerland* (1865); *History of St. Catherine's College* (1902); *The Recollections of a Bishop* (1915).

BROWN UNIVERSITY. An institution of higher education in Providence, R. I.; founded in

1764. In the autumn of 1930, the enrollment was 2282, of whom 332 were graduate students; 1367, undergraduate men; 509, undergraduate women; and 74, school of education students. The faculty had 233 members, including 113 professors, 48 instructors, 61 assistants, and 11 lecturers. Among the new appointees were: Samuel T. Arnold, dean of undergraduate men; Ralph M. Blake, professor of philosophy; Robert B. Lindsay, associate professor of physics; Arlan R. Coolidge, assistant professor of music; and Henry B. Van Hoesen, librarian. The permanent productive funds of the university amounted to \$10,020,274, of which \$9,496,492 was an endowment of the men's college and \$523,782, an endowment of Pembroke, the women's college; the total income from these funds was \$520,844. The library contained 350,000 volumes. The building previously known as Rockefeller Hall, at the request of the donor, John D. Rockefeller, Jr., was to bear the name of Faunce Hall as a memorial to Dr. William H. P. Faunce (q.v.), former president of Brown University. President, Clarence Augustus Barbour, D.D., S.T.D., LL.D.

BRUMBAUGH, MARTIN GROVE. An American educator and former governor, died in Pinehurst, N. C., Mar. 14, 1930. He was born in Huntingdon Co., Pa., Apr. 14, 1862, and was graduated from Juniata College in Huntingdon, Pa., with the B.E. degree in 1881, receiving there in 1883 the M.E. degree and subsequently the B.S. and M.S. degrees. He received from the University of Pennsylvania the A.M. degree in 1894 and the Ph.D. degree in 1895. From 1884 to 1890, he was superintendent of schools in Huntingdon Co., and at the same time State conductor for the teachers' institutes of Louisiana (1886-91). He was president of Juniata College from 1895 to 1906, and, meanwhile was also professor of pedagogy at the University of Pennsylvania (1895-1900 and 1902-06), and first commissioner of education in Porto Rico (1900-02). From 1906 to 1915, he was superintendent of public schools in Philadelphia, following which he was governor of Pennsylvania until 1919. From 1924 until his death, he was again president of Juniata College. He wrote *History of the Brethren; Juniata Bible Lectures; Standard Readers* (5 vols.); *Stories of Pennsylvania and Liberty Bell Leaflets* (with J. S. Walton); *Life and Works of Christopher Dock*; and *Story of Roosevelt*. He edited the *Lippincott Educational Series*.

BRUNEL, brōō-nī'. A British protectorate on the northwestern coast of the island of Borneo. Area, about 2500 square miles; population at census of 1921, 25,454 (35 Europeans). Brunei, the chief town, has about 12,000 inhabitants. Mangrove extract, rubber, coal, sago, and jelutong are the chief products. In 1928, revenue totaled £41,389; expenditure, £40,134; and the public debt (on Dec. 31, 1928), £48,183. Sultan in 1930, Ahmed Tajudin Akluzul Khairi Waddin, a minor, who receives an annual allowance of £1400 from State funds. Government is administered by the British resident. Resident in 1930, R. J. F. Curtis.

BRUSSELS. See EXPOSITIONS.

BRYN MAWR COLLEGE. An institution for the higher education of women in Bryn Mawr, Pa.; founded in 1880. The enrollment for the autumn of 1930 totaled 500. The teaching staff numbered 82. The productive funds of the college amounted to \$6,678,000 in the autumn of 1930, and the income for the year 1929-30 was \$946,-

501. The number of volumes in the library was 134,000. President, Marion Edwards Park, Ph.D., LL.D.

BUCKNELL UNIVERSITY. A coeducational Baptist institution of higher learning in Lewisburg, Pa.; founded in 1846 under the name of University of Lewisburg but renamed in 1886 in honor of its benefactor, William Bucknell. In the autumn of 1930 the enrollment was 1173, of whom 766 were men and 407 women. Of the 442 students enrolled in the summer session of 1930, 241 were men and 201 were women. The faculty numbered 71. The productive funds amounted to \$1,700,000 and the income for the year was \$700,000. The library contained 55,000 bound volumes. President, Emory W. Hunt, D.D., LL.D., D.C.L.

BUCKWHEAT. Estimates of the Department of Agriculture placed the buckwheat production of the United States in 1930 at 8,975,000 bushels, being 2,499,000 bushels below the yield in 1929 and the smallest crop since 1883. The area harvested, 658,000 acres, 10 per cent below the small acreage of 729,000 acres of the previous year, was the smallest in 30 years. The average yield per acre was only 13.6 bushels or 2.1 bushels lower than the average acre yield of the preceding year and the lowest in 42 years. The crop was severely injured by drought in practically all sections where it was grown and among the food grains buckwheat was the only one in which the supply was seriously short. The quality also was lower than in 1929 and below the average for the 10 years 1919-1928. Although the crop was so short buckwheat sold on the farm on December 1, 1930, for an average price of 84.5 cents per bushel as compared with 95 cents the year before and less than the average price of recent years. At these prices the total farm value of the 1930 crop was \$7,588,000 and of the 1929 crop \$11,210,000.

The yields in the more important buckwheat producing states were estimated as follows: New York, 3,465,000 bushels; Pennsylvania, 2,488,000 bushels; Minnesota, 532,000 bushels; Ohio, 432,000 bushels; and West Virginia, 390,000 bushels. The average yields for these States were 16.5, 12.5, 9.5, 16 and 13 bushels per acre. Among the 23 States reporting buckwheat production, all east of the Rocky Mountains, Maine led in average yield per acre with 23 bushels and North Dakota stood last with 4 bushels. Michigan with a crop of 405,000 bushels in the previous year produced only 143,000 bushels in 1930 on an area reduced from 45,000 acres in 1929 to 22,000 acres with an average yield of 6.5 bushels per acre.

During the year ended June 30, 1930, the United States exported only 22,000 bushels of buckwheat valued at \$25,000 as compared with 229,000 bushels with a value of \$254,000 the year before. The imports during this period amounted to 8,180,000 pounds valued at \$154,000 while in the preceding fiscal year 3,633,000 pounds were shipped into the country.

BUENOS AIRES. See CELEBRATIONS.

BUFFALO, THE UNIVERSITY OF. A coeducational institution of higher learning in Buffalo, N. Y.; founded in 1846 under a charter received from the State Legislature. The enrollment for the autumn of 1930 was distributed as follows: College of arts and sciences, 779; school of law, 235; school of dentistry, 121; school of medicine, 273; school of pharmacy, 151; school of business

administration, 212; evening session, 1702. The enrollment for the 1930 summer session was 942. The faculty numbered 448, including 57 new appointees. The income for the year 1929-30, exclusive of gifts, amounted to \$904,526, while the endowment fund balance as of June 30, 1930, was \$4,633,947. The library contained 72,000 volumes and 61,000 pamphlets. President, Samuel P. Capen, Ph.D., L.H.D., Sc.D., LL.D.

BUILDING. According to *Bradstreet's* annual summary, the total value of the building permitted for in 1930 at 215 cities of the United States was \$1,671,403,078, as against \$2,913,131,600 in 1929, a decrease of 42.6 per cent. Of this, New York City furnished a total of \$408,741,972, as against \$944,366,782 in 1929, a decrease of 56.7 per cent, whereas the other 214 cities aggregate in 1930 was \$1,262,661,106, as against \$1,968,764,818 in 1929, a decrease of 35.8 per cent. The accompanying table gives the aggregates by groups of cities in 1930 and 1929, with the percentages of decrease noted. Aside from the decreases in the New England, Middle Atlantic, and Central Western groups, ranging from 34.2 to 52.5 per cent, shown in the table, the decreases in the various groups range in the neighborhood of 22 to 27 per cent.

Attention is called by *Bradstreet's* to the fact that the 1930 building permitted for, was the lightest since 1921, but the 1930 total, \$1,671,403,078, was much below the acreage of the expenditures since 1918, \$2,508,000,000, and it was considered a fair inference that just as the 1917 and 1918 totals reflected war-year conditions, so the heavily reduced total of 1930 likewise reflected below normal building, which might be expected to expand during the following year, favored as it would be by easier money, which was so conspicuously lacking in the year 1929.

BUILDING PERMITS IN THE UNITED STATES 1929-1930

[From *Bradstreet's*]

| | Twelve months | | Change, per cent |
|-------------------------------------|---------------|---------------|---------------------|
| | 1930 | 1929 | |
| New England . . . | \$126,347,639 | \$192,258,903 | D 34.2 |
| Middle Atlantic . . | 681,252,636 | 1,329,627,159 | D 52.5 |
| Central Western . . | 297,544,527 | 573,998,681 | D 48.1 |
| Northwestern . . . | 92,914,264 | 119,486,977 | D 22.2 |
| Southwestern . . . | 148,224,363 | 194,732,447 | D 23.8 |
| Southern | 150,057,682 | 206,560,005 | D 27.3 |
| Pacific and Moun- tain | 225,061,967 | 296,467,428 | D 24.1 |
| Total U. S. . . . | 1,671,403,078 | 2,913,131,600 | D 42.6 |
| New York City . . | 408,741,972 | 944,366,782 | D 56.7 |
| Outside N. Y. . . | 1,262,661,106 | 1,968,764,818 | D 35.8 |
| Canada | 128,428,110 | 182,169,795 | D 29.4 |

For the purpose of giving a precise measure of building activities over a period of years, the following table showing the aggregate expenditures at 120 identical cities since 1909 will be found interesting:

BUILDING EXPENDITURES SINCE 1909

| | | | |
|------------|---------------|------------|-----------------|
| 1909 . . . | \$888,114,741 | 1920 . . . | \$1,234,082,696 |
| 1910 . . . | 846,991,622 | 1921 . . . | 1,462,752,811 |
| 1911 . . . | 824,147,884 | 1922 . . . | 2,288,408,624 |
| 1912 . . . | 879,094,308 | 1923 . . . | 2,831,366,000 |
| 1913 . . . | 814,509,360 | 1924 . . . | 2,936,714,639 |
| 1914 . . . | 728,801,072 | 1925 . . . | 3,398,585,693 |
| 1915 . . . | 763,343,811 | 1926 . . . | 3,227,185,543 |
| 1916 . . . | 919,435,203 | 1927 . . . | 2,870,618,674 |
| 1917 . . . | 633,483,813 | 1928 . . . | 2,794,229,539 |
| 1918 . . . | 372,793,978 | 1929 . . . | 2,484,225,535 |
| 1919 . . . | 1,172,864,155 | 1930 . . . | 1,407,333,518 |

The 1930 construction value in the United States, according to the F. W. Dodge Corporation's review of building and engineering activity, showed a distinct decline in the value of contracts awarded in 37 States east of the Rocky Mountains, the total for the year being \$4,523,114,600, as compared with \$5,754,291,000 in 1929, \$6,628,286,000 in 1928, \$6,303,058,000 in 1927, \$6,380,915,000 in 1926, and \$6,006,426,000 in 1925. The totals for the various projects are included in the following table.

BUILDING IN THE UNITED STATES DURING 1930
[Returns from F. W. Dodge Corporation Review for 37 Eastern States]

| Classification | Totals for contemplated construction | | Yearly totals of contracts awarded | | |
|---|--------------------------------------|-----------------|------------------------------------|------------------------|-----------------|
| | No. of projects | Valuation | No. of projects | Sq. ft. of floor space | Valuation |
| Commercial buildings | 26,677 | \$ 854,189,600 | 22,598 | 91,852,600 | \$ 628,809,500 |
| Industrial buildings | 6,351 | 1,066,438,500 | 5,223 | 53,163,600 | 459,942,600 |
| Educational buildings | 6,043 | 480,187,900 | 4,771 | 58,550,300 | 376,051,200 |
| Hospitals | 1,587 | 261,238,100 | 1,221 | 19,120,000 | 163,120,600 |
| Public buildings | 2,123 | 256,928,800 | 1,477 | 17,023,700 | 139,814,600 |
| Religious and memorial buildings | 2,535 | 135,502,900 | 2,044 | 10,862,300 | 92,837,100 |
| Social and recreational buildings | 3,669 | 227,052,900 | 2,551 | 14,606,000 | 113,298,400 |
| Residential buildings | 83,190 | 1,641,372,700 | 74,713 | 230,039,300 | 1,101,312,500 |
| Public works and public utilities | 27,585 | 3,358,001,500 | 20,671 | 9,164,000 | 1,447,928,100 |
| Total construction | 159,760 | \$8,281,012,900 | 135,269 | 510,381,800 | \$4,523,114,600 |

The summaries of construction of the *Engineering News-Record* (New York) gave a total value of all construction in the United States in three years as follows: \$10,000,000,000 in 1928; \$9,130,000,000 in 1929; \$6,525,000, in 1930. After the record year 1928 the 9 per cent drop in 1929 was the result of a 31 per cent fall in residential building volume. The 30 per cent drop in 1930 was due to a further fall of 42 per cent in residential building and a fall of 24 per cent in other construction.

The only important component recording an increase was public-works construction. This component in 1928 and 1929 amounted to 36 and 37 per cent respectively, of all construction. In 1930, however, due to the building decline, public works totaled 53 per cent, though the increase over 1929 was only 3 per cent. The engineering construction component, including the larger structures of

CONSTRUCTION BY CLASSES AND GEOGRAPHIC SECTIONS

[*Engineering News-Record*]
(In millions of dollars)

| | 1930 | 1929 | 1930 Per cent change | Average 1925-30 | 1930 Per cent change |
|-------------------------------|-------|-------|-------------------------------|--------------------|-------------------------------|
| Water-works ... | 49 | 49 | ... | 63 | + 22 |
| Sewers | 82 | 88 | - 7 | 97 | - 15 |
| Bridges | 109 | 09 | + 10 | 94 | + 16 |
| Excavation | 94 | 32 | + 6 | 34 | ... |
| Roads | 577 | 539 | + 7 | 527 | + 9 |
| Buildings | 298 | 306 | - 3 | 251 | + 19 |
| Federal gov't | 116 | 104 | + 11 | 71 | + 64 |
| Unclassified | 124 | 132 | + 6 | 124 | ... |
| Total public .. | 1,389 | 1,348 | + 3 | 1,261 | + 10 |
| Industrial bldgs. ... | 331 | 547 | - 59 | 350 | - 6 |
| Com'l bldgs. | 1,034 | 1,670 | - 38 | 1,360 | - 24 |
| Bridges | 20 | 38 | - 47 | 22 | - 9 |
| Unclassified | 399 | 349 | + 14 | 237 | + 68 |
| Total private .. | 1,784 | 2,604 | - 32 | 1,969 | - 9 |
| Total eng. construction .. | 3,173 | 3,950 | - 20 | 3,230 | - 2 |
| New England .. | 265 | 238 | + 11 | 234 | - 13 |
| Middle Atlantic .. | 1,288 | 1,681 | - 23 | 1,190 | + 8 |
| South | 270 | 330 | - 18 | 287 | - 6 |
| Middle West | 534 | 747 | - 38 | 677 | - 21 |
| West of Mississippi .. | 490 | 583 | - 16 | 505 | - 3 |
| Far West | 326 | 371 | - 12 | 337 | - 3 |

all classes, dropped 20 per cent, due to the slump in building. This component, which amounted to 36 and 43 per cent of all construction in 1928 and 1929, totaled 49 per cent in 1930. The accompanying tabulation gives values in millions of dollars by classes and geographic sections for 1930 and 1929, and the average for six years. See ARCHITECTURE and FOUNDATIONS.

BUILDING AND LOAN ASSOCIATIONS.

See COÖPERATION.

BUILDINGS WELDED. See BRIDGES.

BULGARIA. A constitutional monarchy in the Balkans lying to the south of Rumania and the east of Yugoslavia. Capital, Sofia; reigning King in 1930, Boris III, who succeeded to the throne upon the abdication of his father, Oct. 3, 1918.

AREA AND POPULATION. As a result of the World War, the area of Bulgaria was reduced from 53,305 to 39,814 square miles. The population according to the census of 1926 was 5,483,125, as compared with the actual population according to the census of 1920, of 4,846,971. The estimated population on Jan. 1, 1929, was 5,713,200. In 1928, there were 185,026 births, 98,658 deaths and 55,896 marriages. The chief cities, with their populations at the 1926 census, are: Sofia, 213,002; Philippopolis (Plovdiv), 84,655; Varna, 60,563; Ruschuk, 45,788; Slivno, 29,263.

EDUCATION. There is free and compulsory primary instruction for children between the ages of 7 and 14 years. In 1927-28, there were 4293 national primary schools, with 438,538 pupils; 1357 private elementary schools, with 65,781 pupils; 1361 national pro-gymnasias, with 142,179 students; 85 national gymnasias, with 25,224 students; and 176 national professional and domestic economy schools, with 16,332 students. The State University at Sofia had 299 teachers and 3780 students in 1928-29. There was also a free private university, with 2241 students.

PRODUCTION. Agriculture engages nearly 80 per cent of the population, the ownership of the land being widely distributed in small plots of from one to six acres. Of the total area of 25,786,550 acres, about 9,182,409 acres were cultivated in 1929, and the forest area totaled 7,203,160 acres. Methods of cultivation are primitive, although some modern machinery is being introduced. Agricultural yields in 1929 compared favorably with the previous year, but the lower prices adversely affected farm purchasing power. The chief crops, with the yield in metric tons for 1929, were: Wheat, 901,937; corn, 916,000; barley, 234,000; rye, 196,000; oats, 150,000; maslin, 92,000; millet, 34,000; sugar beets, 257,000; and sunflower, 66,060. The tobacco crop was estimated at 55,

054,000 pounds. The output of raw silk cocoons was 2389 metric tons; of rose leaves, 6000 metric tons; and of attar of roses, 2000 kilos.

The leading industries are tobacco, textiles, foodstuffs, metal, pottery, and woodworking. The production of manufactured tobacco, the leading state monopoly, amounted to 4920 metric tons in 1929, refined-sugar production to 35,880 metric tons, and coal production to 1,667,080 metric tons. Copper, lead, zinc, aluminium, and salt are other mineral products.

COMMERCE. Imports exceeded exports for the second consecutive year in 1929, the excess of imports totaling 1,892,000,000 leva (1 lev exchanged at \$0.0072), as compared with 808,000,000 leva in 1928. The import total was 8,288,000,000 leva (\$59,839,000), as against 7,041,000,000 leva (\$50,765,000) in 1928. Exports amounted to 6,396,000,000 leva (\$46,177,000), as compared with 6,231,000,000 (\$44,937,000) in 1928. The chief import items in 1929 were textiles, metals and their manufactures, machines and implements, and wood and its manufactures. Shipments of tobacco, the chief export commodity, were valued at 2,896,000,000 leva (\$20,222,000). Other leading exports were eggs, corn, skins, hides and furs, attar of roses, silk cocoons, and livestock. Germany furnished 22.2 per cent of the imports (21.2 in 1928); Italy, 10.8 (15.2); Czechoslovakia, 9 (10.7); United Kingdom, 8.8 (10.4); France, 8.2 (7.7); and Austria, 7.7 (8.1). Of the exports, Germany took 29.9 per cent (27.9 in 1928); Austria, 12.5 (15.3); Italy, 10.5 (11); and Poland, 8.5 (4.6). Imports from the United States increased to 271,900,000 leva (\$1,963,000), while exports to that country amounted to 107,014,000 leva (\$772,640).

FINANCE. Estimated budget receipts for the fiscal year ended Mar. 31, 1930, were 6,740,150,000 leva (7,569,905,000 leva in 1928-29) and estimated expenditures were 6,752,820,000 leva (7,481,513,000 leva in 1928-29). The chief item of expenditure was the sum of 2,106,500,000 leva set aside for the service of the public debt. Next in importance was an appropriation of 1,214,282,000 leva for the Ministry of War. The railroad budget is kept separate. Estimates for 1930-31 were: Revenues, 6,918,000,000 leva; expenditures, 6,436,000,000 leva.

The public debt on Oct. 31, 1929, totaled 1,518,744,490 gold francs, or 40,742,319,640 leva, according to the Ministry of Finance (39,970,000,000 leva on Jan. 1, 1929). As a result of reparation negotiations held at The Hague and at Paris early in 1930, Bulgaria's annual reparation payments were reduced from 13,000,000 gold francs (1 gold franc equaled \$0.193) to 11,500,000 gold francs, payable for 37 years. To meet the extraordinary expenses incurred as a result of the earthquakes early in 1929, the reparation payments for that year were cut in half.

COMMUNICATIONS. Freight traffic on Bulgarian railways increased to 362,000 carloads in 1929, as compared with 330,000 in 1928. There were 1728 miles of railway line in operation in 1929, all state owned, and 602 additional miles were under construction. In 1930, Bulgaria had 9576 miles of state highways, most of which was surfaced with crushed rock, and 46,500 miles of dirt roads. The appropriation for road construction and maintenance in 1930-31 was \$6,588,000. In 1929, 336 miles of highway were constructed, of which 335 miles were macadam.

Ships calling in 1929 at the Black Sea port of

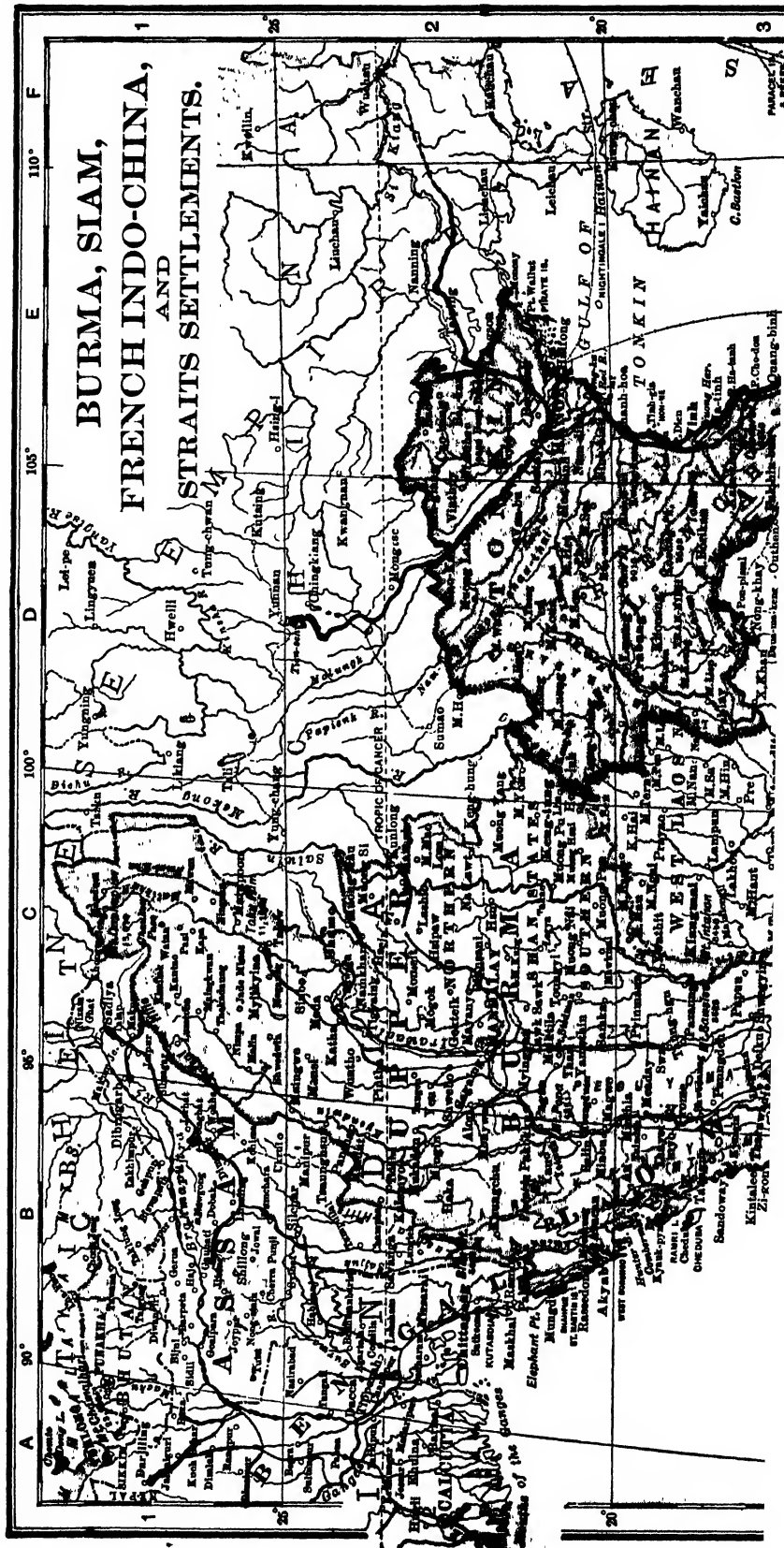
Varna totaled 365 vessels of 632,310 tons (357 vessels of 609,656 tons in 1928); at Burgas, 435 vessels of 742,410 tons (440 of 746,687 tons in 1928). Shipping at the Danube ports in 1929 showed a slight increase over the previous year, totaling 9105 ships or lighters of 1,935,388 registered tons.

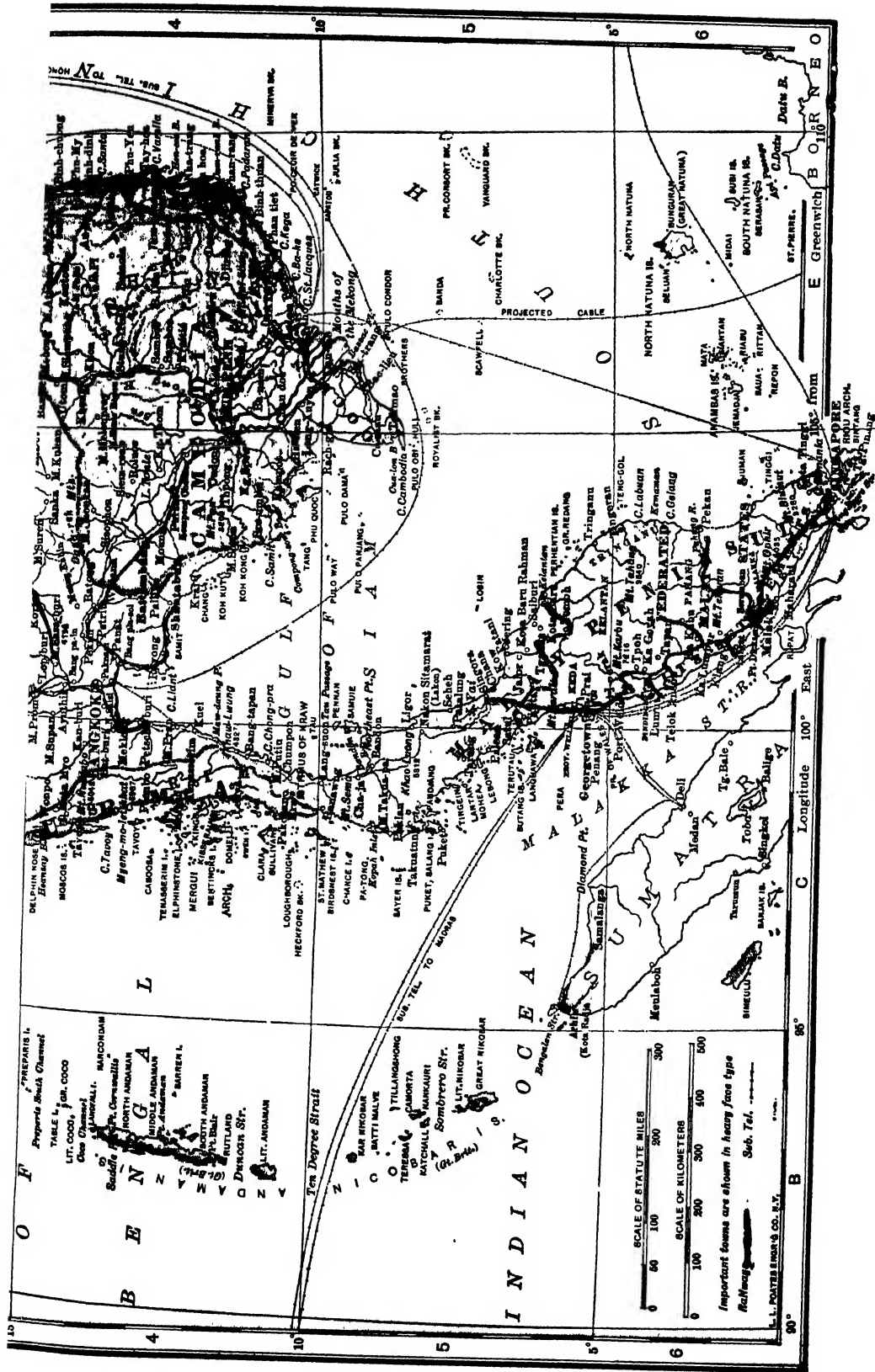
GOVERNMENT. The King is the head of the government, assisted by a council of ministers, nominated by him and a single legislative chamber, known as the Sobranie, composed of 273 members. The parties in the Sobranie, elected in May, 1927, contained the following party groups: Government Coalition, 168; Agrarians, 48; Macedonian Independents, 11; National Liberals, 14; Democrats, 12; Radicals, 2; Social Democrats, 10; others, 8. The ministry as organized Sept. 12, 1928, was as follows: Premier and Minister of Interior, André Liaptcheff; Minister of Education, Nicholas Naidenoff; Justice, Dr. Theodore Kuleff; Commerce, M. Tzvetco Bobotchevsky; Finance, Vladimir Molloff; Public Works, Slavico Vassileff; Posts and Railways, R. Madjaroff; Foreign Affairs, Athanas Buroff; Agriculture, Dimitri Christoff; War, General Bakardjief (Jan. 11, 1929).

HISTORY. The reorganization of Premier André Liaptcheff's Cabinet for the second time since it assumed office Jan. 4, 1926, occurred May 15, 1930, following long and stormy negotiations between the two factions in the government party, or Democratic Entente, headed by the Premier and his chief rival, Professor A. Tsankoff. Tsankoff, the Speaker of the Sobranie and a former Premier, secured minor posts on the Cabinet for himself and two of his followers. The Ministers of Foreign Affairs and Finances remained unchanged. The new Cabinet was constituted as follows: Premier, André Liaptcheff; Foreign Affairs, Athanas Buroff; Finances, Vladimir Molloff; War, General Bakardjief; Education, A. Tsankoff; Agriculture, M. Vassileff; Posts and Railways, M. Soljoff; Justice, M. Milanoff; Trade, M. Mischaikoff; Public Works, George Danailoff.

The entrance into the Cabinet of Professor Tsankoff, one of the most powerful figures in Bulgaria, had two important repercussions. It powerfully stimulated peasant discontent, already widespread as a result of the agricultural crisis, and led the government to challenge the power of the Imro, the secret Macedonian revolutionary organization, which heretofore had pursued its programme of assassination and terrorism in Serb-Macedonia with the more or less tacit support of the Bulgarian government. The peasants held Tsankoff responsible for the assassination of the peasant Premier Stambulisky in 1923 and the subsequent extermination of 25,000 members of the Agrarian party.

Tsankoff's insistence upon the stern repression of the Imro's activities, together with pressure exerted by Great Britain, and France, forced the government on July 18 to order the arrest of Ivan Mihailoff, leader of the terrorist wing of the Imro, and three associates. They were charged with responsibility for the murder on Mar. 4, 1930, of Vassil Poundeff, a Sofia journalist affiliated with the anti-Mihailoff faction of the Imro. Tsankoff was the sworn enemy of Mihailoff, whose agents in June, 1928, assassinated in Sofia Tsankoff's close friend, General Protogueroff, leader of the pacifist section of the Imro. Tsankoff had persuaded General Protogueroff to aban-





don the Imro's terroristic methods in favor of peaceful propaganda for Macedonian autonomy. Mihailoff openly acknowledged his responsibility for Protogueroff's execution and challenged the government to proceed against him. The Ministry, aware that the majority of Bulgarians and of the Sobranje sympathized with the Imro leader, hesitated to act until the return of Tsankoff. Mihailoff and one of his associates, Topukoff, were acquitted for lack of evidence on November 25. The other two defendants, Medaroff and Stanenkoff, were found guilty of Poundeff's murder and sentenced to 15 years' imprisonment. It was the first time a Macedonian feud murder led to a trial in the Bulgarian courts.

The Democratic Entente (Government party) registered an overwhelming victory in the municipal and country elections held Feb. 16, 1930. The voting was marked by disorders in several towns, and the Agrarians, or chief Opposition party, charged that the government used the gendarmerie to coerce the voters. The political unrest in the country was attributed to the "definitely critical" economic condition of Eastern agrarian Europe by Finance Minister Molloff in addressing the League of Nations Assembly Oct. 2, 1930. He said Bulgarian rural communities were unable to export their crops, their purchasing power had been reduced, and that in despair of improving their condition, many peasants were moving to the towns and cities. Government coalition candidates were defeated by Opposition coalition candidates in the majority of the local elections held November 9. The results raised hopes that the Right coalition, in power since 1923, would be overthrown at general elections scheduled for the spring of 1931.

MARRIAGE OF KING BORIS. With the dispensation of the Pope, King Boris III of Bulgaria and Princess Giovanna of Italy were married in the great basilica of St. Francis at Assisi, Italy, on Oct. 25, 1930, their betrothal having been announced in Rome, October 3. It was announced that the Vatican's dispensation had been granted only after both King Boris and Princess Giovanna had signed a written promise to baptize and educate all their children in the Roman Catholic faith. Thus the religious difficulty which had balked previous efforts of King Boris to arrange the marriage was met through the King's decision to ignore the traditional view of Bulgarian jurists that the Crown Prince must be baptized in the Greek Orthodox Church. Article 38 of the Bulgarian Constitution provides that the King must be a communicant of the Greek Church, but no such provision is made regarding the Crown Prince.

Orthodox clerical circles in Sofia showed disappointment when the religious ceremonies attending the arrival of the King and his bride consisted only of a registration and blessing, rather than a wedding. The Orthodox Metropolitan's speech of welcome included the significant sentence: "Now that a foundation has been laid for an Orthodox dynasty, the Bulgarian people will hope, with God's help, for unity, happiness, and prosperity." There were rumors that Boris had secretly returned to the Catholic faith, in which he was originally baptized previous to his father's profession of the Orthodox faith.

The union of the Bulgarian and Italian dynasties was widely regarded as an important move in Italy's policy of uniting the nations defeated in the World War in opposition to France and her

allies of the Little Entente. See ITALY, FRANCE, and JUGOSLAVIA, under *History*; also *REPARATIONS*.

BURIAT-MONGOL REPUBLIC. See *SIBERIA*, and *RUSSIA*.

BURMA. The largest and most easterly province of British India; since 1923, a governor's province under the Government of India Act of 1919. Area, 262,732 square miles; population (1921), 13,212,192. Rangoon, with a population of 345,505, is the capital. Mandalay, with 148,917 inhabitants, is the second city in size.

In 1927-28 there were 478,441 students in recognized schools and colleges and 197,441 in unrecognized institutions. Agriculture is the main occupation, supporting over 9,000,000 persons in 1930. Industry consists mainly in the preparation of agricultural and forest products for market, such as rice and lumber milling, oil refining, and cotton ginning. Factories of all kinds in 1927 numbered 967 and employed 101,586 persons. Rice is the principal crop, to which two-thirds of the cultivable area is devoted. Burma's mineral resources are important, tin, tungsten ore, and silver being mined commercially. The oil production in 1929 reached 262,000,000 gallons, valued at \$17,850,000. Teak production in 1928 approximated 341,963 tons from reserved forests alone. In 1929, imports from the remainder of India and foreign countries totaled \$131,474,000; exports, \$234,559,000.

Revised estimates for the fiscal year 1928-29 placed Government revenues at 1050 lakhs and expenditures at 1170 lakhs (1 lakh equals 100,000 rupees, or \$36,500 at par). The total sea-borne trade in 1927-28 totaled 113,600 lakhs. The railways of the province, extending 1930 miles in 1929, were taken over by the Government of India in January of that year. There were 1522 miles of surfaced roads, 7789 miles of unsurfaced roads, and 60 miles of canals, besides 1200 miles of navigable rivers. The Government is administered by a governor and a legislative council of 103 members, 80 of whom are elected and 23 nominated and *ex-officio*. Governor in 1930, Sir Charles Alexander Innes.

HISTORY. Friction between Burmese and Indian dock laborers in Rangoon led to rioting on May 26, 1930, which continued for several days, with the loss of several score lives and numerous injuries. Troops were required to restore order. An agitation for separation of Burma from India and for greater autonomy showed some evidences of developing. Separation from India was recommended on Dec. 9, 1930, to the Round Table Conference on India and accepted in principle by the MacDonald Government. The form of the new Burmese government was to be worked out at another conference between British and Burmese delegates. A native uprising occurred in the Tharrawaddy district of Southern Burma on Dec. 22, 1930. A number of armed clashes with British troops were reported before the end of the year.

Burma was shaken by a severe earthquake on May 5, the loss of life from the shock and the accompanying tidal wave which swept the Sittang river being estimated at over 2000. In Rangoon and Pegu, 58 miles north of the capital, there were numerous deaths and many Government and religious buildings were destroyed. See *EARTHQUAKES AND INDIA* under *History*.

BUSINESS REVIEW. The year 1930 was from a business standpoint a period of fairly

steady downward movement. Business had received a severe shock at the time of the panic and had undergone considerable recession before the close of 1929. It was believed at the opening of 1930, that this loss would speedily be recovered and a committee of business leaders formed by President Hoover for the purpose of keeping the community fully informed, issued statements from time to time tending to prove that recovery was in progress.

Later information showed that these outgivings were based upon an insufficient body of data. It was true, as the indexes of industrial production hereinafter cited, established, that the early months of the year were considerably better than the later ones, but they were far from good as compared with the corresponding months a year earlier. From April onward, steady declines set in and continued until the end of the year at which time practically all business indexes agreed in the view that there had been a loss of about 25—35 per cent below normal. The recession was especially rapid during the late autumn. Freight carloadings had been rather unsatisfactory from the beginning of the year and they continued to fall off heavily as the summer advanced, due to the steady decline of export trade and the shrinkage of demand for manufactures for home consumption. Building contracts which had occasionally shown some sporadic improvement during the latter part of the year receded definitely.

The accompanying table furnishes a review of industrial production and illustrates the generalizations just set forth.

INDEX OF INDUSTRIAL PRODUCTION

[Index numbers, adjusted for seasonal variations
1923-1925 average=100]

| Month | 1923 | 1924 | 1925 | 1926 | 1927 | 1928 | 1929 | 1930 |
|---------------|------|------|------|------|------|------|------|------|
| January ... | 100 | 100 | 105 | 106 | 107 | 106 | 117 | 102 |
| February ... | 100 | 102 | 105 | 107 | 109 | 109 | 117 | 110 |
| March ... | 103 | 100 | 104 | 107 | 111 | 109 | 119 | 109 |
| April ... | 107 | 95 | 103 | 107 | 109 | 109 | 122 | 110 |
| May ... | 107 | 89 | 103 | 106 | 111 | 109 | 123 | 106 |
| June ... | 105 | 85 | 102 | 107 | 108 | 108 | 126 | 99 |
| July ... | 103 | 83 | 103 | 107 | 106 | 109 | 124 | 89 |
| August ... | 102 | 89 | 103 | 111 | 107 | 112 | 123 | 88 |
| September ... | 100 | 94 | 102 | 112 | 105 | 114 | 121 | 91 |
| October ... | 99 | 94 | 105 | 111 | 103 | 114 | 117 | 87 |
| November ... | 97 | 97 | 106 | 108 | 99 | 112 | 106 | 83 |
| December ... | 96 | 101 | 108 | 105 | 99 | 113 | 99 | .. |
| Annual index | 101 | 95 | 104 | 108 | 106 | 111 | 119 | .. |

The downward movement which had thus been evident in manufacturing and transportation was also manifest, though not so markedly, in distribution. Chain store returns held up fairly well during the fore part of the year; while in those other retail enterprises which were willing to cut prices, fairly good results were reported for a much longer period. Nearly all businesses fell off in the volume of their transactions toward autumn. The month of December brought revival with an unexpectedly good Christmas trade, which in some of the centres was only 5 per cent below the preceding year. In other parts of the country, however, holiday trade was very much less prosperous. Employment was relatively poor at the beginning of the year and became worse as the season advanced. There are no general, trustworthy employment figures for the United States, but the best estimates placed the number out of work at the close of the year as between 4,000,000 and 5,000,000 persons. See UNEMPLOYMENT.

COMMODITY PRICES. Commodity prices at the middle of 1929 were still regarded as very stable.

Just after the panic had ended its first paroxysm there were minor recessions which most persons regarded as temporary. At the close of the year 1929, the average level was 94.2 or only 3 points below the figure registered for January. With the opening of 1930, however, the average level began to recede still further, weakness making itself felt in many directions. Moreover, in many special lines the existence of very great overstocks made it a foregone conclusion that a sharp recession of prices would be unavoidable. Copper prices broke sharply at the beginning of spring, and this recession was followed by similar losses in almost all nonferrous metals. Steel and iron prices finally suffered in the same way, and after May, the decline was fairly continuous up to the end of the year, at which time the total net loss was about 15 points.

Analysis of the various groups of prices shows that there was very great difference among the rates at which the different classes of commodities lost ground. The accompanying table shows the actual index numbers for all commodities with comparative figures for preceding years.

MOVEMENT OF WHOLESALE PRICES

| | 1926 | 1927 | 1928 | 1929 | 1930 |
|----------------|------|------|-------|------|------|
| January | 97.0 | 96.3 | 97.2 | 93.0 | 93.0 |
| February | 102 | 96.0 | 96.4 | 96.7 | 92.0 |
| March | 100 | 95.0 | 96.0 | 92.5 | 91.0 |
| April | 100 | 94.0 | 97.4 | 96.8 | 91.0 |
| May | 101 | 94.0 | 98.6 | 95.8 | 89.0 |
| June | 101 | 94.0 | 97.6 | 96.4 | 87.0 |
| July | 100 | 94.0 | 98.3 | 98.0 | 84.0 |
| August | 99 | 95.0 | 99.8 | 97.7 | 84.0 |
| September ... | 100 | 97.0 | 100.1 | 97.5 | 84.0 |
| October | 99 | 97.0 | 97.8 | 96.3 | 83.0 |
| November | 98 | 96.7 | 96.7 | 94.4 | 80.4 |
| December | 98 | 96.8 | 96.7 | 94.2 | 78.4 |

Taking the year as a whole, the weakest items were those in which price fixing agreements had been most general. This included most of the raw materials, such as metals, lumber, and the like, the food stuffs, particularly grains, and in a lesser degree textile products. Highly-manufactured goods showed substantial resistance to pressure and appeared able to maintain themselves, in a good many cases, partly because of the continuance of understandings among producers; but partly also because of the belief on the part of sellers that they would not appreciably broaden demand under existing conditions by cutting prices. This was an erroneous view as circumstances showed, but it accounted for the failure of a good many groups of retail prices to readjust themselves. Price cutting was not so prominent a feature of the year as it had been of the preceding year, due to the fact that, inasmuch as in a great many branches of business such agreements had already gone to pieces, prices were left to follow their own course. In retail trade, however, as already stated, the maintenance of prices was more successful, although an increasing number of "sales" reflected the necessity of producers for an outlet for goods and for an enlargement of cash in hand.

MANUFACTURING. Manufacturing establishments, at the opening of the year, had been strongly urged to maintain their working forces as far as possible, and to go ahead on the basis of "business as usual." Some leaders in business had made it a point to undertake a real test of this supposed policy, and did so. The plan, however, was not very successful, and in a good many cases resulted in a continuous growth of

overstock, so that even those who had undertaken to keep up production soon found it difficult to do so. By the end of the first half year, the project of maintaining production on its old basis had been very generally abandoned. During the summer, there was a series of unusually long "vacations" and following these only a very gradual restoration of men to employment.

During the last quarter of the year, a great many staffs had been reduced to not more than a third of the usual number while of those who continued occupied, a good many were on short time. Industries that were obliged to make specially large curtailments were exemplified by the automobile trade in which the year's production of cars was only 3,500,000 as against 5,500,000 the preceding year, and various branches of the textile industry in which extensive "lay-offs" took place very early in the year. The rubber industry was greatly depressed, while bad farming conditions compelled the partial closing of not a few farm-impelled producing enterprises. This condition of partial suspension prevailed very widely throughout the United States and was not limited to any one region or "section."

AGRICULTURE. Agriculture on the whole produced a fair normal or average crop. The output of wheat was slightly larger than the preceding year while cotton ran to about 14,350,000 bales. Both crops were much larger than had been desired, owing to the fact that the Federal Farm Board in its effort to stabilize the price of cotton, had endeavored to bring about a reduction of acreage in both products. This was unsuccessful and these two crops would probably have run considerably larger than they did had it not been for unfavorably dry weather. The dry weather, which assumed the proportions of a serious drought as early as mid-summer, was, however, most injurious in its effect on the corn crop which lost fully 20 per cent as a result of the unfavorable weather condition. The accompanying table shows the output in value of agricultural products for a few of the major crops. See also **AGRICULTURE.**

UNITED STATES AGRICULTURAL PRODUCTION,
1930

| | <i>Production</i> | <i>Value</i> |
|-----------------------------|-------------------|-----------------|
| Corn .....bushels | 2,081,048,000 | \$1,378,874,000 |
| Oats .....do. | 1,402,026,000 | 458,973,000 |
| Cotton .....bales | 14,243,000 | 674,044,000 |
| Cottonseed .....tons | 6,328,000 | 186,789,000 |
| Barley .....bushels | 325,893,000 | 128,197,000 |
| Apples .....do. | 163,543,000 | 152,548,000 |
| Oranges (7 states) boxes | 47,691,000 | 100,447,000 |
| White potatoes .....bushels | 361,090,000 | 326,457,000 |
| Wheat .....do. | 850,965,000 | 517,407,000 |
| Hay .....tons | 94,767,000 | 1,135,294,000 |
| Tobacco .....pounds | 1,510,308,000 | 216,895,000 |

As a result of this unfavorable agricultural situation and of almost total loss of crops in some limited regions, the world crisis in farm products, which was prevalent throughout the whole of Europe as well as South America, began to make itself apparent in the United States from mid-summer on, the values both of wheat and cotton, as well as of other products going to abnormally low levels before the end of the season, and inflicting upon the farmer serious embarrassment with (in some quarters) the necessity of direct relief, actually furnished by Congress and by other agencies.

GENERAL BUSINESS. General business in these circumstances could not be good and in fact was

TOTAL NUMBER OF COMMERCIAL FAILURES IN THE UNITED STATES, WITH ASSETS AND LIABILITIES, FOR FOUR YEARS AS REPORTED TO BRADSTREET'S

| | Number of Failures | | | | | Assets | | | | | Liabilities | | | | |
|-------------------------|--------------------|--------|--------|--------|---------------|---------------|---------------|---------------|-----------------|---------------|---------------|---------------|------|------|--|
| | 1930 | 1929 | 1928 | 1927 | 1926 | 1929 | 1930 | 1927 | 1928 | 1929 | 1930 | 1927 | 1928 | 1929 | |
| New England states ... | 2,641 | 2,462 | 2,383 | 2,275 | 2,140,441 | \$ 13,892,401 | \$ 14,184,828 | \$ 16,961,066 | \$ 54,107,502 | \$ 42,350,255 | \$ 39,065,612 | \$ 43,590,488 | | | |
| Middle states | 7,560 | 5,348 | 5,570 | 4,435 | 341,856,457 | 76,858,133 | 46,521,157 | 69,225,118 | 543,112,753 | 187,591,819 | 128,861,382 | 139,244,743 | | | |
| Western states | 5,314 | 4,229 | 4,537 | 4,478 | 184,408,181 | 57,986,230 | 62,150,869 | 75,146,693 | 322,881,251 | 98,726,626 | 105,583,119 | 124,134,134 | | | |
| Northwestern states ... | 1,496 | 1,457 | 1,454 | 1,911 | 38,260,902 | 23,335,619 | 32,073,770 | 47,391,395 | 60,739,436 | 40,365,597 | 50,260,249 | 79,936,205 | | | |
| Southern states | 4,893 | 4,208 | 4,295 | 5,178 | 372,895,491 | 148,531,008 | 108,078,300 | 151,833,474 | 448,151,821 | 202,908,452 | 162,929,502 | 218,619,158 | | | |
| Far-western states ... | 2,305 | 1,199 | 2,131 | 1,990 | 29,557,824 | 30,546,259 | 15,373,280 | 24,491,115 | 56,718,916 | 57,047,984 | 30,304,065 | 47,606,197 | | | |
| Totals, United States | 24,209 | 19,203 | 20,370 | 20,267 | \$988,389,396 | \$351,149,650 | \$278,382,152 | \$385,048,861 | \$1,485,591,679 | \$628,990,633 | \$517,909,929 | \$653,130,925 | | | |

almost uniformly unfavorable. Earnings for the first half of the year showed average losses of 25 per cent or more, while the railroads were off in their net earnings about 33 per cent. The final quarter of the year was better, comparatively speaking, than the earlier season, because the basis of comparison was the post panic quarter of 1929. This brought the average loss for selected industrial enterprises for the twelve months up to about 30-35 per cent while railroads for the year as a whole indicated a loss of rather more than 30 per cent. See RAILROADS. To this unfavorable record there were a good many striking exceptions which were afforded by other business enterprises which had been specially well organized or which had recently introduced economies or were otherwise in exceptionally favorable position to withstand pressure. Among these were some of the food-producing concerns which had profited by reductions in the price of their raw material, tobacco companies which seldom feel very direct effects of depression, and a number of others in the varying branches.

BUSINESS FAILURES. The business failures which had been so troublesome a feature of the previous few years and which had developed out of changing industrial conditions and the increasing severity of competition naturally underwent increase in 1930, as they would have done in any event owing to the difficulties of the time. In 1930, the general bad business, the difficult banking situation, and the underlying changes in the form and structure of trade, all combined to make a peculiarly hard year for the business man. As the year advanced, he began to feel the full force of the decline in volume of trade, so that many concerns which had been keeping up appearances so long as there was a fairly large turnover—although with a very small profit—now began to find their overhead expenses difficult to carry, and so ran “into the red,” while inevitably an unusually large number of enterprises passed their dividends. Business difficulties were widely diffused throughout the country and the total number of actual failures as shown by *Bradstreet's* was fully 20 per cent larger than had been the case during 1929. The table on page 123 reviews the business failure situation.

BUSSES. See AUTOMOBILES.

BUTTER. See DAIRYING.

BYRD, RICHARD EVELYN, EXPLORATION OF. See POLAR RESEARCH; GEOGRAPHICAL SOCIETY, NATIONAL.

CAISSON CONSTRUCTION. See FOUNDATIONS.

CALIFORNIA. POPULATION. According to the Fifteenth Census, the population of the State on April 1, 1930, was 5,677,251. The population on Jan. 1, 1920, was 3,426,861. The capital is Sacramento.

AGRICULTURE. The table in the next column gives the acreage, production, and value of the principal crops in 1929 and 1930.

Farms in the State numbered 136,455 in 1930, the total having increased but slightly above the 136,409 of 1925, but being substantially above the 117,670 of 1920.

MINERAL PRODUCTION. Petroleum, forming regularly the major part of the State's yearly total of mineral production by value, was obtained in greater quantity, 292,037,000 barrels in 1929, as against 231,811,000 in 1928; the value of this product was, for 1929, \$289,000,000 (estimated); for 1928, \$230,000,000. The limitation

| Crop | Year | Acreage | Prod. Bu. | Value |
|-----------|------|-----------|-------------------------|--------------|
| Oranges | 1930 | ..... | 32,800,000 ^a | \$72,160,000 |
| | 1929 | ..... | 24,400,000 ^a | 95,160,000 |
| Grapes | 1930 | ..... | 74,078,000 ^d | ..... |
| | 1929 | ..... | 72,646,000 ^d | 46,445,000 |
| Hay | 1930 | 1,953,000 | 5,913,000 ^b | 63,973,000 |
| | 1929 | 1,933,000 | 5,336,000 ^b | 86,657,000 |
| Barley | 1930 | 1,012,000 | 35,420,000 | 17,002,000 |
| | 1929 | 992,000 | 29,363,000 | 20,554,000 |
| Dry beans | 1930 | 363,000 | 7,049,000 | 20,442,000 |
| | 1929 | 339,000 | 5,768,000 | 28,552,000 |
| Wheat | 1930 | 620,000 | 13,020,000 | 11,067,000 |
| | 1929 | 680,000 | 12,240,000 | 14,688,000 |
| Peaches | 1930 | ..... | 32,836,000 | 14,282,000 |
| | 1929 | ..... | 13,334,000 | 18,078,000 |
| Cotton | 1930 | 270,000 | 250,000 ^c | ..... |
| | 1929 | 309,000 | 260,000 ^c | ..... |
| Rice | 1930 | 110,000 | 7,271,000 | 6,035,000 |
| | 1929 | 95,000 | 6,222,000 | 6,533,000 |
| Potatoes | 1930 | 35,000 | 5,775,000 | 6,064,000 |
| | 1929 | 35,000 | 5,250,000 | 7,350,000 |
| Corn | 1930 | 90,000 | 2,700,000 | 2,349,000 |
| | 1929 | 82,000 | 2,542,000 | 2,847,000 |
| Oats | 1930 | 157,000 | 5,495,000 | 2,363,000 |
| | 1929 | 145,000 | 4,437,000 | 2,707,000 |

^a Boxes. ^b Tons. ^c Bales.

^d Carload shipments for 11 months.

of production by State authority worked to prevent a much higher output as to quantity, but did not effect any satisfactory improvement in the price by the barrel. Less gold was mined in 1929, the total being 412,479 fine ounces, as against 521,740 for 1928. Silver production also fell, to 1,176,895 fine ounces for 1929, from 1,478,771 for 1928. There were mined 1,426,889 pounds of lead in 1929; in 1928, 1,891,037. The mining of copper, on the other hand, increased, to 33,206,512 pounds for 1929, from 25,150,743 for 1928. Thus the total value of the production of these four metals for 1929, coming to \$15,088,228 for 1929, fell but little short of the corresponding total, \$15,381,783, for 1928. Higher prices for copper stimulated its production and helped keep up the total value of metals produced. By metals, the product of 1928 was valued thus: gold, \$10,785,315; silver, \$805,081; copper, \$3,621,707; lead, \$109,680. Totals for the State's production of natural gas, unavailable for 1929, were 246,215,000 M cubic feet for 1928 and 212,364,000 M for 1927; in value, \$56,695,000 for 1928 and \$50,946,000 for 1927. Gasoline extracted from natural gas attained 804,200,000 gallons for 1929, as against 584,111,000 for 1928; its value, \$69,000,000 (estimated) for 1929 as against \$53,885,000 for 1928.

The total value of the gold, silver, copper, and lead produced from placer and lode mining in California in 1930 was estimated at \$13,007,300, or a decrease of approximately \$2,083,300, compared with 1929, according to preliminary figures prepared by the U. S. Bureau of Mines. Gold, silver, and lead all showed increases in output compared with 1929, but copper declined in yield owing to the drop in price of the metal and the consequent curtailment of production. No recovery of zinc was reported in 1930. The value of the gold recovered from lode and placer mining in California in 1930 was estimated at \$9,033,600, compared with a value of \$8,526,703 in 1929. This was an increase of approximately 24,500 fine ounces in quantity and about \$508,900 in value over the yield in 1929. Gold from lode mines increased, with practically all of the larger gold mines showing a gain in output. Placer mining, largely confined to dredging operations, again showed a decrease in gold yield, but active mining of copper ore during the first half of the year

helped to increase the gold output. The silver output in 1930 was estimated at 1,448,000 fine ounces, valued at \$557,500, an increase of approximately 271,100 fine ounces in quantity and a decrease of about \$69,800 in value as compared with 1929. The yield of copper from mines in California in 1930 was estimated at 26,113,000 lbs., valued at \$3,238,000, a decrease of approximately 7,106,000 lbs. in quantity and of about \$2,608,500 in value, compared with 1929. At the end of 1930 only two of the principal copper mines in the State were in operation and one of these, the Mountain Copper Co., was diverting its operations from its copper properties to its gold-bearing gossan deposits.

TRANSPORTATION. The total number of miles of railroad line in operation on Jan. 1, 1930, was 8292.17. There were built, in 1930, 9.63 miles of first, and 18.32 of second track.

EDUCATION. For the better coordination of the divers teaching groups of the State there were held in 1930 a series of professional conferences covering all sections of California, and the possibilities of improved administrative relations and financial provisions were especially discussed. There were enrolled in the public schools in the year ended June 30, 1930, 1,407,190 pupils. Of these, 82,786 were in kindergartens, 769,739 in elementary grades, 228,611 in the regular high-school grades, and 305,493 in special classes in high schools; in the junior colleges were enrolled 20,561. The total expenditure of the school districts for education was \$149,952,241; of this, current expenditure contributed \$123,916,848.

CHARITIES AND CORRECTIONS. The State Department of Public Welfare, as organized in 1927, held the central administrative authority in 1930 with regard to institutions and activities for the care or custody of persons. Much of its work was apart from institutions. State aid was being furnished to some 16,000 children, and of this number 80 per cent were reported as remaining with their own mothers. In cases of adoption the State investigated the qualifications of the proposed foster-parents. Aid, largely outside of institutions, was supplied in 1930 to about 1400 blind persons or persons with impaired vision. The year saw the virtual inauguration of State aid to the needy aged. It was estimated in December, after 10 months' experience, that 7500 or more individuals would be qualified to receive this form of State assistance. Among the chief State institutions were Agnew State Hospital, Agnew; Industrial Home for the Adult Blind, Oakland; Mendocino State Hospital, Talmadge; Napa State Hospital, Imola; Norwalk State Hospital, Norwalk; Patton State Hospital, Patton; Pacific Colony, Padra; Nonoma State Hospital, Eldridge; Stockton State Hospital, Stockton; Ventura School for Girls, Ventura; Whittier State School, Whittier; Preston School of Industry, Ione; State prisons at Folsom and San Quentin.

POLITICAL AND OTHER EVENTS. The State act for the conservation of natural gas, which went into effect in September of 1929, was the subject of a legal conflict in the courts which lasted through much of 1930. A decision of a Superior Court judge affirmed the constitutionality of the act on March 12. The State director of natural resources then instituted proceedings to have the operators in the Santa Fe Springs district enjoined from wasting gas issuing from their wells. Later this official found difficulty in preventing

operators in the Kettleman Hills area from drilling to an extent judged as likely to upset restrictions established in agreement with the Federal authorities. The Federal Secretary of the Interior sought the cooperation of the Attorney-General in injunction proceedings in Federal courts, designed to stop wastage in the Kettleman area, but wastage went on, awaiting an effectual move on the part of the courts, and for the month of August it was estimated that 38 per cent of the natural gas output of the State had gone to waste.

Secretary of the Interior Wilbur went to California in July and worked there to put into effect a system of cooperative agreements for the development of petroleum and gas from Federal lands. This effort was concentrated chiefly in the Kettleman field, of which Federal lands made up about 30 per cent of the area.

The campaign for the pardon of Warren K. Billings and Tom J. Mooney, serving life sentences as participators in the bombing of the Preparedness Day parade of 1916 and the resulting death of 10 persons, was renewed. A group of sympathizers sought to get the State Supreme Court to recommend that the Governor grant pardons. The Court refused on July 4, by a vote of 6 to 1, to recommend the two men's release. Their friends then sought a witness, one J. MacDonald, who had testified at the trial. He was found to be in custody at Baltimore. Taken to California he testified before the Supreme Court that his original testimony of 1916, contributing to the conviction, had been false and prompted by some of the authorities.

The State Supreme Court reconsidered the matter of the proposed pardons for Mooney and Billings later in the year; it refused by 6 to 1 on December 1 to recommend pardon for either man.

The long maintained effort of the Great Northern and the Western Pacific to be allowed to build a connecting line between Klamath Falls, Oregon, and Keddie, California, thus forming a continuous route through the coastal States in competition with the existing route of the Southern Pacific, met with success; the Interstate Commerce Commission granted on June 20 the applications of the two systems for the construction of the desired line, some 200 miles in length. Many of the cities, including San Francisco, and counties of the northern part of the State supported the applications.

San Francisco put to a vote on August 26, the occasion of the primary elections, proposals for four bond issues, all of which were defeated. The proposals were: to issue \$44,000,000 in order to take over the distribution system of the Pacific Gas and Electric Company; to issue \$18,945,000 to take over the distribution system of the Great Western Power Company; to issue \$3,525,000 for constructing a power connection with the Hetch Hetchy power system; and to issue \$1,045,000 for a power plant on the Hetch Hetchy at Red Mountain Bar. The defeat of the power plan was not regarded as impairing the Federal grant of rights in the Hetch Hetchy basin for a water supply.

The Bay Bridge Commission created by President Hoover and Governor Young rendered early in August a report recommending that the projected \$72,000,000 bridge from San Francisco to the mainland be located on a line running from Rincon Hill over Goat Island to the vicinity of the Key System Mole. The report, according to a statement of Governor Young, cleared the

way for the public bridge building agency, the Toll Bridge Authority, to proceed to the completion of the project.

Los Angeles, the Southern California Metropolitan Water District, and the Southern California Edison Company executed with Secretary of the Interior Wilbur on April 6 contracts whereby they were to take 64 per cent of the water delivered by the projected Colorado River Dam. In order to provide for the growth of the city's needs for water up to the time when that from the Colorado would become available Los Angeles voted on May 20 to issue \$38,800,000 of bonds to increase its water supply. With some of these bonds purchases were made later of water lands in the Owens Valley.

Fruit Industries, Ltd., a subsidiary of the Grape Control Board and the collective organization said to represent some 20,000 of the grape growers of California, became an element in the plan of the Federal Farm Board for control of the grape industry. It was reported as having received from the Board in loans, up to November, some \$4,000,000. An advertisement appearing in a Milwaukee journal on November offered for sale unfermented grape juice as a wine ingredient and it was alleged that the grape juice came from the California growers and was thus in effect being marketed with the assistance of the Federal Government. The State's grape interests thus came in theoretical touch with the province of the Prohibition Bureau, but no definite policy of prosecutions was put into effect up to the end of the year.

The State District Court of Appeals at Los Angeles handed down on November 29 an opinion that the State's Oil and Natural Gas Conservation Act of 1929 was constitutional, and it denied a petition of certain oil operators for a writ of prohibition to prevent the enforcement of the act.

ELECTIONS. James Rolph, Republican candidate, was elected Governor on November 4 by a vote unofficially given as 972,270, as against 323,250 for Milton K. Young, Democrat. Frank E. Merriam for Lieutenant-Governor, Frank C. Jordan for Secretary of State, Ray I. Riley for Comptroller and Charles G. Johnson for Treasurer, all on the Republican ticket, were also elected. One Democratic and eight Republican incumbents were returned to the House of Representatives and one Republican candidate was sent to the House to replace a Republican. The Legislature remained in Republican control.

The voters were called upon to ballot on 26 questions, of which 20 were proposed constitutional changes, 5 laws proposed by initiative, and one a legislative act offered for referendum. The initiated proposal to establish daylight saving in the State was defeated, as was a Sunday-closing measure. A State issue of \$20,000,000 of bonds to promote veterans' welfare was approved. A revision of the usury law was beaten. An issue of bonds on State credit for San Francisco harbor was carried; also a provision for permanent registration of voters. In Los Angeles proposals to issue municipal bonds for power development and for sewers both failed of the requisite majority. The San Francisco project for a \$35,000,000 bridge at the Golden Gate was carried.

OFFICERS. Governor, C. C. Young; Lieutenant-Governor, H. L. Carnahan; Secretary of State, Frank C. Jordan; Treasurer, Charles G. John-

son; Comptroller, Ray L. Riley; Attorney-General, U. C. Webb; Adjutant-General, Richard R. Mittelstaedt; Superintendent of Public Instruction, Vierling Kersey; Director of the Department of Agriculture, G. H. Hecke.

JUDICIARY. Supreme Court: Chief Justice, William H. Waste; Associate Justices, William H. Langdon, John W. Preston, Jesse W. Curtis, Emmet Seawell, John E. Richards, John W. Shenk.

CALIFORNIA, UNIVERSITY OF. A coeducational institution of higher learning in Berkeley, Calif.; founded in 1868. Branches are found in various parts of the State: University of California in Los Angeles, with the colleges of letters and science, and education; branch of the college of agriculture in Davis; citrus experiment station and graduate school of subtropical horticulture in Riverside; Scripps Institution of Oceanography in La Jolla; Lick Observatory on Mount Hamilton; and agricultural stations at Kearney Vineyard near Fresno, near San José, and in the Imperial Valley. The number of full-time resident students in courses leading to degrees on Nov. 1, 1930, was 17,322, of whom 8832 were men and 8490 were women. The enrollment in the university extension division in 1929-30 was 39,196 in classes and 4790 in correspondence courses. The 1930 summer session enrollment totaled 8545. At the beginning of the autumn term, there were approximately 2000 members on the regular teaching staff and 100 on the extension staffs. The endowment funds for 1929-30 amounted to \$15,222,684, while the income from them was \$693,944. The total income for the year was \$16,154,867. The library contained approximately 1,150,000 bound volumes.

During 1930 there were completed on the Berkeley campus the Cowell Memorial Hospital, costing \$500,000; Giannini Hall for the college of agriculture, costing \$500,000; a new power plant, costing \$400,000; and International House, the gift of John D. Rockefeller, Jr., costing \$1,800,000. Three buildings for the new college of engineering group, to cost approximately \$500,000, were under construction; and about 13 acres of residence property were added to the campus, the buildings being razed for a recreational area development. In Los Angeles, the new campus with its five buildings costing \$325,000 were dedicated. There were also under construction Kerckhoff Hall, a student union building costing \$600,000 and a mechanics arts building costing \$100,000.

The sixth annual session of the Institute of International Relations was held at the International House on the Berkeley campus Aug. 8-15, 1930. The list of speakers included: Dr. W. J. Hinton, director of research of the Institute of Bankers, London, on "The Unity of British Imperial Interests in the Pacific"; Tamon Mayeda, editor of *Asahi Shimbun*, Tokyo, on "Japan in the Current of World Affairs"; Prof. J. J. L. Duyvendak of the University of Leyden on "Dutch Colonial Administration in the Far East"; Dr. P. C. Chang of Tsing Hua College, China, on "The Present Condition of Chinese Social and Political Life"; Dr. Jacob Viner of the University of Chicago on "Problems of Commercial Policy in the Pacific Area"; Rear Admiral W. C. Cole, U. S. N., on "Naval Strategy and the Web of Pacific Trade"; and Dr. Edwin M. Borchard of Yale University on "New Aspects of the Codification of International Law." Robert Gordon Sproul, B.S., LL.D., became president of the University of

California on July 1, 1930, succeeding William Wallace Campbell, who retired as president emeritus.

CALIFORNIA INSTITUTE OF TECHNOLOGY. An institution for collegiate and graduate instruction and research in the pure and applied sciences, in Pasadena, Calif.; founded as Throop Polytechnic Institute in 1891. Since the World War the progress of the institute has been rapid, including the erection of the Gates Chemical Laboratory, the Norman Bridge Laboratory of Physics, the High-Potential Research Laboratory, a laboratory of steam engineering, an engineering research laboratory, a seismological laboratory, the Daniel Guggenheim Graduate School of Aeronautics, and the William G. Kerckhoff Laboratories of Biology. The institute has no president, the administration centring in an executive council of eight, of which Robert A. Millikan, Ph.D., LL.D., Sc.D., is chairman.

CALKINS, MARY WHITON. An American psychologist and educator, died in Newton, Mass., Feb. 26, 1930. She was born in Hartford, Conn., Mar. 30, 1863, and was graduated from Smith College in 1885, receiving the M.A. degree from the same institution two years later. After a year of graduate study at Clark University she was appointed, in 1891, instructor in philosophy and psychology at Wellesley College and later professor of these subjects. As a psychologist, she not only contributed to the study of dreams, association, time and space experience, and numerous other problems, but developed the theory of personalistic or self psychology, summed up in the statement that "every idea is the experience of a self who is conscious." As a philosopher, she was said to be the first woman in the entire history of philosophy to achieve distinction. Her work in this field also centred about the importance of the self, or the idealistic view of mind. Building on the foundation of absolute idealism laid by Prof. Josiah Royce, of Harvard, she elaborated the view that the universe is completely mental in nature and that every mental existent is either a self or a part, aspect, phase, or process of a self. The Litt.D. degree was conferred on her by Columbia University in 1909 and the LL.D. degree by Smith College in 1910. She was a past president of the American Psychological Association and of the American Philosophical Association, and in 1928 was elected an honorary member of the British Psychological Association. Her works include: *An Introduction to Psychology* (1901); *Der doppelte Standpunkt in der Psychologie* (1905); *The Persistent Problems of Philosophy* (1907); *A First Book in Psychology* (1909); and *The Good Man and the Good* (1918).

CALLENDAR, HUGH LONGBOURNE. An English physicist, died Jan. 21, 1930. He was born at Hatherop in 1863 and was educated at Trinity College, Cambridge University, becoming a fellow there in 1886. During 1893-98 he was professor of physics at McGill University in Montreal, after which he returned to England as professor at University College in London. In 1902 he became professor of physics at the Imperial College of Science, an affiliation continued until his death. By his research in the measurement of heat, Professor Callendar set new standards of accuracy for physical and engineering measurements. In 1886 he communicated to the Royal Society his work on a platinum resistance thermometer, and he continued his researches

in temperature measurement at the Cavendish Laboratory until 1893, with the result that the applications of his thermometer are useful both to the research worker and to the engineer concerned with heat regulation in industrial operations. In 1928 he published a table of experimental values of steam up to and beyond critical pressure. Other publications are *Law of Condensation of Steam* (1898) and *The Imperial College of Science*, London (1904). He was elected a fellow of the Royal Society in 1899, and in 1906 was awarded the society's Rumford Medal. In 1920 he was made Commander of the Order of the British Empire.

CAMBODIA. A French protectorate constituting one of the five component states of French Indo-China. Area, 67,550 square miles; population at the census of 1928, 2,602,573, of whom 1953 were Europeans (excluding military forces). Phnôm-Penh, with a population of 83,079, is the capital and chief town. There are 282 French schools. The soil is fertile, but only a comparatively small area is under cultivation. The chief product is rice, its annual export amounting to about 250,000 tons. Other products include cotton, pepper, kapok, tobacco, rubber, silk, salt fish, hides, cattle, coffee, sugar, and iron. Imports in 1927 totaled 64,641,018 francs (68,009,173 in 1926) and exports, 23,500,000 francs (26,253,000 in 1926). The budget for 1930 balanced at 13,386,000 piastres, including 728,000 piastres appropriated for the use of the king and princes (the piastre was stabilized at 10 French francs, equal to \$0.392, on May 31, 1930). In 1928 there were 1009 miles of surfaced roads in the country. Executive authority is exercised by a French Resident-Superior, who acts through the native king. King in 1930, Sisowathmonivong (crowned July 22, 1928); Resident-Superior, A. Le Fol. Cambodia is famous for its ruins of ancient civilizations, particularly those of Angkor. See FRENCH INDO-CHINA.

CAMEROON, kâ'm-e-rōon, or CAMEROONS. The former German territory of Kamerun on the Gulf of Guinea, West Africa, bounded on the north by Nigeria and on the east and south by French Equatorial Africa and Spanish Guinea. Occupied by French and British troops in 1916, it was divided between the two nations in 1919 under mandates of the League of Nations.

FRENCH CAMEROON. France received an area of 166,489 square miles, in addition to 107,270 square miles ceded to Germany in 1911 and later incorporated in French Equatorial Africa. The population of the French portion in 1928 was estimated at 1,900,000, including 2009 Europeans. In 1928 there were 92 government schools, with 16,659 students, and 38 private schools. Tobacco, almonds, palm oil, timber, rubber, cacao, and ivory are the chief products. Imports (1928) totaled 207,727,000 francs, and exports, 155,297,000 francs. The general budget for 1929 balanced at 63,041,485 francs; the special railway budget amounted to 21,766,000 francs. Highways extended 2437 miles and railroads, 292 miles. Yaoundé is the seat of administration. Commissioner in 1930, M. Marchand.

BRITISH CAMEROON. The British portion, extending along the Nigerian frontier from the sea to Lake Chad, has an estimated area of 34,236 square miles and an estimated population of 700,050. Imports in 1928 totaled £320,605 and exports, £386,460. For 1926-27 the revenue was £90,224 and expenditure, £126,306. Since then the budget

has been incorporated with that of Nigeria. A total of 237 vessels entered the port of Victoria in 1928. The Governor of Nigeria is administrator of the territory. See NIGERIA.

CAMP FIRE GIRLS. An organization primarily for the adolescent girl. Its purpose is to "seek beauty, give service, pursue knowledge, be trustworthy, hold on to health, glorify work, and be happy." The programme evolved to carry out these aims has been planned to take care of the out-of-school time of girls. It makes use of symbolism, ceremony, and ritual and includes practically every wholesome activity which would naturally engage the interest of the young girl. Each girl, upon joining, selects a name for herself which expresses some ambition or ideal.

The activities of Camp Fire are grouped under the seven crafts, which form the basis of the system of honors and awards: Home, health, hand, camp, nature lore, business, and patriotism and citizenship. Distributed among these crafts are about 700 honors which the girl may earn as steps toward the winning of the three progressive ranks. The rank of wood gatherer typifies loyalty to organization and group; of fire maker, the ideal of wider loyalty to mankind and God; and of torch bearer, the highest rank, the desire to pass on undimmed to others that light which has been given to her. All symbolize the taking on of certain responsibilities and the carrying out of certain desires.

As a special project for 1930, Camp Fire girls studied Indian lore, their attention being particularly engaged with the Indians of their own localities. They made beautiful handwork, decorated with designs based on Indian symbolism; gathered together interesting exhibits of Indian relics and handicraft; and gave and sponsored programmes which had as their inspiration In-

normal schools or conducted independently. There was a registered enrollment of 2716, with 1951 graduates. During the summer of 1929, 20,000 Camp Fire girls attended more than 110 class-A camps (camps having an attendance of 25 or more), while thousands of others went camping in small groups with their leaders.

At the National Council of Camp Fire Girls, which met in Worcester and Boston, Mass., Sept. 4-7, 1930, Mrs. Lida Foote Tarr was elected president; Miss Florence Hughes, first vice president; Dr. Joseph E. Rayercroft, second vice president; Dr. Jay B. Nash, third vice president; Dr. Myron T. Scudder, treasurer. Lester F. Scott was secretary and national executive. The organization publishes *Everygirl's*, a monthly magazine for girls, and *The Guardian*, a programme resource for leaders, which is published monthly except during July and August. The national headquarters are at 41 Union Square, New York City.

CANADA. A dominion of the British Empire in North America, bounded on the north by the Arctic Ocean, on the south by the United States, and on the east and west by the Atlantic and the Pacific oceans, respectively. Capital, Ottawa.

AREA AND POPULATION. The total land area of Canada, revised according to the Labrador Boundary Award of 1927, is estimated at 3,504,688 square miles, of which 560,000 square miles is suitable for agricultural or pastoral purposes. The water area is about 180,035 square miles. Canada consists of nine provinces, each with its own parliament and administration, and two territories, viz., the Northwest Territories and Yukon Territory, each under a commissioner, assisted by a council.

The following table shows the areas of the provinces, etc., with the population at recent censuses:

AREA AND CENSUS POPULATIONS OF CANADIAN PROVINCES

| Province | Land area sq. miles | Water area ^a sq. miles | Total area sq. miles | Population, 1901 | Population, 1911 | Population, ^b 1921 |
|----------------------------|------------------------|--------------------------------------|-------------------------|---------------------|---------------------|----------------------------------|
| Prince Edward Island | 2,184 | ..... | 2,184 | 103,259 | 93,728 | 88,615 |
| Nova Scotia | 20,743 | 685 | 21,428 | 459,574 | 492,338 | 523,837 |
| New Brunswick | 27,710 | 275 | 27,985 | 331,120 | 351,889 | 387,876 |
| Quebec | 571,004 | 23,430 | 594,434 | 1,648,898 | 2,005,776 | 2,301,199 |
| Ontario | 357,932 | 49,500 | 407,262 | 2,182,947 | 2,527,292 | 2,933,602 |
| Manitoba | 224,777 | 27,055 | 251,832 | 255,211 | 461,394 | 610,118 |
| Saskatchewan | 237,975 | 13,725 | 251,700 | 91,279 | 492,432 | 757,510 |
| Alberta | 248,800 | 6,485 | 255,285 | 73,022 | 374,295 | 588,454 |
| British Columbia | 349,970 | 5,885 | 355,855 | 178,657 | 392,480 | 524,582 |
| Yukon | 205,346 | 1,730 | 207,076 | 27,219 | 8,512 | 4,157 |
| Northwest Territories— | | | | | | |
| Franklin | 546,532 | 7,500 | 554,032 | 20,129 | 6,507 | 7,988 |
| Keewatin | 218,460 | 9,700 | 228,160 | | | |
| Mackenzie | 493,225 | 34,265 | 527,490 | | | |
| Total | 3,504,688 | 180,035 | 3,684,723 | 5,371,315 | 7,206,643 | 8,787,998 |

^a The water area given above excludes all tidal waters except that portion of the St. Lawrence River between Pont-des-Montes and the foot of Lake St. Peter in Quebec.

^b Excluding 485 members of the Canadian navy.

dian legends, music, and ceremonies. There was keen interest shown in the project throughout the country, and it was felt that the desired goal was attained, namely, an appreciation of the Indians' contribution to American civilization, both in their art and their philosophy, and correct information regarding their history, customs, and present status.

The membership of the organization in 1929 was 219,978, including 164,519 Camp Fire girls and guardians and 35,520 Blue Birds, the youngest members. During the school year of 1928-29 and the summer of 1929, 119 Camp Fire training courses were given in colleges, universities, and

The population on June 1, 1930, was estimated by the Dominion Bureau of Statistics at 9,934,500, or 137,700 more than on June 1, 1929. The 1930 population was divided by Provinces and Territories as follows: Prince Edward Island, 85,800; Nova Scotia, 553,900; New Brunswick, 423,400; Quebec, 2,734,600; Ontario, 3,313,000; Manitoba, 671,500; Saskatchewan, 882,000; Alberta, 660,000; British Columbia, 597,000; Yukon, 3700; and the Northwest Territories, 9800.

The figures include about 105,000 Indians and about 6000 Eskimos widely scattered throughout northern Canada. More than 55 per cent of the population is of British origin, 28 per cent is of

French origin, and other European stocks constitute slightly over 14 per cent. The proportion of British stock is highest in Ontario and the Maritime Provinces; of French stock, in Quebec and New Brunswick; and of other European stocks, in the Prairie Provinces.

The principal cities, with their recent populations and the census population of 1921 (in parentheses), are: Montreal, 1,098,409 in 1930 (618,506); Toronto, 585,628 in 1928 (521,893); Winnipeg, 202,377 in 1928 (179,087); Vancouver, 149,262 in 1928 (117,217); Hamilton, 123,359 in 1927 (114,151); Ottawa, 22,731 in 1928 (107,843); Quebec, 31,071 in 1927 (95,193); Calgary, 72,500 in 1928 (63,305); London, 71,310 in 1930 (60,959); Edmonton, 69,744 in 1928 (58,821); Halifax, 58,372 in 1928 (58,372); St. John, 60,000 in 1928 (47,166); Victoria, 38,750 in 1927 (38,727); Windsor, 61,095 in 1928 (38,591).

In 1928, exclusive of the Territories, there were 236,194 births, 108,939 deaths, and 74,287 marriages. The province of Quebec, which has one of the highest rates of natural increase in the civilized world, had a birth rate of 31.6 per 1000 of population in 1928, as compared with a rate for the whole of Canada of 24.5. Immigration during the fiscal year ended Mar. 31, 1930, totaled 163,288, as against 167,722 in the previous fiscal year. The 1930 arrivals were divided as follows: 64,082 from the United Kingdom; 30,727 from the United States; and 68,479 from other countries. Canadians returned from the United States during the year numbered 26,133. At the census of 1921 there were in Canada 3,389,636 Roman Catholics, 1,409,407 Presbyterians, 1,407,994 Anglicans, 1,159,458 Methodists, and 421,731 Baptists. See CANADA, UNITED CHURCH OF.

EDUCATION. Education is directly controlled by the respective Provinces (see separate articles on each Province for educational statistics). The provincially-controlled schools of seven Provinces, excluding Quebec and Ontario, in 1928 had a total enrollment of 1,384,864 pupils, of whom 1,225,972 were in the elementary grades, and 158,889 in the secondary schools. In 1927, 557,732 pupils were enrolled in the primary schools of Quebec and 700,476 in the primary and secondary schools of Ontario.

Higher education is carried on in 23 universities and 88 colleges, 50 of the colleges, most of them classical colleges or seminaries, being in the Province of Quebec. Of the universities, six (New Brunswick, Toronto, Manitoba, Saskatchewan, Alberta, and British Columbia) are state controlled; four Dalhousie, McGill, Queens, and Western) are undenominational; and the remainder are denominational. In 1927-28, there were 19,377 students in the provincially-controlled universities, 9598 in other undenominational universities, and 27,067 in denominational institutions; a total of 56,042. In the same year the 88 colleges had an enrollment of 21,786.

AGRICULTURE. Of the total land area of 1,306,320,000 acres, approximately 358,162,190 acres are suitable for agricultural purposes. In 1928 only 59,351,811 acres were under cultivation and 9,528,043 acres were in use as pasture. The gross agricultural revenue in the same year totaled \$1,730,302,000, of which field crops contributed \$1,125,003,000, while the total agricultural wealth, including the year's production, was estimated at \$8,027,299,000. For 1927, the estimate was \$8,007,948,000. The total value of field crops produced in 1929 was \$979,750,400.

The yield of the stable crops in 1930 was higher than in 1929, with the exception of hay, but in general the harvest was sub-average and prices were unusually low. The production of the chief crops in 1929, with comparative preliminary estimates for 1930, are shown in the following table:

CANADIAN CROP YIELDS, 1930 AND 1929
[Units in bushels, except as indicated]

| | 1930 | 1929 |
|----------------------|-------------------------|-------------------------|
| Wheat | 395,854,000 | 304,250,000 |
| Oats | 429,156,000 | 282,838,300 |
| Barley | 189,963,000 | 102,313,300 |
| Rye | 22,286,000 | 13,160,500 |
| Flaxseed | 4,847,000 | 2,060,400 |
| Potatoes | 47,262,000 ^a | 39,930,000 ^a |
| Hay and clover | 15,104,000 ^b | 15,835,000 ^b |

^a cwt, ^b tons.

Estimates of other crops for 1930 were: Tobacco, 36,712,700 pounds; apples, 3,165,936 barrels. The apple crop was about 1,000,000 barrels under the 1929 production, but other fruit crops had higher yields. The wheat crop is the most important single factor in the national economy. While the wheat acreage for 1929 reached a record level, the production was reduced by drought to 304,250,000 bushels, and the value of the crop declined to \$346,502,000 from \$451,235,000 in the previous year.

The total area sown to the principal field crops in 1930 was estimated at 60,464,670 acres (59,607,034 in 1929). Despite generally improved harvests, the lower prices received for grain caused a decrease in the total value of the principal grain crops in 1930 to \$631,592,900 (estimated) from \$948,981,000 in 1929 and \$1,125,003,000 in 1928. Based upon average prices received by farmers at the point of production up to the end of the year, the value of the 1930 field crops was estimated as follows: Wheat, \$174,792,000; oats, \$102,919,000; barley, \$27,784,000; rye, \$4,401,000; buckwheat, \$7,124,000; mixed grains, \$18,435,000; flaxseed, \$4,194,000; potatoes, \$39,858,000; turnips, \$18,059,000; hay and clover, \$161,122,000; alfalfa, \$19,877,000; fodder corn, \$17,142,000; and grain hay, \$21,268,000. By Provinces, the total value of 1930 crops was estimated at follows: Ontario, \$178,445,000; Saskatchewan, \$121,023,000; Quebec, \$118,917,000; Alberta, \$95,189,000; Manitoba, \$54,139,000; New Brunswick, \$17,089,000; British Columbia, \$16,447,000; Nova Scotia, \$16,284,500; and Prince Edward Island, \$11,512,000.

The yield of maple sugar in 1929 was 11,698,925 pounds, valued at \$2,162,839, and of maple syrup, 2,174,084 pounds, valued at \$3,955,817. For 1930, the estimated maple sugar output was 8,208,000 pounds, and the maple syrup production, 2,185,000 gallons. Other special crops, with the quantity and value of production, were: Sugar beets, 244,930 tons valued at \$2,041,465 in 1928; tobacco, 29,786 pounds in 1929 (41,976 in 1928); honey, about 22,489,909 pounds in 1928.

Livestock in the country in 1929 totaled 3,376,487 horses, 3,778,227 milch cows, 5,152,711 other cattle, 3,728,309 sheep, and 4,381,725 swine. The wool clip in 1929 was placed at 21,234,000 pounds, valued at \$4,247,000, as compared with 19,611,430 pounds valued at \$5,099,000 in 1928. Eggs produced in 1928 were valued at \$84,442,727. The output of creamery butter (1929) was 174,724,465 pounds valued at \$67,291,136; of factory

cheese, 118,646,039 pounds valued at \$21,388,122.

FRUIT FARMING. In Nova Scotia, New Brunswick, Ontario, and British Columbia, fruit raising is an important industry, with apples as the most important crop. Peaches, pears, plums, cherries, grapes, and small fruits are grown in abundance. The production and value of the chief fruit crops in 1928 is given by the *Canada Year Book* for 1930 as follows: Apples, 3,235,970 barrels, \$11,297,867; grapes, 69,120,000 pounds, \$2,764,800; strawberries, 11,364,740 quarts, \$1,426,990; peaches, 605,770 bushels, \$1,200,345; and cherries, 271,250 bushels, \$836,137.

FISHERIES. Besides immense salt-water fishing areas, Canada has 220,000 square miles of fresh water abundantly stocked with many varieties of food fish. The product of Canadian fisheries in 1929 had a total value of \$53,518,521, or \$1,532,452 less than in the preceding year. The lakes of the three Prairie Provinces yielded more than \$4,000,000 of the total. The chief commercial fishes caught are lobsters, halibut, whitefish, pilchards, haddock, salmon, cod, herring, sardines, pickerel, trout, and smelts. The total investment in fisheries in 1928 was \$58,072,371; 62,785 persons were engaged in fishing and 15,434 in canning and curing establishments.

FORESTS. The total stand of merchantable timber in Canada in 1929 was estimated at 224,304,000,000 cubic feet, of which 91,473,000,000 were in the Eastern Provinces, 56,826,000,000 in the Prairie Provinces, and 76,005,000,000 in British Columbia. The total area under forest amounted to 1,151,454 square miles, of which 285,574 square miles were inaccessible. In 1927 the total value of forest products was \$205,631,727; the value of wood, wood products, and paper exported in 1928-29 was \$288,621,745. See **FORESTRY**.

FUR INDUSTRY. Raw fur production for the year ended June 30, 1929, was valued at \$18,054,499, as compared with \$18,758,177 for the previous year, a decrease of 4 per cent. The steady decrease in production, due to gradual extermination of wild fur-bearing animals, is being offset partially by the extensive development of fur farming. On Jan. 1, 1927, there were in operation 3067 fox farms, with 62,619 foxes, and 313 farms for other fur-bearing animals. Pelts sold from fur farms in 1927 were valued at \$2,154,350.

MINERAL PRODUCTION. Canada contains 16 per cent of the world's known coal resources, is the chief source of supply for nickel and asbestos, and ranks third in the production of gold, silver, and aluminium, fourth in copper and lead, and sixth in zinc. Mineral production increased from \$172,000,000 in 1921 to \$307,146,000 in 1929, a gain of 78 per cent. The 1928 mineral output was valued at \$274,989,487. In 1928 there were 22 separate metallic, non-metallic, and clay products, each of which had a production valued at \$1,000,000 or over. Mineral production by Provinces in 1929 was: Ontario, \$116,526,096; British Columbia, \$67,522,557; Quebec, \$45,389,837; Alberta, \$34,652,128; Nova Scotia, \$0,890,956; Manitoba, \$4,925,403; Yukon (Territory) \$2,932,704; New Brunswick, \$2,371,137; Saskatchewan, \$1,935,676; total, \$307,145,000.

Due to the drastic reduction in mineral prices and reduced outputs of many non-metallic minerals and structural materials, the total estimated value of mineral production in 1930 was \$276,865,000, or 11 per cent less than the 1929 figure. The values of the leading mineral products in 1930 were estimated as follows: Coal,

\$53,000,000; gold, \$43,193,296; copper, \$38,687,000; nickel, \$24,449,000; sand, gravel and stone, \$16,500,000; cement, \$17,686,000; lead, \$12,992,000; clay products, \$11,000,000; natural gas, \$10,561,000; silver, \$10,057,000; zinc, \$9,393,000; asbestos, \$8,800,000; petroleum, \$5,120,000; lime, \$4,477,000; gypsum, \$2,875,000; salt, \$1,575,000.

Capital invested in the mining industry in 1928 totaled \$841,967,982, the number of employees was 89,448, and salaries and wages amounted to \$115,954,022. The prospecting and development of one of the largest unprospected mineral areas in the world was going forward in northern Canada in 1930, largely as a result of the introduction of the airplane for use in reaching isolated fields.

MANUFACTURES. In the five years ended in 1930 Canada rose to second place in the manufacture of automobiles, to third place in paper and aluminium, and to fifth in rubber. In the amount of hydro-electric energy produced, Canada ranked second among the nations in 1930. The number of kilowatt-hours of electricity generated in 1929 was 18,600,000,000 (16,336,518,000 in 1928), and the turbine horse-power capacity of water-power plants totaled 5,727,162 (5,349,232 in 1928). Projects under construction were expected to add 1,600,000 horse power in the period 1930-32.

The gross value of manufactured products for 1928 was \$3,769,850,364, distributed among the several Provinces as follows: Ontario, \$1,949,724,119; Quebec, \$1,073,162,291; British Columbia and Yukon, \$270,851,669; Manitoba, \$159,435,094; Alberta, \$100,744,401; Nova Scotia, \$84,948,608; New Brunswick, \$67,413,742; Saskatchewan, \$59,125,280; Prince Edward Island, \$4,445,160. In 1927, the gross value of the manufactured output was \$3,425,498,540. The ten leading manufacturing industries are paper and pulp, flour- and grist-mill production, slaughtering and meat packing, sawmills, butter and cheese, automobiles, electric light and power, rubber goods, cotton yarn and cloth, and sugar refineries. The capital invested in manufacturing in 1927 was estimated at \$4,337,631,558, as compared with \$3,981,569,590 in 1926, and the number of persons engaged was 618,933 (581,539 in 1926).

According to the Dominion Bureau of Statistics, production of iron and steel manufactures in Canada was valued at \$732,390,039 in 1929. This total was 20 per cent above the corresponding figure for 1928 and exceeded in value the output for any previous year excepting 1918. The outstanding gain during 1929 was made in the railway rolling stock industry with a production valued at \$126,382,788 representing an increase of \$52,960,731 over the value of production in 1928. The automobile industry advanced by \$14,448,098 to \$177,315,593 and the auto parts group showed a gain of \$16,458,287 to \$33,465,444, although this gain was partially due to the inclusion of body and engine plants formerly included under automobiles. The 1929 production of steel was 1,379,688 tons, or 11 per cent above the 1928 figure. Pig iron production reached a new high level of 1,090,244 long tons (1,037,535 long tons in 1928). For 1930, production of steel at 1,011,743 tons was 26.6 per cent less than in the record year 1929. In 1930, production included 957,430 tons of ingots and 54,313 tons of castings, with 95 per cent intended for sale. Production of pig iron in Canada in 1930 at 747,448 long tons was

30.8 per cent below the record for the industry established in 1929.

The output in 1929 of chemical and allied products totaled \$168,598,892, or 14 per cent more than in 1928, according to a preliminary estimate. The sulphuric acid production was 110,749 tons, valued at \$1,375,599. For the year ended Mar. 31, 1930, cigarettes manufactured in Canada totaled 5,035,878,655 and the revenue collected from the excise on cigarettes was \$30,223,822.

Unemployed workers in Canada in August, 1930, were estimated at 150,000. Steps were taken by the Canadian Government to relieve the situation (see below under *History*).

INVESTMENTS. The Royal Bank of Canada estimated the foreign capital invested in Canada in June, 1930, at \$6,150,000,000, including \$3,650,000,000 from the United States, \$2,250,000,000 from Great Britain and \$250,000,000 from other countries. In 1928 and 1929, it was estimated, foreign capital entered Canada at the rate of \$10,000,000 a month. Canadian investments in foreign countries increased from \$800,000,000 in 1920 to \$1,800,000,000 in June, 1930, of which \$1,000,000,000 were invested in the United States, \$100,000,000 in Great Britain, and \$700,000,000 in other foreign countries.

BUSINESS CONDITIONS. The short wheat crop in 1929 and the low prices received for it, together with the estimated depreciation of \$5,000,000,000 suffered by Canadian listed and unlisted stocks in fall of 1929, induced caution in business circles during 1930. Grain prices continued to decline during 1930 due to accumulating surpluses and diminished export demand; in December, wheat sold at between 52 and 53¼ cents a bushel, the lowest level recorded since organized trading in the commodity began. The industrial depression had important repercussions in Canadian politics and at the Imperial Conference of 1930. See below under *History* and GREAT BRITAIN under *History*. The volume of business in 1930 was about 20 per cent below that of 1929.

COMMERCE. Preliminary figures for the fiscal year ended Mar. 31, 1930, placed total imports at \$1,248,273,582, as compared with \$1,265,679,091 in 1928-29, and total exports at \$1,144,938,070, as compared with \$1,388,733,075 in the previous year. The decrease for the year in the total value of trade was \$261,363,514, of which \$17,405,509 represented a drop in imports, \$243,451,370 a decrease in domestic exports, and \$506,635 a decline in reexports. The value of imports and exports by industrial groups in 1928-29 and 1929-30 is shown in the accompanying table compiled from the *Canada Year Book* for 1930.

During the calendar year 1929 merchandise imports were valued at \$1,298,944,000, or 6.2 per cent more than in 1928, while exports totaled \$1,208,375,000, or 11 per cent less than the 1928 export total of \$1,349,751,000. Imports from the United States in the calendar year 1929 reached \$893,607,000, a gain of 8 per cent over 1928. Exports to that country totaled \$522,585,000 or 6 per cent more than in the previous year. Of the \$68,000,000 increase in imports from the United States, about \$14,000,000 was accounted for by larger iron and steel imports, about \$12,000,000 by a 58 per cent gain in electrical apparatus imports, and some \$6,000,000 by 57 per cent increase in copper imports. Petroleum imports increased by \$15,000,000, chemical imports by \$2,000,000, or 7 per cent, and vegetable imports by \$2,000,000 or 25 per cent. In the same calendar year imports

CANADIAN FOREIGN TRADE BY INDUSTRIAL GROUPS

| IMPORTS | 1928-29 * | 1929-30 * |
|---|------------------------|------------------------|
| Agricultural products .. | \$233,130,244 | \$227,048,817 |
| Animal products | 71,661,754 | 69,853,833 |
| Fibres, textile products .. | 206,444,044 | 185,241,252 |
| Wood products, paper .. | 59,214,818 | 60,951,077 |
| Iron and its products .. | 346,610,939 | 316,878,627 |
| Non-ferrous metals ... | 75,438,431 | 87,950,252 |
| Non-metallic minerals ... | 166,964,231 | 186,496,388 |
| Chemicals | 37,723,046 | 39,907,503 |
| Miscellaneous | 68,491,584 | 73,945,833 |
| Total imports | \$1,265,679,091 | \$1,248,273,582 |
| Total dutiable imports \$ | 821,075,430 | \$ 819,230,474 |
| Total free imports .. | 444,603,661 | 429,043,108 |
| Duty collected | \$ 200,479,264 | \$ 199,011,628 |
| EXPORTS | | |
| Agricultural products . \$ | 646,514,058 | \$ 384,635,751 |
| Animal products | 158,757,272 | 133,009,145 |
| Fibres, textile products .. | 9,678,019 | 9,066,226 |
| Wood products, paper .. | 288,621,745 | 289,566,675 |
| Iron and its products .. | 82,256,717 | 78,589,580 |
| Non-ferrous metals ... | 112,655,194 | 154,319,429 |
| Non-metallic minerals .. | 27,401,790 | 28,545,096 |
| Chemicals | 19,438,064 | 22,468,462 |
| Miscellaneous | 18,263,813 | 20,057,938 |
| Total domestic exports | \$1,363,586,672 | \$1,120,258,302 |
| Total foreign exports | 25,186,403 | 24,679,768 |
| Total exports | 1,388,733,075 | 1,144,938,070 |
| Grand total external trade | \$2,654,452,166 | \$2,393,211,652 |

* Fiscal years ending March 31.

from the United Kingdom increased by 2 per cent, imports from Germany, 11 per cent; from Japan, 4 per cent; and those from France decreased by 6 per cent.

The export gains in trade with the United States were registered chiefly in shipments of metals and newspaper. The small wheat crop was chiefly responsible for a 35 per cent drop in exports to the United Kingdom. Exports to other European countries also declined. The estimated value of foreign trade in 1930 fell off \$580,000,000, or 22 per cent, from 1929, the adverse balance of trade being estimated at \$98,467,000.

The accompanying figures showing imports and exports for the years 1924-25 to 1929-30 indicate the steady growth of imports as compared to exports.

CANADIAN IMPORTS AND EXPORTS, 1924-25 TO 1929-30

| Year ended March 31 | Total exports | Imports for home consumption |
|------------------------|-----------------|---------------------------------|
| 1924-25 | \$1,081,361,643 | \$ 796,932,537 |
| 1925-26 | 1,328,700,137 | 927,328,732 |
| 1926-27 | 1,267,573,142 | 1,030,892,505 |
| 1927-28 | 1,250,456,297 | 1,108,956,466 |
| 1928-29 | 1,388,773,075 | 1,265,679,091 |
| 1929-30 | 1,144,938,070 | 1,248,273,582 |

Canada's total trade, including visible and invisible items, in the calendar year 1929 was estimated at nearly \$4,000,000,000, with an unfavorable balance of about \$83,000,000. Forty per cent of the total consisted of so-called invisible items. Items of this category which showed debit balances were freight payments, \$38,000,000; interest, \$216,000,000; non-commercial remittances, \$9,000,000; and motion picture royalties, \$4,000,000. Items registering credit balances were ship-

ments of gold and subsidiary coin, \$47,000,000; tourist expenditures, \$188,000,000; insurance transactions, \$23,000,000; advertising, \$4,000,000; electrical energy, \$4,000,000; and capital of immigrants and emigrants, \$1,000,000. The Dominion Bureau of Statistics estimated tourist expenditures in Canada in 1929 at \$299,188,000, as compared with \$266,393,000 in 1928, \$230,223,000 in 1927, and \$83,734,000 in 1920. Of the total 1929 expenditures, \$288,500,000 was attributed to visitors from the United States. Expenditures by Canadian tourists abroad in 1929 were placed at \$111,301,000, of which over \$91,000,000 were spent in the United States. In 1930, American tourists spent nearly \$325,000,000 in Canada.

The leading countries participating in trade with Canada in 1928 and 1929, with respective trade totals, are given in the accompanying table.

CANADIAN TRADE BY PRINCIPAL COUNTRIES (Thousands of Canadian dollars)

| EXPORTS * AND REEXPORTS | | | |
|----------------------------|---------|---------|--|
| | 1927-28 | 1928-29 | |
| United States | 478,004 | 500,168 | |
| United Kingdom | 410,691 | 429,780 | |
| Germany | 42,244 | 46,709 | |
| Netherlands | 35,588 | 44,367 | |
| Japan | 32,968 | 42,100 | |
| Belgium | 20,782 | 27,301 | |
| China | 13,432 | 23,687 | |
| Italy | 18,743 | 23,025 | |
| Australia | 14,189 | 19,470 | |
| New Zealand | 11,367 | 17,858 | |
| France | 9,946 | 16,131 | |
| British West Indies | 14,901 | 15,758 | |
| Argentine Republic | 11,086 | 14,493 | |
| British East Indies | 13,915 | 19,610 | |
| British South Africa | 8,725 | 12,232 | |
| Greece | 4,282 | 11,851 | |
| Newfoundland | 11,661 | 11,161 | |
| IMPORTS * FOR CONSUMPTION | | | |
| United States | 719,436 | 868,056 | |
| United Kingdom | 185,896 | 194,021 | |
| France | 26,474 | 26,216 | |
| Germany | 17,056 | 20,798 | |
| British West Indies | 17,349 | 15,233 | |
| British East Indies | 14,437 | 14,913 | |
| Japan | 12,505 | 12,921 | |
| New Zealand | 8,262 | 12,771 | |
| Belgium | 9,898 | 12,015 | |
| Netherlands | 8,794 | 9,017 | |
| Switzerland | 8,596 | 7,917 | |
| Argentine Republic | 9,850 | 7,427 | |
| Colombia | 7,580 | 6,849 | |
| Fiji | 4,318 | 5,698 | |
| Cuba | 5,587 | 4,904 | |
| British Guiana | 6,072 | 4,873 | |
| Peru | 5,216 | 4,448 | |

* Excluding coin and bullion.

FINANCE. For the fiscal year ended Mar. 31, 1930, the total of estimated actual revenues was \$447,322,000, a decrease of \$14,325,024 from the previous fiscal year, while the estimated actual expenditures amounted to \$402,815,000, an increase of \$22,513,504. Ordinary revenue, estimated at \$440,306,000, decreased \$14,157,874, while ordinary expenditure, amounting to \$360,050,000, increased \$9,097,076 over 1928-29. The surplus for the year was \$44,507,000. General revenues and expenditures in the Consolidated Fund for the years 1924-25 to 1929-30 are shown in the accompanying table compiled by the Dominion Bureau of Statistics.

The chief items of general revenue for 1929-30, with comparative figures for 1928-29 in parentheses, are as follows: Customs, \$179,430,000 (\$187,206,000); excise, \$65,036,000 (\$63,683,000); Post Office, \$33,345,000 (\$30,612,000); excise taxes, \$63,409,000 (\$83,009,000); and income tax, \$69,021,000 (\$59,422,000). The Mont-

CANADIAN PUBLIC FINANCE, 1925-30 * (Thousands of Canadian dollars)

| Fiscal year ended March 31, | Revenue | Expenditure | Grand Total |
|--------------------------------|-------------------|-------------------|----------------|
| | Total Ordinary | Total Ordinary | |
| 1925 | 351,515 | 318,892 | 351,170 |
| 1926 | 382,893 | 320,660 | 355,186 |
| 1927 | 400,453 | 319,548 | 358,556 |
| 1928 | 429,701 | 336,168 | 378,717 |
| 1929 | 455,464 | 350,953 | 388,806 |
| 1930 | 445,952 | 357,780 | 398,212 |

* Consolidated Fund figures do not include special receipts and expenditures. In 1929-30 special receipts amounted to \$1,370,000 and special expenditures to \$4,603,000.

real district reported a \$3,409,000 increase in income-tax receipts for the year and Toronto an increase of \$2,298,000. The budget estimate for expenditure in 1929-30 was \$404,245,000 and in 1930-31, \$399,358,000. The decrease for 1930-31 was due to the decrease in interest on the public debt and in amounts required for immigration, and ocean and river services. The 1930-31 appropriations for aviation, public works, and the Post Office and marine departments all showed increases. In the first eight months of the 1930-31 fiscal year, the Federal surplus of \$14,507,000 was converted into a deficit of \$23,500,000.

The unmatured funded debt outstanding Mar. 31, 1930, totaled \$2,195,000,000, representing a reduction, since the net debt reached its maximum in 1923, of \$227,000,000, or 9 per cent. In the same period, 1923-30, the per capita interest on the debt dropped from \$15.18 to \$11.25. The service on the debt during 1929-30 amounted to \$122,000,000, as against \$125,980,000 in 1928-29. The national wealth in 1929 was estimated at \$29,000,000,000, as compared with \$7,000,000,000 in 1900 and \$27,668,000,000 in 1927.

SHIPPING. On Jan. 1, 1929, vessels under Canadian registry numbered 8645 of 1,306,074 net tons. For the fiscal year ended Mar. 31, 1929, sea-going vessels entering Canadian ports numbered 22,531 of 27,464,158 net registered tons and those clearing totaled 22,895, of 26,944,369 net registered tons. In the same year, 95,047 ships of 49,046,588 net registered tons entered the coast-wise trade and 93,905 of 48,007,097 tons cleared. Including vessels on rivers and lakes, the total number of ships entering Canadian ports was 154,898 of 95,498,497 tons and the total departing was 155,237 of 95,290,415 tons. Vessels on rivers and lakes brought the total tonnage entered to 95,498,497, as compared with 86,368,065 in 1927-28, and the total tonnage cleared to 95,290,415, as against 86,963,348 in 1927-28.

RAILWAYS. The single-track mileage of Canadian steam railways in 1929 totaled 41,323 miles, of which 22,468 miles represented lines of the Canadian National Railways, operated by the government (excluding the Central Vermont Railway, 420 miles, and the Thousand Island Railway, 4.6 miles). The Canadian Pacific Railway was the chief private system, with a single-track mileage of 14,417 miles. In the calendar year 1929, all steam railways carried a total of 39,446,000 passengers (40,592,792 in 1928), and 137,425,000 tons of freight (141,230,026 in 1928). The total earnings were about \$533,501,000 (\$563,732,260 in 1928) and the total expenses were \$433,168,000 (\$442,701,270 in 1928). The decline in railway operations recorded in 1929 continued in 1930. The total revenue freight loaded between Jan. 1 and July 5, 1930, amounted to 1,583,728 cars, or 10.5 per cent below the total for the correspond-



Photo Keystone View Co., N. Y.

WILLIAM LYON MACKENZIE KING

Prime Minister, Secretary of State for External Affairs,
1926-1930



Photo Keystone View Co., N. Y.

RICHARD B. BENNETT

Prime Minister, Secretary of State for External Affairs,
Appointed Aug. 8, 1930

ing period in 1929. The ballasting of the Hudson Bay Railway, which reached Churchill in 1929, and improvements upon the port at Churchill were expected to delay the opening of that route for regular commercial traffic until the fall of 1931. In March, 1930, work was begun on the new \$50,000,000 Canadian National Terminal in Montreal. The plans called for the expenditure of \$10,000,000 annually for five years. On Sept. 30, 1930, the Canadian Pacific inaugurated passenger service into Prince Albert, Sask., over a newly completed line north from Lanigan. A total of 385 miles of new railway line were completed in 1930, as compared with 841 in 1929.

OTHER COMMUNICATIONS. Of the 381,976 miles of highway in Canada on Jan. 1, 1929, 7723 miles were hard surfaced, 56,393 miles were graveled, 140,541 miles were improved earth roads, and 177,316 miles were unimproved. It was estimated that in 1930 more than \$87,000,000 was spent on highway construction and maintenance, of which \$57,000,000 was spent by the Provincial Governments and about \$30,000,000 by counties and townships. In 1928, there was in Canada one motor vehicle for every nine of its population, as compared with one for every 4.9 of the population in the United States. Completion of the trans-Canada highway at Dominion expense was promised by Premier Bennett in August, 1930. The cost of remaining construction was estimated at \$50,000,000. The King Government had cut off the subsidies formerly advanced to the Provinces to carry on construction.

Planes of Canadian airlines in 1929 flew 6,284,079 miles, carrying a total of 124,751 passengers, 3,903,908 pounds of freight and express, and 430,636 pounds of mail. Comparative figures for 1930 were: Total mileage 4,350,970; passengers carried, 55,961; freight and express, 1,449,337 pounds.

For the calendar year 1928, there were 53,777 miles of telegraph line, the gross revenue for the year being \$14,740,641 and the operating expenses \$11,647,063. The telephone wire mileage at the end of 1928 was 3,982,867 miles, the number of telephones, 1,334,534; total revenue, \$61,791,333; operating expenses, \$51,542,544. The number of wireless and radio stations on Mar. 31, 1929, was 298,644, including 297,398 amateur broadcasting stations.

GOVERNMENT. Executive power is exercised in the King's name by the Governor-General of Canada, acting through a responsible ministry or cabinet. Legislative power is in a Parliament of two Houses: a Senate and a House of Commons, the former consisting of 96 members appointed for life and the latter of 245 members in accordance with the distribution act of 1924, elected for five years (unless sooner dissolved) by popular vote, including woman suffrage. Women are eligible for election to Parliament. The Governor-General in 1930 was Viscount Willingdon. As a result of the election of Sept. 14, 1926, the House of Commons was composed of the following parties: Liberals, 120; Conservatives, 92; Liberal-Progressives, 10; United Farmers of Alberta, 11; Progressives, 9; Labor, 3; and Independent, 2. The cabinet as formed on Sept. 25, 1926 was as follows: Prime Minister, Secretary of State for External Affairs, William Lyon Mackenzie King; Finance and Receiver General, Charles A. Dunning; National Defense, Col. J. L. Ralston; Postmaster General, Peter J. Veniot; Soldiers' Civil Reestablishment and Pub-

lic Health, James H. King; Justice and Attorney-General, Ernest Lapointe; National Revenue, W. D. Euler; Marine and Fisheries, Pierre J. A. Cardin; Secretary of State, Fernand Rinfret; Railways and Canals, Thomas A. Crerar; Interior, Indian Affairs, and Mines, Charles Stewart; Agriculture, William R. Motherwell; Public Works, John C. Elliott; Trade and Commerce, James Malcolm; Solicitor General, Lucien Cannon; Immigration and Colonization, Robert Forke; Labor, Peter Heenan; Minister without Portfolio, Senator Raoul Dandurand.

HISTORY

Of preëminent importance among the developments of 1930 was the national election of July 28, which ended nearly a decade of Liberal rule and launched the Dominion upon a new course under the Conservative leadership of Premier Richard B. Bennett.

The defeat of the Liberals under Premier Mackenzie King was sensational and overwhelming. Their representation in the House of Commons was reduced from 120 to 89, while the Conservative membership increased from 92 to 139, out of a total of 245, giving the latter party a clear working majority. In seven of the nine Provinces, the Conservatives emerged with handsome majorities. For the first time since the conscription issue of 1917 transformed Quebec into a citadel of Liberal strength they made a substantial impression, winning 25 out of the 65 seats allotted to that Province. The Conservative appeal failed only in Nova Scotia and British Columbia, where Liberal gains reduced the Conservative representation from 12 to 10 and from 12 to 7, respectively. The Conservatives also shattered the Liberal monopoly of power in the Prairie Provinces, gaining 11 seats in Manitoba, 7 in Saskatchewan, and 3 in Alberta. In Ontario, where larger gains were expected, the Conservatives won six districts in addition to the 53 previously held. The defeat at the polls of five of Premier Mackenzie King's Ministers emphasized the sweeping character of the Conservative victory. The composition of Parliament following the election was: Conservatives, 139; Liberals, 89; Progressives, 12; Labor, 3; Independents, 2. None of the eight Communist candidates polled a substantial vote.

CONSERVATIVE CABINET. On the day following the election, the Ministry of Premier Mackenzie King resigned. The Conservative Ministry, sworn in on August 7, was composed as follows: Prime Minister, President of the Privy Council, Secretary of State for External Affairs, and Minister of Finance, Richard B. Bennett; Minister of Fisheries, E. N. Rhodes; Labor, Senator Gideon Robertson, Justice and Attorney General, Hugh Guthrie; Trade and Commerce, H. H. Stevens; Railways and Canals, R. J. Manion; National Revenue, E. B. Ryckman; Postmaster General, Arthur Sauve; Pensions and National Health, Colonel Murray MacLaren; Public Works, H. A. Stewart; Secretary of State, C. H. Cahan; National Defense, D. M. Sutherland; Marine Alfred Duranleau; Interior and Superintendent of Indian Affairs, Thomas G. Murphy; Solicitor General, Maurice Dupre; Immigration and Colonization, and Mines, W. A. Gorden; Agriculture, Robert Weir; Ministers without Portfolio, Sir George H. Perley and J. A. MacDonald.

CAMPAIGN ISSUES. The significant tendencies of Canada's political development seen in the Conservative triumph were: (1) the drift toward a

nationalist policy of tariff protection for Canadian industries and away from imperial preference, except on a strictly reciprocal basis; and (2) the termination of the exclusive affiliation of the Roman Catholic Church and the French population of Quebec with the Liberal party, long deplored as a menace to the growth of a united Canada.

The main issue of the election, however, was the economic depression and the accompanying unemployment, for which the electorate evidently held the Mackenzie King Government responsible. With the exception of a few months in 1926, the Liberals had been in office since 1921. The most effective complaint raised against them was that they had no policy to remedy unemployment and that they had not brought lasting prosperity. In Quebec and Manitoba, where unemployment and trade depression were particularly acute, the Liberals suffered their heaviest losses. The Government's trade agreement with New Zealand, under which the sister Dominion dumped large quantities of state-subsidized butter on the Canadian market, antagonized the agricultural population and alienated much support.

The issue of imperial preference and of tariff retaliation against the United States was relegated to second place, much against the will of the Liberals. In the Dunning tariff (see below), the Liberals had imposed countervailing duties upon products imported from countries which taxed imports of similar Canadian products, while imports from the United Kingdom were granted a preferential rate. The Liberal campaign slogan was "Let Uncle Sam go his own way; our way is with John Bull." The Conservatives took the position that they would extend preferential tariff rates to Great Britain only in return for reciprocal concessions and that they would go much further than the Liberals in protecting Canadian industry against the competition of American and other foreign manufactures. On the tariff issue, the Conservatives appealed to the strongly protectionist French population in Quebec and particularly to the French Independent Nationalists, headed by Henri Bourassa. As Canada was the best customer of the United States, the campaign was followed with close interest in that country.

CONSERVATIVE LEGISLATION. One of the first acts of the Bennett Government was to call a special session of Parliament (September 8 to 22) to pass emergency unemployment and tariff legislation. A public works appropriation of \$20,000,000 was voted as an unemployment relief measure. The appropriation was to be supplemented by a similar amount from the Provinces, substantial contributions by municipalities, and approximately \$21,000,000 by the railways, making a total of between \$80,000,000 and \$90,000,000 in public outlays, which it was planned to release for expenditure within the succeeding 12 or 18 months. In connection with railway construction programmes, the Dominion Government agreed to pay interest estimated at \$1,600,000 in order that projects costing about \$20,000,000 and originally planned to cover a period of four years, might be undertaken at once. Of the total Dominion appropriation, \$4,000,000 was set aside for direct unemployment relief. Unemployment relief expenditures actually approved by the Federal Government up to November 5 totaled \$37,000,000, of which \$14,000,000 was to be expended by seven of the Provinces and the Yukon Territory,

\$11,514,000 by the Canadian Pacific Railway Company, \$11,139,650 by the Canadian National Railways, and \$500,000 out of the grade-crossing fund. As a further stimulus to employment, the Minister of Immigration on August 15 ordered the restriction of immigration from Europe.

The tariff revision effected by the special session carried out the Conservative election promises. Import duties on about 125 classes of goods, including textiles, shoes, paper, agricultural implements, cast-iron pipe, fertilizers, electrical apparatus, household equipment, gasoline, jewelry, and meats, were increased. The new rates became effective provisionally on September 17 and were finally adopted by Parliament, with certain modifications, on September 22. Important changes in the customs laws were also inaugurated.

The new tariff continued the practice of dividing the tariff schedules into three classes. A comparatively low preferential rate was fixed on certain classes of British goods, an intermediate rate on imports from countries granting reciprocal tariff concessions to Canada, and a high general rate on imports from countries granting no tariff concessions, such as the United States. In some instances the preferences granted Great Britain were less than those accorded in the Dunning tariff, sponsored by the Liberals. On the other hand, some British goods, such as agricultural machinery, were placed on the free list, while the general duty was increased. The changes in the customs laws were intended primarily to prevent dumping on the Canadian market, particularly by Soviet Russia.

Premier Bennett returned from the Imperial Conference held in September without any tangible advantage for Canada, to face a rising tide of discontent in the Prairie Provinces caused by the collapse of grain prices. A resolution favoring an independent dominion in the Canadian West was adopted at a district meeting in Saskatchewan early in November. See **GREAT BRITAIN** under *History*.

THE SIXTEENTH PARLIAMENT. The fourth session of the 16th Parliament convened at Ottawa Feb. 20, 1930, and adjourned May 30. Two of the chief measures of the Liberal Government enacted into law were the Dunning tariff and an amendment to the export law prohibiting the clearance of liquor to the United States. The latter measure was adopted by a vote of 162 to 11, after Prime Minister Mackenzie King had announced that it was intended to prevent even the apparent countenancing by Canadian Government officials of smuggling operations.

The Dunning tariff, which became effective May 2 and was later ratified by Parliament, represented the most drastic revision of customs duties since 1907. It gave expression to uneasiness and resentment aroused in Canada by the high duties on many Canadian products contained in the Hawley-Smoot tariff bill, then under discussion in the United States Congress.

According to an analysis by the United States Department of Commerce, it affected, adversely in most instances, American exports to Canada aggregating between \$175,000,000 and \$225,000,000 annually. A total of 216 items were added to the free list under the British preferential tariff, favorably affecting about \$200,000,000 of British Empire trade. Thus the competition for the Canadian market between the British Empire and the United States was substantially increased.

American products adversely affected were

mainly steel manufactures, machinery, fruits, and vegetables. A countervailing duty proviso, attached to a number of items, served further to increase rates on imports from the United States. The proviso stipulated that if any country imposed higher duties on specified Canadian products than those levied by Canada on the same products imported from such country, the Canadian rates would be raised to the same level.

The same session of Parliament ratified agreements for the return to the Prairie Provinces of their natural resources (transfer was effected Oct. 1, 1930) and for the restoration to British Columbia of control of public lands in the Railway Belt and the Peace River Block. Benefits of the Fair Wages and Eight Hour Day Act were extended to those employed on government construction work. The Canada Grain Act was consolidated; provision was made for increased grain storage facilities; an inquiry into the promotion of the livestock industry was inaugurated; a separate Department of Fisheries was created; the Companies Act was amended; and treaties with the United States for the protection of the Pacific sockeye salmon and halibut fisheries were ratified. Another act provided a bounty of 49½ cents a ton on bituminous coal mined in Canada and used in the iron and steel industry. Nonresidents serving as directors, officers, or employees of companies carrying on business in Canada were required to pay the Canadian income tax on interest or dividends received from such companies, under another law. An exception was made where the majority voting stock was controlled in Canada. The international treaty for the limitation of naval armaments negotiated at London in the spring was ratified also.

OTHER EVENTS. Among other events of the year were the appointment of Hanford McNider, former United States Assistant Secretary of War, as Minister to Ottawa and the opening by him of negotiations for an agreement on the St. Lawrence waterway project; the appointment in February of Mrs. Norman F. Wilson of Ottawa as Canada's first woman Senator; and the transfer in September of Vincent Massey from his post as Minister to Washington to that of Canadian High Commissioner in London. Mr. Massey resigned, however, immediately after the Conservative victory, and was succeeded by G. Howard Ferguson, Premier of Ontario. Viscount Willingdon, retiring Governor General of Canada, was appointed Viceroy of India, effective March, 1931. See **SVERDRUP ISLANDS, STRIKES AND LOCKOUTS, PROHIBITION, OLD AGE PENSIONS, POLAR RESEARCH, TRADE UNIONS.**

CANADA, THE UNITED CHURCH OF. The designation applied to the single body formed in 1925 by the union of the Congregational, Methodist, and Presbyterian churches in Canada; the Methodist churches of Newfoundland and Bermuda are also included. Since the formal consummation of the union on June 10, 1925, a total of 600 congregations, mostly in smaller towns and rural districts, have amalgamated into approximately one-half that number of self-supporting charges. The board of home missions has also established 285 new fields of home-mission status, each field including three or four places at which public worship has been inaugurated and regularly conducted. Since 1925, 375 fields which formerly received aid have become self-supporting and have passed off the home-mission list. Foreign mission work has been carried on in

Japan, Korea, China, India, Trinidad, and Angola (West Central Africa).

In 1929 there were in Canada, Newfoundland, and Bermuda 7402 preaching places (including home missions) in 3001 pastoral charges. Between June 10, 1925, and Dec. 31, 1929, the communicant membership had increased from 600,522 to 650,845, and the number of persons under pastoral care from 1,261,778 to 1,528,296. In the same period 127,000 persons were received as communicants on profession of faith. The fourth general council of the United Church of Canada was held in London, Ont., in September, 1930. The Rt. Rev. Edmund H. Oliver, D.D., F.R.S.C., was chosen moderator for 1930-32; the Rev. T. Albert Moore, D.D., was secretary. Headquarters are at 421 Wesley Buildings, Toronto, Ont.

CANALS. OHIO RIVER. U. S. The opening of the Ohio River canalization, "the greatest canalization project ever undertaken in this if not in any country," was noted in the 1929 YEAR BOOK. Figures of estimated transportation savings published by Col. C. W. Kutz, U. S. A., ret. (*Eng. News-Record*, March 13, p. 432) served to stir up an immense amount of discussion and to bring to the fore the whole problem of transportation in the United States. No tolls are charged for the use of the Ohio River route and Colonel Kutz's estimates were attacked as being unduly favorable to the water-way. *The Railway Age* (February 1) pointed out that the true cost of moving freight on the Ohio system not only involved the actual cost of handling the freight and operating and maintaining the barges, but should also include proper allowances for interest on the investment, sinking fund and taxes. These latter items were characterized as "hidden costs" by the Ohio State Chamber of Commerce and were shown to amount to 6.62 mills per ton mile, whereas the "disclosed costs," those given to the public and actually paid by the shippers were only 4.23 mills, for the government operations on the Mississippi and Warrior Rivers.

Obviously there must either be an end to subsidized transportation or the railroad situation must be changed. In 1930 the people of the United States were paying the taxes, interest, and carrying charges on tax-free means of transportation such as the Ohio canalization and the modern highway system. The cost of such transportation is therefore met by the carriers or shippers only in part and much of the burden is transferred to the tax payers. On the other hand the railroads pay taxes annually of over \$420,000,000, must earn interest on their bonded indebtedness, and are strictly regulated not only as to rates but also as to the hours and conditions of employment of their employees. Clearly there were gross injustices in the American transportation system as it had been developing in recent years and the Ohio River work may serve to focus public attention on this vicious situation.

WELLAND CANAL, CANADA. "With little attention from the outside world," says the *Engineering News-Record* (N. Y.), "a great engineering project has been under way during the past 17 years in Canada." Previous YEAR BOOKS have recorded progress on this remarkable canal and have noted its possible effects on Great Lakes transportation. Thoroughly modern in all respects, the new Welland work replaces the old and inadequate canal and furnishes practically a ship canal connecting Lakes Erie and Ontario. At a cost of over \$120,000,000 slack water navigation has been pro-

vided around Niagara Falls with a channel of 25-foot draft and with only 8 locks, whereas the old 14-foot draft channel required 26 locks. Perhaps the most notable feature of the new canal are the locks—notable alike for their great lifts and the completeness of their electrical and other equipment. At Thorold a flight of three locks with a total lift of 139½ feet surmounts the great Niagara escarpment. These locks are 80 feet wide, over 850 feet long and their great lift, 46½ feet each, place them among the largest in the world. It will be operated toll-free to both Canadian and American vessels, and, although much larger than demanded by present traffic needs, it is so designed that it can be made an essential part of the St. Lawrence River ship canal system when this is built. *Engineering* (London) has published during the year a series of articles on the Welland Canal, which are most thorough and are completely illustrated with photographs and detailed drawings. The canal was practically finished.

THE FORTH AND CLYDE CANAL, GREAT BRITAIN. It will be remembered that Smeaton, the famous British civil engineer, had built a canal joining the Firth of Forth and the Firth of Clyde in 1768–90. A special government committee reported during the year on the proposal which had been brought forward to build a new canal of ship size at this point. The committee reported adversely on the ground that the construction would be extremely costly, probably over \$250,000,000, which was compared with the \$85,000,000 Manchester Ship Canal, and that the possible traffic was conjectural but could not be expected to justify such an expenditure.

THE NEW IJMUIDEN LOCK, HOLLAND. Until a little over a century ago the harbor of Amsterdam, Holland, was approached through the shallow Zuider Zee. At that time a 47-mile canal was built connecting the harbor directly with the North Sea. In 1876 this canal was replaced by the shorter North Sea Canal. At the entrance to the canal, IJmuiden, 14 miles from Amsterdam, a lock was built. This was enlarged in 1896 and in 1924 construction was begun on an even larger work. Indeed the new lock opened by Queen Wilhelmina in April, 1930, was 1315 feet long and 161 feet wide, with 50 feet depth of water over the sill, is the largest lock in the world. Unlike the great mitring gates of the locks at Panama those of IJmuiden are of the rolling caisson type—practically rolling doors which slide perpendicularly to the axis of the lock, into pockets in the side walls. The largest ships may now pass through this canal from the North Sea directly to Amsterdam. For the purpose of comparison the dimensions of the new lock and those of the Kiel and Panama Canal locks are given:

| | Length in ft. | Width in ft. | Depth in ft. |
|------------------|------------------|-----------------|-----------------|
| IJmuiden | 1,315 | 161 | 50 |
| Kiel Canal | 1,083 | 148 | 45 |
| Panama | 1,000 | 110 | 41½ |

GERMAN CANALS. The great difference between the economic status of inland canal navigation in the United States and in Europe, particularly Germany, is illustrated by a comparison of the New York State Barge Canal situation with that of the German Mittelland Canal system. Both are large canals and both are built for approximately the same capacity, about 18 or 20 million tons a

year. The New York State work actually carries about one-tenth of this volume of traffic while the German canal transported some 12,000,000 cargo tons in 1925 and appeared to be growing in use. Information now available on this German work enables us to submit a brief outline of the development.

THE MITTELLAND CANAL, GERMANY. This great central German canal project, which was planned about the close of the Nineteenth century, was actively carried forward through the early years of the World War. Operations were again resumed on a large scale in 1922 and an important link in the system was completed in 1930.

The most interesting works on the canal line are the river crossings and locks. The Weser crossing was made by a concrete aqueduct of 8 spans and almost 1200 feet long, and the Elbe Valley will be crossed by another aqueduct, over 7 miles long, which includes 24 arches of about 100 feet span and a steel bridge. Important locks at Anderten and Allerbüttel were required on the Hanover-Elbe section to lift the barges to the 38-mile reach or level connecting these two points.

Barges of 1000 tons capacity were provided for, and it was found necessary to adopt a wider section in the later work—135 feet wide at the surface, 95 at the bottom, a draft of 6½ feet, and a depth of 13 feet. The canal locks are 738½ feet long and 30½ feet wide. The depth in the lock chambers of the new locks is about 10 feet and the Anderten lock, completed in 1928, has a lift of 49 feet, the largest of any inland lock in Europe.

BREMEN-RUHR, GERMANY. A report was published that a new canal from Bremen, Germany, to the Ruhr District, capable of accommodating vessels of 1300 tons is to be built to parallel the old 750-ton channel. See ILLINOIS and NEW JERSEY under *Political and Other Events*; NICARAGUA under *History*.

CANARY ISLANDS. A group of small islands off the northwest coast of Africa, belonging to Spain. Area, 2810 square miles; population, Jan. 1, 1929, estimated at 543,018. Santa Cruz de Teneriffe, with an estimated population of 56,309 (Jan. 1, 1929), and Las Palmas, population 71,374, are capitals of the two provinces into which the islands were divided by Royal Decree of Sept. 21, 1927. The University of Seville maintains an educational establishment in the Canaries and is in charge of higher education. There is regular steamship communication with Spain. The islands are under the administration of continental Spain through a local governor.

CANBERRA, AUSTRALIA. See CITY AND REGIONAL PLANNING.

CANCER. See SURGERY, PROGRESS OF.

CANTERBURY, FORMER ARCHBISHOP OF. See DAVIDSON, THE MOST REV. AND RT. HON. RANDALL THOMAS, FIRST BARON OF LAMBETH.

CAPE COLONY. See CAPE OF GOOD HOPE PROVINCE.

CAPE OF GOOD HOPE PROVINCE. The southernmost of the four original provinces of the Union of South Africa; formerly known as Cape Colony or the Colony of the Cape of Good Hope. Capital, Cape Town. Area, 276,536 square miles; population at the census of 1921, 2,781,542, of whom only 650,327 were Europeans. On June 30, 1928, the total population was officially estimated at 3,035,802, including 728,159 Europeans, 1,782,234 Bantus, 7961 Asiatics, and 517,448 of mixed

and other origin. The census of 1926 showed 706,137 Europeans. The chief towns, with their white population in 1926, were: Cape Town, 130,568; Kimberley, 17,268; Port Elizabeth, 33,371; East London, 23,210. The movement of population in 1928 among Europeans was: Births, 18,032; deaths, 7519; marriages, 6351. For non-Europeans, so far as registered, it was: Births, 37,719; deaths, 28,167; marriages, 9377.

Education is compulsory for white children. In 1928 there were 4610 aided schools, with 138,987 white pupils. Education of the 185,552 non-European pupils was carried on mainly by Church and missionary bodies. The state expenditure for education in 1928-29 was £3,270,454. The provincial revenue in 1927-28 totaled £4,104,044, including £2,423,393 received as a subsidy from the Union Treasury; expenditure (ordinary), £4,119,757. Administrator of the province in 1930, J. H. Conrahe (appointed 1929). See SOUTH AFRICA, UNION OF.

CAPE VERDE (vũrd) ISLANDS. A group of 14 islands off the western coast of Africa belonging to Portugal. Area, 1475 square miles; population at the census of 1928, 150,160. The chief products are sisal, castor oil, coffee, mustard, brandy, oranges, and hides. Estimated revenues and expenditures in 1928-29 balanced at 16,384,970 escudos (1 escudo exchanged at approximately \$0.0447 in 1929). Imports in 1928 totaled 60,958,321 escudos; exports, 1,727,192 escudos. St. Vincent, the chief port, is a coaling station for European navigation to South America. In 1928, 1125 ships entered the port. The islands are administered by a governor, whose seat is at Praia, the capital. Governor in 1930, Col. Antonio Alvarez Guedes Vaz. See PORTUGAL under *History*.

CARDINALS, NEW. See ROMAN CATHOLIC CHURCH.

CARINTHIA. A province of the Republic of Austria; formerly a crownland of the Austro-Hungarian Empire. Area, 3680 square miles; population at the census of 1923, 370,817, as compared with 396,200 in 1910. Capital, Klagenfurt, with a population in 1923 of 27,423.

CARLETON COLLEGE. A coeducational institution of higher learning in Northfield, Minn.; founded in 1866 and maintaining relations of coöperation with the Congregational, Baptist, and Protestant Episcopal churches. The enrollment for the autumn of 1930 was 932. There were 67 faculty members. The endowment amounted to \$2,754,282, and the total income of the year was \$642,988. There were 96,000 volumes and 30,000 pamphlets in the library. President, Donald John Cowling, Ph.D., D.D., LL.D.

CARNEGIE CORPORATION OF NEW YORK. Established by Andrew Carnegie in 1911, this corporation was formed for the advancement and diffusion of knowledge and understanding among the people of the United States, Canada, and the British colonies. Its total endowment is approximately \$135,000,000 of which \$10,000,000 is applicable elsewhere than in the United States. The corporation has conceived its function to be not that of an operating agency in itself, but rather that of an agency charged with the duty of studying and estimating those forces and institutions that make for the advancement and diffusion of knowledge and understanding in the areas specified and of aiding these institutions in such measure as may be possible within the income of the corporation, having care always to the fact

that the income of this endowment is to be a liquid asset for each generation.

In 1930, as in the previous year, approximately two-thirds of the annual income of the corporation was devoted to a reduction of unpaid obligations which on September 1 amounted to \$21,512,506. The annual report of the president, Frederick P. Keppel, showed that during the fiscal year 1929-30, the sum of \$3,709,250 was appropriated. Of this amount, \$729,750 was applied toward library service; \$159,500 toward the encouragement of adult education activities; \$513,500 toward the support of national organizations in the field of fine arts and of departments of art in colleges and universities and of projects for developing appreciation of the arts; \$739,500 toward the support of educational and scientific studies and research publications; and \$1,567,000 toward general interests, including the Carnegie Endowment for International Peace.

The corporation made scholarship grants for graduate study by prospective college teachers of the arts and by qualified students of library science. It continued to support various important projects, such as research in the study of vitamins, nutrition, investigation of high-frequency rays of cosmic origin, coöperative research in pyorrhea and otosclerosis, and study of susceptibility to infectious diseases. Various studies conducted by the American Historical Association, the Modern Language Association, the Institute of Economics, and the American Law Institute were continued through the year. From the income of its \$10,000,000 fund, the corporation continued its five-year programme in British Africa, involving a total of \$500,000. This included scientific research, aid to Jeanes Schools, exchange of educational visits, and library service, carried on largely through responsible local bodies. Various educational enterprises in Canada, Australia, and New Zealand also were aided.

The trustees of the corporation in 1930 were: James Bertram, Nicholas Murray Butler, John J. Carty, Samuel Harden Church, Robert A. Franks, William J. Holland, David F. Houston, Henry James, Frederick P. Keppel, Russell Leffingwell, John C. Merriam, John A. Poynton, and Elihu Root. Officers of administration were: Elihu Root, chairman of the board; Robert A. Franks, vice chairman and treasurer; Frederick P. Keppel, president; James Bertram, secretary; and Robert M. Lester, assistant to the president. The headquarters are located at 522 Fifth Avenue, New York City. See LIBRARY PROGRESS.

CARNEGIE FOUNDATION FOR THE ADVANCEMENT OF TEACHING, THE. A foundation established by Andrew Carnegie on Apr. 76, 1905, when he placed an endowment of \$10,000,000 in trust with 25 trustees, mostly presidents of universities and colleges, for the purpose of encouraging higher education in the United States, Canada, and Newfoundland, chiefly by providing retiring allowances for teachers in universities and colleges and pensions for their widows. The foundation was incorporated by Act of Congress in 1906. Its resources were increased by a further gift of \$5,000,000 from Mr. Carnegie in 1908, and by appropriations of \$1,250,000 in 1913 and \$12,000,000 in 1918 from the Carnegie Corporation, which Mr. Carnegie established in 1911. At the completion of its twenty-fifth year, June 30, 1930, the foundation had endowments and accumulated reserves amounting to \$32,150,000, and had distributed \$20,361,000 in

retiring allowances and pensions to 1100 teachers and 500 widows, chiefly through 94 associated institutions, selected because of their educational excellence.

The foundation publishes extensive annual reports, which deal with many educational problems. Its division of educational inquiry, established in 1913, has issued a score of comprehensive bulletins, dealing with medical, legal, engineering, dental, and vocational education, the training of teachers, intercollegiate athletics, and kindred subjects. In 1930 the foundation was engaged in a comprehensive study of the relations between secondary schools and colleges in Pennsylvania. Dr. Henry Suzzallo, former president of the University of Washington, succeeded Dr. Henry Smith Pritchett as president in August, 1930; Clyde Furst was secretary. The headquarters are at 522 Fifth Avenue, New York City.

CARNEGIE INSTITUTE OF PITTSBURGH. See ART EXHIBITIONS.

CARNEGIE INSTITUTE OF TECHNOLOGY. A nonsectarian institution for technical education at Schenley Park, Pittsburgh, Pa.; founded in 1900. The enrollment for the autumn of 1930 was 6577, including 2547 registered in the regular day courses and 4030 in the evening courses. For the summer session 814 students were enrolled. The faculty numbered 369, of whom 250 were on full time and 119 on part time. A coal research laboratory was opened under the direction of Dr. H. H. Lowry. The endowment of the institution was \$15,900,000 and the annual income \$794,000 (not including student fees). The institute has a campus branch of the Carnegie Library of Pittsburgh, which has 450,000 volumes. President, Thomas Stockham Baker, Ph.D., LL.D., Sc.D.

CARNEGIE INSTITUTION OF WASHINGTON. An organization founded in 1902 "to encourage in the broadest and most liberal manner investigation, research, and discovery, and the application of knowledge to the improvement of mankind." The institution attempts to advance fundamental research in fields not normally covered by the activities of other agencies, and to concentrate its attention upon specific problems with the idea of shifting attack from time to time to meet the more pressing needs of research. Its major activities in 1930 were carried on through the following departments and divisions: Department of embryology (located in the Hunterian laboratory of the Johns Hopkins University medical school); department of genetics (laboratory in Cold Spring Harbor, Long Island, N. Y.); geophysical laboratory; division of historical research, including the Section of Aboriginal American History, Section of United States History, and Section of the History of Science; department of meridian astrometry (headquarters in the Dudley Observatory, Albany, N. Y.); Mount Wilson observatory, in Pasadena, Calif.; nutrition laboratory, in Boston; division of plant biology (central laboratory at Stanford University); department of terrestrial magnetism; Tortugas (Fla.) laboratory of marine biology.

During 1930 the institution conducted a group of investigations in central Africa. They were concerned with movements of the earth's crust in the so-called Rift region, as expressed in seismic and volcanic activity; habits and psychology of a type of gorilla inhabiting a portion of the volcanic area examined; and geographical distribution of certain groups of animals, considered with special

reference to the geological factors which influenced their migration. In addition to researches on occurrence, history, and evolution of specific groups of animals and plants, the institution supported during the year studies on two of the greatest problems in the history of life: the beginnings of life, and the beginnings of human history in America. The first was concerned with remains from the earliest unaltered rocks, or strata of the Proterozoic age, in the Grand Canyon, while the second involved investigation of Gypsum Cave, Nevada, where man-made implements were found in close association with remains of the ground-sloth and other extinct animals. The outstanding piece of work, conducted by the division of historical research in the Maya field of Middle America, was the completion of the excavation and repair of the Caracol, a tower-like building of circular form at Chichen Itzá, which is believed to have served both as a temple and as an astronomical observatory.

The results of the institution's investigations are made known through the scientific journals, the institution's *Year Book*, a series of monographs which it issues, and other regularly established channels. During 1930 the executive committee authorized the publication of 18 volumes at an aggregate estimated cost of \$56,875. Total receipts of the institution from interest on endowment, bonds and bank deposits, sales of publications, refunds on grants, and miscellaneous items amounted to \$3,638,195 for the year, while total expenditures, including purchase of bonds, large projects, minor grants, publications, and administration amounted to \$3,590,631. The president in 1930 was Dr. John C. Merriam, and the administrative secretary was W. M. Gilbert. The officers of the board of trustees were: Elihu Root, chairman; Henry S. Pritchett, vice-chairman; and W. Cameron Forbes, secretary. The executive committee included: Elihu Root, chairman, W. Cameron Forbes, Cass Gilbert, John C. Merriam, William Church Osborn, William Barclay Parsons, Stewart Paton, and Henry S. Pritchett. Headquarters are at Sixteenth and P Streets, N. W., Washington, D. C.

CARNEIRO, kār nār'ō ANTONIO. A Portuguese painter, died in Oporto, Apr. 1, 1930. He was born in Amarante, Nov. 16, 1872, and studied art at the Oporto Academy and also in Paris under Benjamin Constant and J. P. Laurens. He exhibited at the Universal Exposition in Paris in 1900 and at the Louisiana Purchase Exposition in St. Louis in 1904. He was well known as a landscape and historical painter, having first gained recognition in this field with "Scenes from History of the City of Evora" (1901). His paintings of religious subjects, such as "The Baptism of Christ" and "The Last Supper," also earned him high honors. He was a fellow of the National Society of Fine Arts of Lisbon.

CAROLINE ISLANDS. A group of about 500 coral islets in the western Pacific, transferred from Germany to Japan under mandate of the League of Nations by the Paris Peace Treaty. The chief islands are Ponapé, with 8286 inhabitants; Yap, an important wireless and cable station, with 7332; and Parao, with 7257.

CARTELS. See CHILE, CUBA.

CASE SCHOOL OF APPLIED SCIENCE. An engineering college in Cleveland, Ohio; founded in 1881. In the autumn of 1930 the enrollment was 751 students. The summer session registration was 182. The faculty numbered 78

members. The endowment amounted to \$4,328,496 while the income for the year was \$411,466. The library contained 24,850 volumes. President, William Elgin Wickenden, D.Eng., D.Sc.

CASUALTY INSURANCE. See **INSURANCE.**

CATHOLIC CHURCH. See **ROMAN CATHOLIC CHURCH.**

CATHOLIC UNIVERSITY OF AMERICA, THE. A national institution of higher education in Washington, D. C.; founded in 1887 by the Roman Catholic hierarchy with the approval of the Holy See and chartered by an act of Congress. It consists of the following schools: Sacred sciences; canon law; law (coeducational); engineering; arts and sciences; and graduate school of arts and sciences (coeducational). The enrollment for the summer session of 1930 was 755, while that for the autumn term was about 1000. Affiliated with the university is the Catholic Sisters' College (190 students); Trinity College for Women (382 students); National Catholic School of Social Service (44 students); and 30 religious houses of study in the immediate vicinity with an enrollment of about 800 students. In addition, there are affiliated throughout the United States 4 seminaries, 29 colleges, 225 high schools and academics, and 57 novitiates. The university is governed by a board of trustees (prelates, priests, and laymen) through the Rector, who is advised by an academic senate composed of representatives (lay and clerical) of the various faculties. The faculty of the university proper numbered 123, of whom 39 were full professors. The endowment amounted to approximately \$3,000,000. The library contained 300,000 volumes. Administrative officers: The Rt. Rev. James H. Ryan, S.T.D., Ph.D., LL.D., Litt.D., rector; the Rt. Rev. Edward A. Pace, S.T.D., LL.D., vice rector; and Richard J. Purcell, Ph.D., general secretary.

CATTLE. See **DAIRYING; LIVESTOCK.**

CATTLE DISEASES, CATTLE PLAGUE, CATTLE-TICK ERADICATION. See **VETERINARY MEDICINE.**

CAUCASUS, kă'kă-sūs. A term applied to the indefinite region in southern Russia, comprising the isthmus which separates the Sea of Azov and the Black Sea from the Caspian Sea; formerly an administrative division of the Russian Empire. It was divided into two districts of Transcaucasia and Ciscaucasia, of which the former, after the World War, was divided among the three republics of Armenia, Georgia, and Azerbaijan. These were incorporated under the constitution of 1923, in the Union of Soviet Republics, as the Transcaucasian Socialist Federated Soviet Republic. Consult each under its own title.

CAVALRY. See **MILITARY PROGRESS.**

CELEBES. See **DUTCH EAST INDIES.**

CELEBRATIONS. The memories of the past are conspicuously brought to the present by celebrations, and in the United States the series commemorating the great events of the War of the Revolution were finding a fitting culmination, for which preparations were being made, in the celebration at Yorktown where Cornwallis surrendered his army to Washington. The bicentenary anniversary of the birth of the Father of his Country was approaching, and the tercentenary of the founding of Massachusetts was held during 1930, while that of Maryland, to be held in 1933, was being organized.

Belgium, Greece, and Uruguay each held centenary celebrations which were not confined to

one day but were extended throughout the year. These are mentioned in the articles on these countries. Belgium expressed her celebration with expositions (q.v.) at Antwerp, Brussels, and Liège; Greece by the restoration of the Parthenon and other events; and Uruguay by a series of Olympic games, general athletic contests, and other festivities.

Some of the more important celebrations that occurred during the year follow:

February 10-December 30. President Hoover in an appropriate proclamation called attention to the fact that: Congress had authorized commemoration of the heroism of the fathers and mothers who traversed the Oregon trail to the Far West. On April 10, 1830, the first wagon train left St. Louis for Oregon, pioneering the way for the thousands of men and women who settled the Pacific States. On December 29, 1830, Ezra Meeker was born who carried over into our day the personal memory of his historic epoch. The Oregon Trail Memorial Association which he founded and which included men and women in all walks of life in all parts of the country, sponsored the movement to observe the period from April 10 to December 29 of this year as the covered-wagon centennial, to recall the national significance of this centenary of the great Westward tide, which established civilization across a continent. Accordingly a covered-wagon train, reenacting the departure of the first expedition over the Oregon trail 100 years previously, set out from St. Louis for the West on April 10, with 81 men riding in ten covered wagons, two ancient buggies and on horses and mules. Indians wearing war paint and feathers, men in fur caps and leather coats and pants, women in long flowing dresses and hoop skirts made the scene realistic as the expedition departed from a spot near the Mississippi River front and traveled five miles through St. Louis streets.

The expedition carried a message from the Governor of Missouri to the Governor of Oregon. Special celebrations were held at various places on the route, as at Caspar, Wyo., on July 3 when the Old Oregon Trail was thronged by youths and patriachs bound for Independence Rock for the opening of a three-day celebration of the Oregon Trail Centennial. The largest single group was a caravan of 200 Boy Scouts headed by Eagle Scouts of New York City boroughs traveling in the ox-moble owned by Henry Ford and originally built for the late Ezra Meeker.

February 10. The tenth anniversary of the reunion of Schleswig with Denmark was celebrated with appropriate exercises. Copenhagen was flag bedecked in honor of the event, while wreaths and flowers were placed on the graves of nationals of the allied powers. Commemorative meetings and festivals were held throughout Schleswig.

March 25. The day of the declaration of Hellenic Independence was celebrated by the completion of the restoration of the shattered columns of the north façade of the Parthenon in Athens, Greece. This restoration of "the most perfect structure ever erected" was begun in 1916 and was carried on largely by means of funds furnished by citizens of New York.

April 2. The 125th anniversary of the birth of Hans Christian Andersen was celebrated in Copenhagen, Denmark, at the exercises in the Town Hall; the speakers paid tribute to Andersen and special performances in commemoration of the noted author were held at the Royal Theatre.

April 6-10. The centenary of the establishment of the Mormon Church was celebrated in Salt Lake City by a historical address delivered by President Heber J. Grant and a pageant entitled "The Message of the Ages." A similar celebration was held in Independence, Mo., with addresses by prominent officials of the Mormon Church. See **LATTER-DAY SAINTS, CHURCH OF**.

April 10-13. The 250th anniversary of the founding of Carolina under the Lord's Proprietors as well as the same anniversary of the arrival of the first Huguenot fleet, fleeing from the wrath of Louis XIV of France, was celebrated with religious and other patriotic exercises in Charleston, S. C.

April 13. The 187th anniversary of the birth of Thomas Jefferson was celebrated with some 1200 meetings in various parts of the United States. Most of the observances were held on the 14th and many of the speeches broadcasted by radio. One of the chief speakers was President Edwin A. Alderman of the University of Virginia, whose tribute went on the air over a nation-wide hook-up.

April 26. Interesting exercises commemorating the landing of the first permanent settlers in the New World in 1607 were held at Cape Henry, Va., to which President Hoover and the governors of the 13 original States and those States originally part of Virginia were invited.

April 27. The 2000th anniversary of the birth of Vergil was celebrated throughout the world in literary and educational circles. In Italy on this date, a "Lucus Virgilianus" was opened consisting of a wood with all the trees, shrubs, and flowers mentioned in the Eclogues, the Georgics and in the *Aeneid*. Other celebrations were held in Mantua, Rome, Naples, and Brindisi, Italy. In the United States the celebrations were under the direction of the American Classical League and besides prizes, included commemorative medals, plaques, posters, postcards, and bookplates.

May 4. There was celebrated in Algiers the centenary of the possession by France of her great African colony. The elaborate ceremonies under the presidency of President Doumergue, included a naval review participated in by more than 80 vessels, including dreadnaughts, cruisers, destroyers, and submarines, and four squadrons of airplanes of the French Atlantic and Mediterranean fleets off Algiers; and also the unveiling of a statue of René Viviani, former prime minister, who was born in Algiers, as well as many festivities participated in by the native population and tribal chieftains. See **ALGERIA**.

May 11. The heroic resistance of the city of Leghorn, Italy against a besieging army of 20,000 Austrians in 1849 was celebrated this year with greater enthusiasm than usual owing to a visit by Mussolini.

May 14. The 119th anniversary of the independence of Paraguay from Spain was celebrated in Asunción with a military parade, naval demonstration, and other appropriate exercises. The day was also celebrated at the capitals of Argentina, Brazil, and Uruguay by receptions at the Paraguayan Legations, and at the schools in Buenos Aires, Rio de Janeiro, and Montevideo, bearing the name Republic of Paraguay School in accordance to the South American custom of giving the name of sister republics to schools.

May 16-23. The Golden Jubilee National Congress of the Salvation Army, the climax of the celebrations of fifty years' achievement by the organization in the United States, was held in New

York City. The 25th anniversary of Commander Evangeline Booth's service was also celebrated. The jubilee opened with a grand pageant at the Seventy-first Infantry Armory. Also on the programme during the celebration was a reception at City Hall, special Sunday services in the Metropolitan Opera House and other places throughout the city, and a grand musical festival. See **SALVATION ARMY**.

June 11. Buenos Aires celebrated the 350th anniversary of its founding by Juan de Garay 50 years after the Indians had destroyed the first settlement established by Francisco Pizarro's lieutenant, Pedro Mendoza. Refugees from the first settlement made their way up the river and founded Asunción, Paraguay. De Garay traveled overland from Pizarro's headquarters in Lima, Peru, to Asunción, gathered 60 civilians, brought them down the river and founded what is now the world's second largest Latin city.

June 15-25. The quadricentennial anniversary of the publication of the Augsburg Confession, the basic statement of Protestantism, was celebrated in Augsburg, Germany, by a series of events and attended by delegates from everywhere, including representatives from 30 American church denominations. A collection of valuable Lutheran Bibles in all languages were on exhibition. Historical plays were a part of the programme. A feature of the festival was open-air concerts by a corps of 600 trombone players. A solemn memorial service on June 25, 400 years after Martin Luther's friend and spokesman, Philip Melancthon, presented his confession to Emperor Charles V, sitting in conclave with his Diet to consider this "new Lutheran doctrine," concluded the sessions. See **LUTHERAN CHURCH**.

June 23. The sesquicentennial anniversary of a battle in which the American forces under Gen. Nathanael Greene defeated the British under Sir Henry Clinton, was celebrated in Springfield, N. J., with a series of exercises including a military parade in which there were floats, illustrative of the event, a sham fight, display of fireworks, and memorial services.

June 26-28. The 1000th anniversary of the Althing, the oldest parliament in the world, was celebrated in Reykjavik, Iceland, by a special session lasting three days which was attended by the King of Denmark, Princes Olav and Gustav, and other guests including several thousands who came from abroad. The American official delegation led by Senator Norbeck, consisted of Representative O. B. Burtness of North Dakota, F. H. Fljezdal of Detroit, Prof. Sveinbjorn Johnson of the University of Illinois and O. P. J. Jacobson of St. Paul, Minn. A series of special coins were issued in commemoration of the event. See **ICELAND**.

July 4. The sesquicentennial of the founding of Jonesboro, the oldest town in Tennessee, and known as the place where Andrew Jackson practiced law and fought his bloodless duel with Waightstill Avery, was celebrated with patriotic exercises and a historic pageant.

July 10. The 175th anniversary of the battle of Fort Duquesne, where Gen. Edward Braddock was killed, was celebrated in Braddock, Pa., by the unveiling of a monument to George Washington with appropriate addresses and by a historic pageant. A commemorative postage stamp was issued by the Post Office Department.

July 29. The 900th anniversary of the introduction of Christianity into Norway by King

Olav was celebrated in Nidaros, formerly Trondhjem, with the dedication of the restoration of the interior of the cathedral, a festival cantata, religious exercises, and other fitting ceremonies.

August 6. The annual occurrence of Oriskany Day, which commemorates the first check to the British in the Burgoyne campaign and during which the first American flag was flown from Fort Stanwix, was celebrated by an automobile parade from Schenectady to Rome, a distance of 95 miles.

August 11. The eleventh anniversary of the adoption of the Weimar constitution which created the present government in Germany was celebrated with festivities throughout the Fatherland, and particularly in Berlin where a pageant was presented depicting the freeing of the Rhine from its heavy chains, to the great joy of the other German rivers—each river being represented by a column of school children clad in gauzy blue, green, or brown, according to the color of the river.

August 14. The centenary of the independence of Ecuador as a sovereign republic was universally celebrated throughout that country and in the United States particularly by addresses and other exercises pertinent to the occasion in the building of the Pan-American Union in Washington.

August 16. The 150th anniversary of the death of Baron de Kalb who fell at the battle of Camden, S. C., was celebrated by the placing of a wreath on his statue in Annapolis, Md., by his descendant George de Kalb, in the presence of representatives of the U. S. Government, the State of Maryland, and members of patriotic societies.

August 18. The 343d anniversary of the birth of Virginia Dare, the first child of English parentage born in the New World, was celebrated by the erection of a memorial gateway at Manteo, N. C., the site of Sir Walter Raleigh's ill-fated colony.

August 20. The 175th anniversary of the expulsion of 6000 Acadians from Nova Scotia by the British was celebrated in Grand Pré, N. S., by a gathering of their descendants who after the celebration of a pontifical high mass, listened to patriotic and historical addresses appropriate to the occasion.

September 11. The 154th anniversary of the peace conference between Admiral Howe, representing the English colony, and the three Americans, Benjamin Franklin, John Adams, and Edward Rutledge, in an attempt to maintain peace between England and the American colonists, at the old Billow house, now Conference House, in Tottenville, Staten Island, N. Y., was celebrated by a reception at which patriotic addresses pertinent to the occasion were delivered.

September 18. The 120th anniversary of the independence of Chile was celebrated throughout that country, and in Santiago by a reception given by President Carlos Ibañez and the Ambassador from the United States, William S. Culbertson.

September 21-27. The tercentenary of the founding of Jersey City, N. J., was celebrated with an elaborate programme that began with special religious services and continued with tableaux and music depicting the early history, a parade of military, a historical pageant entitled "Yesterday, Today, and the Dawn of Tomorrow," patriotic addresses, an athletic field meet, and a display of fireworks.

October 1-15. The 2000th anniversary of the birth of Vergil was celebrated with imposing cere-

monies throughout the world and conspicuously in Italy, at Mantua where he was born; in Naples where he was buried; and in Rome where he spent most of his life. These celebrations culminated on October 15, the accepted date of the birth of the poet.

October 4-12. The tercentenary of the founding of Hoboken, N. J., was celebrated by a series of exercises which included a sham battle, a pageant of floats, a reception at Stevens Institute of Technology, a dramatic pageant, a field meet for athletics, and fireworks, and other events appropriate to the special named days which were designated as Religious Day, Hospitality Day, Business Men's Day, Transportation and Safety Day, and Historic Day.

October 7. The sesquicentenary anniversary of the battle of King's Mountain was celebrated on the battlefield in South Carolina with patriotic exercises, including an address by President Hoover in which he said that this battle ranked in importance with those of Lexington and Concord, and that as it spoiled the strategy of Lord Cornwallis, it deserved greater recognition than it had previously received.

October 4. The 250th anniversary of the founding of the village of Bedford, N. Y., was celebrated by a military display and a historic pageant written for the occasion by Rev. Arthur Ketchum. Also a telephone conversation was held between the Mayor of Bedford, England, and the local officials in Bedford, N. Y.

October 12-15. The 250th anniversary of the settlement and the 200th year of the granting of its charter by George II, was celebrated in New Brunswick, N. J., beginning with a union religious service and followed by a military, civic, fraternal, and historic parade, and a pageant, "The Drama on the Highway," with a cast of 3000 persons, was presented at Neilson Field. The Governor of the Province of New Brunswick, Canada, and the Mayors of the twelve "Brunswicks" in Georgia, Maine, Maryland, Michigan, Minnesota, Mississippi, Missouri, Nebraska, North Carolina, Ohio, Tennessee, and Virginia were invited. A message of congratulation was received from President Hoover.

October 19. The 149th anniversary of the surrender of the British Army under Cornwallis to Washington at Yorktown, Va., was celebrated with patriotic exercises, including addresses by Governor Pollard of Virginia and others. A congressional committee was appointed with an adequate appropriation for the sesquicentennial celebration in 1931 at which President Hoover was expected to be present.

November 25. The 25th anniversary of the accession by King Haakon and Queen Maud to the throne of Norway was celebrated in Oslo by a religious service, a royal procession, the receipt of congratulations by the King, which were personally acknowledged by him by means of the radio, a gala dinner, and a torchlight procession. President Hoover sent a message of congratulation.

December 17. The 100th anniversary of the death of Gen. Simon Bolívar, the liberator of Spanish South America from the control of Spain, was celebrated with elaborate exercises in Argentina, Bolivia, Colombia, Ecuador, Peru, and Venezuela, and also in New York, Philadelphia, and Washington, and as well in London, Paris, Rome, and elsewhere in Europe. For other details of the anniversary, see BOLÍVAR CENTENARY.

December 17. The 275th anniversary of the admission of Jews in the New World was celebrated in Faneuil Hall, Boston, at which a message from President Hoover and others from various Christian leaders—Catholic and Protestant—were read, and addresses delivered by prominent persons including Bishop Sherrill of Massachusetts. The 23 Jewish settlers admitted to New Amsterdam on Dec. 17, 1655, by Governor Peter Stuyvesant have grown to over 4,500,000 persons.

December 28. The 74th anniversary of the birth of Woodrow Wilson was celebrated by appropriate exercises at the Washington (D. C.) Cathedral and by a dinner in New York City at which an address was made by Newton D. Baker, Secretary of War during Wilson's administration.

MASSACHUSETTS BAY TERCENTENARY. As told in the *YEAR BOOK* for 1929 (p. 157), the preliminary plans for these unusual state-wide celebrations were well matured by the end of 1929. For detailed information concerning the local celebrations, which were more than 150 in number, reference must be made to the issues of the *Nineteen-thirty News for the Tercentenary*. The beginning of the year was ushered in throughout the State "from the Berkshires to Cape Cod and from Essex County to Bristol County by public bells and chimes" which rang forth at noon, as well as by radio addresses and other means of announcement. The special celebrations began on Tercentenary Sunday, June 1, with religious, civic, and historic exercises that were thereafter continued during the year. These celebrations culminated in Boston during the week of September 14-20, when on the evening of September 15 an electrical parade was held of illuminated historical floats with escorts, picturing 300 years of growth and development of Boston and Massachusetts. This was followed on September 16 by the dedication of a memorial to the founders on Boston Common at which an address was delivered by Charles F. Adams and a poem by Edward Markham was read. September 17 was "Boston Day" and was celebrated by the greatest historical pageant ever presented in New England. It included 200 floats, 100 bands, and 40,000 marchers. The events during the remaining three days of the week were chiefly of a literary and musical character, closing on Saturday the 19th with a display of fireworks.

Incidental to these events was the presence during Boston Week in Charles Street basin of the reproduction of the ship *Arbella*, the vessel that brought Governor Winthrop and his party to New England and which came in state to Salem on June 12. Also to be mentioned was the Pioneers' village in Forest Park, Salem, which consisted of reproductions of dwellings of settlers in 1630 with period furniture, gardens, animals, and home industries in appropriate landscape setting which was continued during the year. Appropriate souvenirs, including medals, flags, and a special commemorative 2-cent postage stamp issued by the Government were available. And it may be added that an attractive series of permanent markers indicating historic sites were placed at important places throughout the State. A book recording the progress of fifty years since the publication in connection with the 250th anniversary of the settlement of Boston was in preparation and was to serve as a fifth volume in that series. Never before has such a successful presentation of the early history of a community

been so satisfactorily presented to the public and it is safe to assume that the permanent result will be a greater knowledge among the people of Massachusetts of the interesting events of the first settlement of that great Commonwealth.

WASHINGTON BICENTENNIAL COMMISSION. With the coming of the New Year, an increased interest began to be developed in the plans for the bicentennial celebration of the birth of Washington. Among the additions to the personnel was the appointment of George K. Eastman of Rochester, N. Y., to the Commission in place of Hanford MacNider of Iowa, who became Minister to Canada. Frederick V. Fisher, an assistant director of the San Francisco Exposition, was in June chosen executive officer of the Commission in the District of Columbia. He was associated with Representative Sol Bloom and Col. U. S. Grant 3d, who were associate directors representing the National Government. Suitable offices with an adequate force were established in Washington as well as a suite for women's work under the direction of the women members of the Commission.

A bill authorizing the approximate appropriation of \$200,000 was passed by Congress for the purpose of the preparation of a definitive addition of all the essential writings of George Washington, in 25 volumes. Provision also was made for the distribution of 100,000 copies of a pamphlet entitled *Honor to George Washington*, and 100,000 copies of a pamphlet *Reading About George Washington*. Two thousand copies of a set of directions for celebrations and pageants for the bicentennial was decided on as well as distribution of 120,000 copies of a portrait of George Washington. Preparation of a George Washington atlas, and a map showing places identified with the career of Washington was arranged for. The bill also authorized the George Washington Bicentennial Commission to appoint a director, a historian, an executive secretary, and other necessary personnel.

Tentative plans for the great celebration as published, provided for its beginning at noon on New Year's day when 10,000 school children of Washington, D. C., would stand on the steps of the Capitol and join in singing patriotic songs which would be broadcast over the Nation. The next event of National significance would come Feb. 22, 1932, Washington's birthday, when the central event was to be a memorial address by the President, a convocation of 14,000 of the most eminent educators in America in Washington. Then would follow President's day, March 4, when it was planned to hold a great public demonstration by the schools, public bodies, and citizens of Washington in exaltation of the high office of President. Next, on March 27, Easter Sunday, it was planned to hold a procession of the clergy of all faiths under the Stars and Stripes, together with high tributes to Washington as a churchman and a sermon by some world-renowned preacher. The next notable event would be on April 30, the anniversary of the inauguration of Washington, when there would be a parade led by the President and Vice President and all living former Presidents and Vice Presidents. May 30 was to be observed as Heroes' day, which it was planned to make the greatest Memorial day ever observed in America, with the life of George Washington as a soldier and statesman exalted as the exemplar in times of war and peace. Then would come Flag day, June 14, when a vast outdoor pageant was

contemplated, in which every State that had a star in the flag would participate.

It was planned to make Independence day an old-fashioned Fourth of July with parades, universal decorations of homes and public buildings, and fireworks. There were to be two observances in September. First, Labor Day, when there would be a Nation-wide tribute to labor. Next, Constitution day, when it was hoped to have large delegations representing the 40,000,000 members of fraternal organizations in Washington to pay tribute to Washington as a lodge member. Armistice day was to have a notable place in the year's pageant of holidays. Thanksgiving day would be devoted to the glorification of the American home and the old-fashioned ideals of the America of Washington's day. Plans for other key days were in the making at the end of the year. In addition August would be set aside as Pilgrimage month and September as Education month, with a gathering in Washington of the Nation's most notable educators. In addition tentative plans called for the observance of Patriots' day, April 19, the observance to be in the hands of patriotic organizations; Columbus day, October 12; Yorktown day, October 19, and Navy day, October 27. Other features of the year's celebration, as outlined by the committee, were: Pilgrimage of States, civic groups, national bodies, fraternal orders, labor, farmers, and youth to the shrines of Washington. Historic portrayals of George Washington amid the shrines of his birth, life, and death, were contemplated as well as presentations in Washington by American genius of the best in art, music, drama, science, philosophy, and literature of America. Athletics, sports, and regattas, and water carnivals were to be arranged along with colorful parades and outdoor pageants. There were to be loan exhibits of art, antiques, and historic treasures. Meetings in Washington of national bodies and conventions were to be held and conferences of educational, intellectual, and spiritual leaders of America. Dedication of memorials to George Washington were to include, Wakefield, Birthplace of Washington; Memorial Bridge over the Potomac; Memorial Highway from Great Falls to Mount Vernon; Masonic Memorial Temple to Washington at Alexandria, Va.; and other notable remembrances of Washington.

In 1905 the States commissions had been appointed generally by the Governor and sometimes following action by the State Legislative to cooperate with the National Commission. In New York the George Washington Bicentennial Commission in its second report suggested that a permanent memorial to Washington be erected, offering a choice of three memorials as follows: First, a great tower or temple, either on the Palisades or on the heights at the upper end of Manhattan Island, such a structure to have no utilitarian use but to stand as a testimony to Washington's honor alone; second, a memorial and museum at Albany within the group of the present State buildings; or third, the erection of an impressive memorial to Washington at the entrance to New York Harbor. An interesting undertaking, worthy of mention, was the appointment of a commission for the purpose of selecting one portrait which was to have official sanction as a part of the observance of the 200th anniversary of Washington's birth.

The Territory of Hawaii, as a part of its observance made formal application through Raymond C. Brown, chairman of the Hawaiian

Bicentennial Commission, for permission to place a memorial stone in the Washington monument, which was granted. The territories of Porto Rico and the Philippines, in addition to Hawaii, had no stone in the great monument to Washington, and it seemed probable that they would also unveil stones in the Washington monument on special days set aside for them in 1932.

The American Tree Association had in hand a programme approved by the Commission, for planting millions of George Washington memorial trees in the country before 1932, which was expected to result in the planting of 10,000,000 trees. This first planting was registered in the name of Edward W. Yiehe, Forest Hills, Long Island, N. Y. The National Park Association recommended to the Secretary of the Interior that some great national landmark be named for George Washington on the occasion of the bicentennial. Some national park probably will be chosen for this honor and will be called the "George Washington National Park."

CELL. See ZOOLOGY.

CELTIC LITERATURE. See PHILOLOGY, MODERN.

CEMENT. The preliminary estimates of production for the Portland cement industry for the United States indicated for 1930 a total of 160,905,000 barrels, as compared with 170,646,000 barrels in 1929, or a decrease of 5.7 per cent. The

PRODUCTION AND SHIPMENTS OF FINISHED PORTLAND CEMENT IN 1929 AND 1930, BY DISTRICTS

[In thousands of barrels]

| DISTRICT | 1930 | 1929 |
|---|---------|---------|
| <i>Production</i> | | |
| Eastern Pennsylvania, New Jersey, and Maryland | 34,844 | 37,727 |
| New York and Maine | 11,314 | 11,419 |
| Ohio, Western Pennsylvania, and West Virginia | 17,552 | 17,936 |
| Michigan | 11,505 | 13,749 |
| Wisconsin, Illinois, Indiana, and Kentucky | 20,224 | 21,378 |
| Virginia, Tennessee, Alabama, Georgia, Florida, and Louisiana | 12,884 | 13,793 |
| Eastern Missouri, Iowa, Minnesota, and South Dakota | 16,783 | 15,697 |
| Western Missouri, Nebraska, Kansas, Oklahoma, and Arkansas | 12,596 | 12,393 |
| Texas | 6,781 | 7,374 |
| Colorado, Montana, Utah, Wyoming, and Idaho | 2,257 | 2,695 |
| California | 10,103 | 13,092 |
| Oregon and Washington | 4,062 | 3,893 |
| Total | 160,905 | 170,646 |
| <i>Shipments</i> | | |
| Eastern Pennsylvania, New Jersey, and Maryland | 35,081 | 37,647 |
| New York and Maine | 11,122 | 11,520 |
| Ohio, Western Pennsylvania, and West Virginia | 16,996 | 17,737 |
| Michigan | 10,820 | 13,326 |
| Wisconsin, Illinois, Indiana, and Kentucky | 19,573 | 21,171 |
| Virginia, Tennessee, Alabama, Georgia, Florida, and Louisiana | 12,728 | 14,047 |
| Eastern Missouri, Iowa, Minnesota, and South Dakota | 16,875 | 15,984 |
| Western Missouri, Nebraska, Kansas, Oklahoma, and Arkansas | 11,958 | 12,267 |
| Texas | 6,793 | 7,084 |
| Colorado, Montana, Utah, Wyoming, and Idaho | 2,874 | 2,766 |
| California | 10,402 | 12,965 |
| Oregon and Washington | 4,022 | 3,354 |
| Total | 158,744 | 169,868 |

shipments in 1930 aggregated 158,744,000 barrels, as against 169,868,000 barrels in 1929, or a decline of 6.5 per cent. At the end of the year, the

stocks on hand at the various plants amounted to 25,848,000 barrels, as compared with 23,538,000 barrels at the end of 1929. At the close of December, 1930, the total output of finished cement, as compared with the estimated capacity of 165 plants, was 38.2 per cent as compared with 51.5 per cent at the close of December, 1929. The relation of production to capacity for the calendar year 1929 was 61.5 per cent, as compared with 66.4 per cent in 1929. The table on page 143 gives the production and shipments of finished Portland cement by districts in 1930 and 1929.

In addition to Portland cement, the production of clinker (unground Portland cement) in 1930 was 161,028,000 barrels, as compared with 168,988,000 barrels in 1929. Imports of hydraulic cement in 1930 totaled 977,997 barrels, valued at \$1,140,929, as compared with imports in 1929 of 1,727,900 barrels, valued at \$1,938,240.

CENSUS. During the year 1930 the Fifteenth Decennial Census of the United States was successfully taken. It was without doubt the most comprehensive statistical survey ever undertaken, whether measured by the scope and detail of the inquiries, or by the number of persons employed on the work, or by its cost, or by the mass of data which it had accumulated. The population enumerated in this census, covering continental United States and all outlying territories and possessions except the Philippine Islands, was 124,926,069; and the territory covered was about 3,628,000 square miles.

As summarized by Director of the Census W. M. Steuart in his Annual Report the work of taking the census consisted in—

1. Establishing the boundaries of 575 supervisors' districts. Each district contained a territory in which a supervisor would be responsible for the enumeration of the population and the collection of the statistics of agriculture, irrigation, drainage, and any other subjects that might be assigned him.
2. Subdividing each supervisor's district into enumeration districts not too large to be canvassed by the enumerators within the time fixed by the law and the regulations of the department.
3. The formulation of the schedules of inquiries covering the subjects to be included in the census as defined by law; and the preparation of the instructions and numerous forms required for the conduct of the field force. There were more than 400 printed schedules and forms used for this purpose, with a total edition of over 67,000,000 copies, besides a large number of mimeographed letters and forms distributed to the supervisors.
4. Selection and appointment of supervisors and enumerators. Each applicant for appointment to these positions was required to fill out a schedule designed to test his qualifications for the work.
5. Distribution of blank copies of schedules and other questionnaires and instructions to the field force.
6. The holding of conferences with the supervisors. These conferences were held in the principal cities of the United States, and, for the first time in the history of census taking in this country, the Director of the Census thus came in personal contact with every supervisor.
7. Instructions on the part of the 575 supervisors to the enumerators who were appointed to make the canvass in over 120,000 enumeration districts.
8. The selection and appointment of the office force that would be required in the office of each supervisor. This force consisted of 4,302 employees.
9. Making arrangements with the Indian Bureau for the Indian agents to act as supervisors for Indian reservations.
10. Making similar cooperative arrangements with the War Department, the Navy Department, and the State Department, as well as with the Bureaus of Lighthouses, Fisheries, and Navigation of the Department of Commerce.
11. Establishing cooperative arrangements with the chambers of commerce, the boards of trade, business clubs, newspapers, and prominent citizens, throughout the United States.
12. Giving publicity to the fact that a census was to be taken and appealing to every person to cooperate with

the bureau in its endeavor to make a perfect enumeration.

13. Supervising the work of the supervisors, enumerators, and agents employed throughout the United States during the enumeration which extended from April 1 to July 1.

14. Making arrangements for the announcement by the supervisors of the total population and number of unemployed in the different political subdivisions of their respective districts. This was the first time in the history of census taking in the United States that arrangements of this character have been made.

The field work involved in taking the census, covered the collection of the basic data—the securing of answers to numerous inquiries relating to individuals, farms, factories, and other enterprises, covering the subjects of population, agriculture, manufacturing, irrigation, drainage, distribution and unemployment. April 1 was selected as the date for the population and agricultural enumerations. The Census Bureau then took up tabulation and publication of the data collected, which was required to be completed by Dec. 31, 1932. There were approximately 20 million schedules handled, checked, and coded, preparatory to transcribing the data to punch cards.

The duties connected with the decennial census, necessitated an increase in the personnel of the Census Bureau from 925 to more than 7000. Ninety per cent of the permanent force were engaged in duties connected with the Fifteenth Census. This created a problem because experienced personnel engaged in other census activities were obliged to turn their attention to the conduct of the decennial census at the expense of other Census Bureau investigations, which had already attained large dimensions.

By the end of the fiscal year, June 30, 1930, the Bureau of the Census had announced the population of 745 cities of over 10,000 inhabitants each out of a total of about 940, and of 1821 counties out of 3098. Large numbers of smaller cities, townships, and other political subdivisions were also announced by that time. In all the Bureau made over 70,000 announcements before the first of July, 1930. At the corresponding date following the census of 1920, only 221 cities had been announced and no counties. These announcements were followed through the remainder of the calendar year by frequent bulletins and press statements for States and counties and for different industries.

In the census of distribution, which for the first time was conducted on a nation-wide scale, at the end of the fiscal year returns had been received from 1,500,000 retail and wholesale establishments and country buyers, 100,000 construction contractors, and 17,000 hotels. As these returns were received they were examined to insure consistency in the answers to the various questions, and much correspondence was necessary in order to complete the reports from some of the more important concerns. The publication of reports on this investigation began in the early autumn and continued throughout the year. The information presented in this preliminary publication covered the total net sales of the establishments, the inventories, employees, and salaries and wages, classified according to kind of business, by States, counties and cities.

During recent years, the scope of the U. S. Census Bureau's inquiries covering industry and commerce had been steadily extended. Where at the beginning of the century the only industrial statistics collected were those on manufactures and mines and quarries, gathered every ten years,

the Bureau had developed to a point where it issued periodically statistics on a great variety of subjects. The census of manufactures was on a biennial basis; the census of agriculture was taken every five years, while the new census of distribution as part of the decennial census is referred to elsewhere.

See article UNITED STATES for summaries of population, etc.; also UNEMPLOYMENT.

CENTRAL AMERICA. The term generally applied to the southern portion of the North American continent lying to the north of the Panama Canal and south of Mexico and consisting of the five states, Costa Rica, Guatemala, Honduras, Nicaragua, and Salvador, and the British crown colony of British Honduras. See the articles on these respective countries. See EXPLORATION; ANTHROPOLOGY.

CENTRAL ASIA. See SOVIET CENTRAL ASIA.

CENTRAL STATIONS. See BOILERS; DYNAMO ELECTRIC MACHINERY; POWER PLANTS, STEAM.

CEREALS. See BARLEY; OATS; RYE; WHEAT.

CEYLON, sē-lōn'. An island in the Indian Ocean off the southern extremity of Hindustan, belonging to Great Britain. Capital, Colombo. Area, 25,332 square miles; population, at the census of 1921, 4,504,549; estimated in 1929 at 5,479,000. In 1921 there were 8099 Europeans; 29,403 burghers, or Dutch descendants, and other Eurasians; and the remainder of the population comprised Singhalese, Tamils, Moors, Malays, Veddas, and others. Registered births in 1928 numbered 213,311; deaths, 132,337; marriages, 30,146 (exclusive of Moslem marriages). Leading cities, with their populations in 1921, are: Colombo, 244,163; Jaffna, 42,436; Galle, 39,073; Kandy, 32,562. Buddhism is the religion of the majority. In 1928, there were 1171 vernacular schools, with 174,935 pupils; 1914 aided schools, with 231,556 pupils; 498 unaided schools, with 20,832 pupils; and 474 English and Anglo-vernacular schools, with 93,270 pupils.

Primarily agricultural, Ceylon specializes in such export crops as plantation tea, rubber, and coconuts. Half of the population's rice needs is raised locally, and cacao, cinnamon, citronella grass, and miscellaneous products are cultivated. About 3,200,000 acres are under cultivation. Livestock in 1928 included 1,618,000 cattle, 57,000 sheep, 47,000 swine, 170,000 goats, and 2000 horses. There are about 2600 elephants on the island, 1000 of which are tamed. Plumbago is extensively mined and small gold, monazite and thorium deposits have been found.

Imports in 1929, including bullion and specie, were valued at \$147,096,000 and exports at \$154,242,000. The principal exports (1928): Tea, £13,415,660; rubber, £5,383,671; desiccated coconuts, £1,322,674; copra, £2,120,109; and cacao, cinnamon, plumbago, coir, and areca nuts. Rice and paddy, cotton manufactures, sugar, manures, coal and coke, bullion, and spirits are the chief imports, in the order named. The United Kingdom in 1929 took £15,175,622 of the exports and supplied £5,920,186 of the imports.

For the fiscal year 1927-28, revenues amounted to £8,942,330 and expenditures to £10,140,480. The net public debt on Sept. 30, 1928, amounted to £12,650,893, and was incurred wholly for public works. Shipping entered and cleared in 1928 totaled 22,725,000 tons (British, 13,303,000 tons). There were 951 miles of railway line in operation (September, 1928), with several extensions

under construction, and 10,652 miles of telegraph wire. Surfaced highways extended 3644 miles. Government is in the hands of a governor, assisted by an executive council of nine ex-officio and nominated members, and a legislative council of 49 members, of whom 34 are elected. The colony is divided into nine provinces, each administered by a Government agent. Governor in 1930, Sir Herbert James Stanley, succeeded by Sir Graeme Thomson, former Governor of Nigeria.

MALDIVE ARCHIPELAGO. The Maldive Archipelago consists of 13 coral islets, 400 miles southwest of Ceylon. Inhabited by 70,000 Moslems (1921 census), they are ruled by a native sultan and pay an annual tribute to the Ceylon government. Millet, fruits, and edible nuts are the chief products.

CHACO. The South American frontier region in dispute between Bolivia and Paraguay. See BOLIVIA under *History*.

CHAMBER MUSIC. See MUSIC.

CHAMBER OF COMMERCE OF THE UNITED STATES. A national federation of more than 1800 business organizations, established in 1912 primarily as a vehicle for the expression of national business opinion on important economic questions. The President of the United States and other government officials aided in its organization, and it has since served as an agency for the coöperation of business and government in the furtherance of national economic policy, holding itself ready at all times to advise the government regarding the needs of business and the possible economic effects of legislative measures.

The members of the chamber are trade associations and local or regional chambers of commerce, these groups being represented on a board of directors, composed of 34 members chosen from geographical districts or specific fields of business and elected for a term of two years. The membership in 1930 consisted of 1819 business organizations, 9517 individual members, and 12,696 associate members. The policies of the organization are formulated only by resolutions adopted at its meetings or by direct referendum, in order that they may reflect as accurately as possible the opinion of all classes of business represented in the constituent membership. Among the questions to which the chamber directed its attention during the year were: The tariff, foreign trade policies, farm legislation, produce exchange trading, reduction of government in business, reorganization of Federal government departments and agencies, voluntary consolidation of railroads, adherence of the United States to the protocol of the Permanent Court of International Justice, prudent reduction of armaments, highways, air mail, passports, Federal Reserve policies, water-power policies, and immigration. It also worked with President Hoover in the formulation and operations of the National Business Survey Conference for dissemination of current trade data.

For the convenience of its members the chamber maintains at its national headquarters 12 service departments, covering the main divisions of business activity. The agricultural department aids local chambers of commerce in the solution of agricultural problems and the enhancement of trade area prosperity. The civic development department aids business men to approve not only local municipal and civil development but also matters of general national importance. The commercial

organization department assists member chambers in strengthening their organization and extending their usefulness to the communities which they serve. The department of manufacture aims to assist local chambers with their problems of industrial extension. The domestic distribution department attempts to promote better methods of distribution; it also has cooperated with the U. S. Bureau of the Census in working out a distribution census so as to obtain an accurate account of the channels of distribution, wages of employees, and volume of business in different parts of the country. The finance department studies methods of Federal, State, and local taxation and problems of corporation and international finance.

The foreign commerce department deals with tariff policies and import and export problems. The insurance department works to secure a more enlightened public attitude toward the insurance institution. The natural resources production department deals with the problems of water power, oil, coal, forest, and other natural resources. The trade association department serves as a clearing house as to the activities which a trade association can carry out most effectively. The transportation and communication department studies problems of rail, highway, waterway, and air transportation and of postal service and electrical communications. The research department covers the general field of economic research. Studies are also conducted by the following special committees: Aeronautics, education, electrical communications, Federal taxation, highway and motor transport, immigration, inland waterway transportation, national defense, railroads, and State and local taxation and expenditures. The chamber publishes a monthly magazine, *The Nation's Business*, with a circulation of more than 320,000, and issues from time to time reports on economic subjects.

The eighteenth annual meeting of the chamber was held in Washington April 28 to May 1, 1930. The officers elected for 1930-31 were: President, William Butterworth of Moline, Ill.; chairman of the board, Julius H. Barnes of New York City; vice presidents, A. J. Brosseau of New York City, W. Rufus Abbott of Chicago, William M. Wiley of Sharples, W. Va., Paul Shoup of San Francisco, Charles W. Lonsdale of Kansas City, Mo.; treasurer, John Joy Edson of Washington; secretary, D. A. Skinner of Washington. National headquarters are in Washington, with divisional headquarters in New York City, Atlanta, Chicago, Minneapolis, Dallas, and San Francisco.

CHAMPIONSHIPS. See **ATHLETICS**; **BOXING**, and other sport titles.

CHANDERNAGOR. See **FRENCH INDIA**.

CHANEY, LON. An American motion picture actor, died in Los Angeles, Calif., Aug. 26, 1930. He was born in Colorado Springs, Colo., Apr. 1, 1883. After several years' appearance on the legitimate stage, he made his screen debut in 1912. His first famous rôle was that of the bogus cripple in *The Miracle Man* in 1919. He gained renown as a character actor and as a master of make-up, acquiring the sobriquet of the "man of a thousand faces." His important pictures include: *Outside the Law*; *Treasure Island*; *Oliver Twist*; *The Hunchback of Notre Dame*; *He Who Gets Slapped*; *The Unholy Three*; *The Monster*; *The Phantom of the Opera*; *The Tower of Lies*; *The Road to Mandalay*; *The Blackbird*; *Tell It to the Marines*; *Mr. Wu*; *Alonso, the Armless*; *The Unknown*; *Mockery*; *London after Midnight*;

The Big City; *Laugh, Clown, Laugh*; *While the City Sleeps*; and *West of Zanzibar*. His last picture was a talking version of *The Unholy Three*.

CHANNEL TUNNEL. See **GREAT BRITAIN** under *History*; **TUNNELS**.

CHAROST, ALEXIS ARMAND, CARDINAL. A French Roman Catholic prelate, died in Paris, Nov. 7, 1930. He was born in Mans Nov. 14, 1860, and attended the Seminary of Mans, the French Seminary in Rome, and the University of Angers, receiving the degrees of Doctor of Theology and Doctor of Canon Law. Ordained to the priesthood in 1883, he was successively professor at the Holy Cross College in Mans, secretary to Mousigneur Labouré in Rennes, and vicar-general and director of secondary education of the archdiocese. In 1913, while stationed in Lille as a parish priest, he was made titular Bishop of Miletopolis and auxiliary of Cambrai. When Lille was raised to the rank of a bishopric in November of that year, he was installed as the first Bishop. He was held as a hostage in the early months of the World War on account of the charge to his people during the German occupation of Lille that, although they were compelled to bow to force, they should "maintain a stout allegiance to the republic." In 1919 he became chancellor of the Catholic University in Lille, and the following year was made titular Archbishop of Chersonèse and coadjutor of Mousigneur Duborg in Rennes. He was elevated to the archbishopric of Rennes in 1921, and in December, 1922, was made a Cardinal-Priest by Pope Benedict XV, with titular jurisdiction over the Church of Santa Maria della Vittoria in Rome.

CHAUCER STUDIES. See **PHILOLOGY**, **MODERN**, under *English*.

CHAUTAQUA INSTITUTION. An educational movement established in Chautauqua, N. Y., in 1874 by Lewis Miller and the Rev. Dr. John H. Vincent, both prominent in the Methodist Episcopal Church. Its original idea was that of an assembly for Sunday-school teachers, but it was gradually developed into an institution affording during the months of June, July, and August a series of correlated lectures and entertainments. The three general fields of activity are the general assembly, consisting of an educational and popular series of lectures and addresses, concerts, operas, dramatic entertainments, and so forth; the summer schools, offering credit courses under the direction of New York University; and a home-reading circle, in which five outstanding books are designated for reading during the year, in addition to a news narrative appearing in a monthly review.

The attendance at the annual session in 1930 was estimated at 45,000. Among the lecturers at the general assembly were: Dr. Paul Harvey on "The Present Temper of the Orient"; Dr. Richard Burton on "Literary Tendencies Today"; Kenneth MacGowan on "Footlights across America"; Ameen Rihani, Arabian poet and statesman, on "Where East Meets West"; and Dr. Edward Howard Griggs on "Present Problems of American Life." The 1930 summer school included 17 departments, with 125 instructors and approximately 2500 students. Permanent buildings, valued at \$1,250,000, are owned by the institution; those under construction in 1930 included the Smith Memorial Library, the \$60,000 gift of Mrs. A. M. Smith Wilkes, and the community church. The officers in 1930 were: George E. Vincent, honorary president; Arthur E.

Bestor, president; William L. Ransom, chairman of trustees; Shailer Mathews, chairman of the executive board; Charles E. Peirce, secretary; and Jessie M. Leslie, treasurer.

CHEESE. See DAIRYING.

CHEMICAL INDUSTRY, SOCIETY OF. See CHEMISTRY, INDUSTRIAL.

CHEMICAL SOCIETY, AMERICAN. See CHEMISTRY, INDUSTRIAL.

CHEMISTRY. The progress of this science during the year was continuous and persistent. Conspicuous among the favorite subjects for study and investigation was the atom, and much was developed as to its constitution. The sex hormones, both male and female, were analyzed, and it may yet be found that after all life is generated when a certain aggregate of atoms find themselves in a congenial environment. It was announced on November 13, that the Nobel prize in chemistry for 1930 was awarded to Prof. Hans Fischer of Munich for his success in synthetically producing hæmoglobin, the coloring matter of blood.

NEW ELEMENTS. In February, through the agency of the Science Service, the public press in the United States announced that by a new and highly sensitive method of analysis, in which it is possible to detect one part of a compound in several billion parts of water, there had resulted the discovery by Dr. Fred Allison and Prof. E. J. Murphy of the physics department of the Alabama Polytechnic Institute of evidence of the presence of Element 87 which was one of the missing elements. These scientists consistently found in samples of pollucite and lepidolite minima at points of the scale corresponding to an element of the chemical equivalent ascribed to ekacæsium, the name already given to Element 87. The fact that the minima characteristic of an element of the properties of ekacæsium appear at the appropriate parts of the scale in the chloride, nitrate, sulphate, and hydroxide compounds of these minerals affords evidence of considerable weight that the element is present in the samples under test, since by their method the compound instead of the element is detected, and different compounds of the same element appear at different regions of the scale.

ATOMS AND THEIR STRUCTURE. The results of several studies on the structure of atoms were published during the year.

Early in January Col. F. E. Johnson, a retired army officer, living in Washington, D. C., announced that he found atoms to be synchronous motor-generators built up of the isotopes of hydrogen and helium. That following neon, the tenth atomic number, there appear three neon structural units which differ only in the so-called K group, the L and M groups being the same in the three completed neon structural unit groups. The variation in these fundamental neon structural units is the cause of the "regular" and "irregular" doublets, which are also known as the "relativity" and "screening" doublets. Two of these neon groups with 10 and 8 orbital electrons, respectively, are successively built up as valence groups and determine the subperiods of the Periodic Table of the Elements. These three neon structural unit groups form 6 different double parallel groups. Colonel Johnston called them structural argon groups because they determine the argon periods of 18 corresponding to the first three full periods ending in argon, krypton, and xenon of the periodic table of the elements.

Isotopic variations of the neon and argon structural groups and the isotopes of hydrogen and helium in the valence groups enter into definite progressive periodic structural relations in forming the atoms of the successive atomic numbers. Thus the periods and subperiods of the periodic table of the elements result from the periodic structural neon group, two of which form an argon group and determine an argon period. Further, the first 100 elements are members of the first 5 argon periods, of which the first three consist of 18, the fourth of 14 ending in erbium, Atomic No. 68, and the fifth of 32 elements. There are only 13 rare earths and these lie between cerium and hafnium. They form two subclasses differing in the K group of the neon valence group. Thus in Nos. 65 to 68 the valence group has no K group, while the others are similar to lanthanum, Atomic No. 57.

Thus it appears that the electro-mechanical principles involved result in an atomic structure consisting of a nucleus and orbital electrons having the characteristics of a synchronous motor-generator belonging to an adiabatic invariant system. Further, the radon group of which mercury is the end product has no valence group, but, like the 13 rare earths, vary in the K group of the argon structural unit group. The great mystery of the radioactive elements is thus solved. Colonel Johnston finds that the structural unit is the argon group of six forms and each with isotopic variations.

Because of the fact that the two neon groups in an argon unit maintain synchronism through their isotopic separators, they can only vary by a particles, which are helium atoms. This results in four even and four odd series of which only three even ones have been found, namely, radium, thorium, and actinium. The unknown odd elements, Nos. 85, 87, and 93 belong to the odd series and exist somewhere. Each of these 8 series ends in a known isotope of mercury. Following Atomic No. 100 a parallel transition takes place corresponding to the parallel argon groups until No. 400 is reached, when there is a structural change covering the following 100 elements similar to the radon structure initiated in the mercury atom.

In March Dr. W. F. Maggers of the U. S. Bureau of Standards in Washington obtained spectra photographs which revealed the atomic structure of lutecium. Everything on earth, in the final analysis, is composed of atoms. An atom consists of a central body, somewhat like the sun in the solar system, with from 1 to 98 other bodies revolving around it. The number of planets, or electrons, distributed about the central nucleus, determines the kind of atom. Thus, if there is only one, it is an atom of hydrogen. If there are 98, it is an atom of uranium. Ninety kinds of atoms are known. The central body increases in size proportionate to the number of its planetary family. Nobody will ever see an atom. But it has been possible to photograph them which reveals how the atoms are made up. Each arrangement of planetary electrons, when made luminous, gives off light of a different composition. This is divided in a prism, and the distribution of spectrum lines studied. In this way, it was found, atoms are built up from the simpler to the more complex, according to a definite pattern, which seems to hold throughout nature. Electrons are arranged in successive "shells" around the nucleus. One electron is added to the hydrogen

atom, and the first "shell" is completed. The result is a helium atom. Then by some unexplained increase in the central mass which attracts other electrons, the process of building up the elements goes on. A second shell is built up outside the first. When this is completed in this case by light electrons, the product is neon. A new shell starts. Finally, with four shells composed of 54 electrons, is found the rare gas, xenon. Then begins the process of building up a fifth shell. Electrons are added until, with three new ones, the rare metal lanthanum is reached.

Dr. Magers attempted the difficult job of knocking off all three outer electrons by means of an electric spark, and then obtaining the spectrum of what was left. With the incomplete outer shell knocked out, a new shell was being built up just the same. Lutecium had a complete sixth shell of 14 electrons. In theoretical physics this is one of the greatest triumphs ever achieved in the Bureau of Standards.

At the meeting of the American Chemical Society held in Atlanta, Ga., in April, Prof. William D. Haskins of the University of Chicago, reported that he had succeeded in building up an atom. The proof consisted of two photographs of the process, obtained as a result of seven years' painstaking experimental work, which involved taking 34,000 instantaneous still photographs of helium atoms, moving at a speed of 11,000 miles a second, at the moment of collision with atoms of nitrogen gas into which they were propelled. According to his account, the helium atom became part of the nitrogen atom with which it was in direct impact, forming fluorine for an instant, which explosively threw off an atom of hydrogen, leaving oxygen as the result. For his experimental attempt to build up heavy atoms from light ones and thereby transmute one element into another, he selected the fast-moving α particles of helium cast off by the radio-active metal, thorium, at a speed of about 11,000 miles a second. Through an instantaneous shutter, about 12 of these α particles at a time were admitted into a glass cylinder filled with nitrogen gas and with supersaturated water vapor. As the α particles tore through the nitrogen gas, they electrified it in their path and the water vapor condensed in each path like a thread of steam. At the same instant, each thread of steam was made visible by a powerful illumination and a still photograph was taken. Each photograph showed an average of twelve threads of steam, scientifically known as tracks, located where the high-speed α particles of helium had torn through space. Owing to the open formation of matter it was most probable for these particles to make the complete trip through the space covered by the camera without encountering an atom of the nitrogen gas in direct impact.

Sir William Bragg, in an address before the Royal Institution in London, in May, announced that he had found that in nature certain atoms, certain molecules, certain combinations of molecules are preferred to others. Thus chemists have shown that cellulose is essentially some multiple of a certain group of atoms, 6 carbons, 10 hydrogens, and 5 oxygens. They have been able to show how the atoms in this group are attached to one another, which to which. They have gone further and shown that the 6 carbons are arranged in a sequence. They do not, however, make a long chain; 5 of them with the oxygen make a ring and the remaining carbon with certain attach-

ments hangs therefrom. This construction is for some reason the basis of the structure of plant life.

When a fine pencil of X-rays traverses a fibre of any kind, cotton, hemp, ramie, or jute, the rays are scattered in such a way that a photographic plate placed behind the fibre is covered with a diagram of fine spots. The new methods, by which crystal structure is analyzed with the help of X-rays, can be applied to this diagram and a beginning made with its interpretation. It appears that cellulose is composed in large part of a mass of small crystals. This is shown by the fact that there actually is a diagram. That the same diagram is obtained from all fibres, even from animal cellulose, shows that we are dealing with one and the same substance. It can further be deduced, by measuring up the spaces on the diagram, that there is in each crystal a periodicity parallel to the direction of the fibre, and this quantity can be determined exactly.

In a paper on X-ray Scattering and the Structure of Atoms, read before the American Physical Society in June, Prof. A. H. Compton, who recently had won the Nobel prize, said: "If you look at an atom, you will find it spherical in shape, the size of the spheres differing with the different elements. The electron surrounds the nucleus like a nebular haze, the nebula being thicker toward the centre than it is toward the circumference. We no longer find it convenient to say that it is a definite particle revolving in a fixed orbit around the nucleus. Rather it is like a cloud of raindrops, diffused through the sphere of the atom. Several weeks ago, I noticed a beautiful halo around the moon. Half an hour later the halo was visibly smaller in diameter, and it was no surprise when a few hours later rain began to fall. The interpretation of such halos, as due to the diffraction of the moonlight by droplets of water suspended in the air, is well known. The larger the droplets the smaller the angle of diffraction necessary for the appropriate phase difference between the rays coming from the two sides of the drop. So by observing the diameter of the halo we can estimate the size of the water drops which cause it. A shrinking halo means a growing drop and hence probable rain.

In a similar manner it is possible to find the size of molecules and atoms in a gas, by observing the diffraction halos produced when they are traversed by a beam of X-rays. We substitute X-rays for the moonlight, and instead of the rain drops or vapor, we use helium, neon, argon, or some other gas. The X-rays make diffraction halos on the gas, just as the moonlight makes it on the raindrops, and just as we can estimate the size and position of the rain drops, we can estimate the size and position of the electrons.

At a meeting of the National Academy of Sciences, held in Berkeley, Calif., Dr. Ernest D. Lawrence and Prof. N. F. Edlfsen of the University of California described a new kind of atomic superpower plant. It proposes to speed up atomic hydrogen particles to about 37,000 miles a second, so they can be used as bullets to bombard and possibly break the atoms of other elements. Other methods have required expensive, heavy equipment and high power, but the new apparatus can be set on a chair and used with little power. It combines an alternating current of electricity and magnetism to set the nuclei, or central masses of hydrogen atoms to whirling in widening circles at constantly increased speed until finally they

are shot out of a tube. Their speed is equivalent to the energy produced by a 1,000,000-volt X-ray tube, which is far greater than any ray power yet available. Rays of radium have atomic particles traveling about 12,000 miles a second. Scientists have shot these radium particles into gases and knocked out small pieces of atoms, but have not been able to break up entire atoms. What speeds of atomic bullets are needed to break up atoms and to put transmutation and power production theories to actual test are not known. At this same meeting the principle of identity, a new scientific mode of study to solve some of the paradoxes of modern physics, was explained by Dr. Gilbert N. Lewis of the same University. The study promised information about the nuclei of atoms. In recent years scientists have learned atoms are composed of electrons surrounding a central mass. This mass is the nucleus and has largely defied analysis.

ANALYTICAL CHEMISTRY. The reports of papers on improved methods of analysis and on new forms of apparatus were many, typical of which are the few here presented.

It is found by M. Wagenaar (*Pharm. Weekblad*, vol. 66, p. 1073) that the most sensitive reagents for strychnine are gold and platinum chlorides, picric acid, and mercurous iodide in presence of potassium iodide, with each of which 0.1 mg. can be detected at dilutions of 1 in 1000-5000. A review of the tests for acetic acid by D. Krieger and E. Tschirch (*Chem. Zeit.*, vol. 54, p. 42) seem to indicate that the only trustworthy process which is specific is the microchemical reaction depending on the formation of sodium uranyl acetate. H. Weber contributes (*Chem. Fabr.*, 1930, p. 69) important and ingenious devices for cooling, for supplying liquid continuously to a relatively small evaporating vessel, for continuously supplying liquid for washing slimy and troublesome precipitates, and for automatically filling pipettes and burettes. According to L. Ekkhert (*Pharm. Zentr.*, vol. 71, p. 417) the green color produced by ferric chloride when brought in contact with compounds containing adrenaline changes to red without the usual addition of alkali; 10 per cent sodium nitrate solution produces a red color darkening to blood-red after 1 to 2 minutes. Color reactions with some alkaloids and concentrated sulphuric acid were also given in this paper.

BIOLOGICAL CHEMISTRY. The status of this branch of chemistry was significantly expressed in the words of Dr. Paul R. Heyl in a paper presented by him before the Science Forum in New York City in January. "There is nothing occult or supernatural in the processes of life and eventually we will unravel its secret. Protoplasm is nothing but a chemical compound. I see no reason why some day we shall not be able to produce it. When we do so it may be living or it may be dead—no one can say."

According to a report presented at the Atlanta meeting of the American Chemical Society, held in April, a clew to premature old age was found in the newest vitamin. Only a year old in the recognized family of diet principles, vitamin G was presented to the chemists as possessing special control over growth. These newly found qualities were described by Prof. H. C. Sherman of Columbia University in whose laboratory experiments with rats showed that in these animals the vitamin is directly connected with growth. Lack of it may retard growth, stop it, or in ex-

treme cases cause death. In some rats the shortage caused premature old age. Loss of hair is one of its most commonplace danger signals. Its lack is suspected as a cause of pellagra and is presumably identical with the pellagra preventive diet discovered by Dr. Joseph Goldberger. The growth requirements of rats presumably apply to other mammals also. Vitamin G must play a prominent part in any adequately comprehensive conception of food values from now on.

Still another member of the vitamin family was suspected to be hiding behind G. Dr. Sherman called it the "new factor," saying that it too was important for growth, and that evidence of its presence had been detected by several other laboratories in addition to Columbia. This new factor is abundant in milk and presumably in meat. Vitamin G is also found in leaves, such as spinach, kale, and cabbage. It appears moderately in eggs.

At the Cincinnati meeting of the American Chemical Society, held in September, new methods of rejuvenation were discussed. Instead of transplanting the glands themselves which had so far proved unsuccessful, the new methods called for the employment of extracts which the ductless glands are known to secrete, these secretions to be administered either by injection or in the form of tablets or liquid medicines. Some of these extracts come from glands which, in all probability, could never be transplanted. While the experiments described had not been conducted on human beings, they opened up a new field in curing the sick, helping premature old age, and aiding in the development of subnormal youth. Some of the physicians present announced that the application of these gland experiments had cured cases of pernicious anemia, stomach ulcers, and had proved as effective in the treatment of the dreaded Addison's disease as insulin has in diabetes.

Some of the amazing practical experiments were reported by Dr. F. C. Koch of the University of Chicago, who said that a sex extract called hormone, obtained from men when injected into roosters, caused growth of their combs and wattles, which are nature's ornamental badges of the male sex. Sex hormones obtained from women caused the rooster's combs to grow as well as did the male extract. A different feminine hormone, however, obtained from women, caused roosters' feathers to change slightly, so as to show markings typical only of hen feathers.

Among others papers are the following: In studying the influence of insulin on narcotized animals H. Horsters and H. Brugsch (*Arch. Exp. Path. Pharm.*, vol. 147, p. 193) find that the administration of narcotics inhibits the convulsions accompanying insulin hypoglycemia, independently of any effect of the narcotic on the blood sugars level. It was found by B. Longo and C. Paderi (*Atti R. Accad. Lincei*, vol. 10, p. 322) that alkaloids act as excitants on seeds and plants containing them, the action being non-specific with the seeds and specific with the plants. According to J. W. Hershey (*Science*, vol. 71, p. 394) animals soon die in an atmosphere of pure oxygen; hemorrhage and the development of certain bacteria occur under these conditions. The addition of 0.03 per cent of carbon dioxide to the oxygen has little or no effect in prolonging life. Mice exist normally in a mixture of 79 per cent of helium and 21 per cent of oxygen and in one of 75 per cent of argon and 25 per cent of oxygen;

higher percentages of argon are harmful. The rare gases together with carbon dioxide appear to be essential to normal life in an atmosphere of 21 per cent of oxygen and 78 per cent of nitrogen. An increase in the percentage of oxygen up to 60 has little effect, but larger percentages had an adverse effect. Aluminum occurs in almost all animals and plants and may be necessary for the maintenance of life. According to the researches of C. Massatsch and H. Stendel (*Biochem. Zeit.*, vol. 220, p. 239) aluminum in the amounts likely to occur in foods is quite harmless. R. Brill (*Naturwiss.*, vol. 18, p. 622) reports that X-ray examination shows that natural silk fibroin consists of at least two substances, one of which is crystalline. The crystals are not preformed in the glands of the silk worm, but separate during the drying of the fluid secretion.

GENERAL CHEMISTRY. This branch of chemistry usually refers to those elements and their compounds that are derived from minerals, as distinguished from organic chemistry, the compounds of which were formerly reported as the result of the action of life. Some of the more notable advances in this subject are indicated by the following items:

According to J. R. Partington (*Journ. London, Chem. Soc.*, 1929, p. 2577) the existence of the compound $2\text{AsCl}_3 \cdot 3\text{SCl}_2$ as originally described by Rose, probably does not exist. He also described an improved method for the preparation of arsenic trichloride. The isobar at atmospheric pressure and the isotherms at 1000° , 800° , 640° , 600° , and 500° were determined for the system titanium-hydrogen by L. Kirschfeld and A. Sieverts (*Zeit. Phys. Chem.*, vol. 145, p. 227) whose results are published in a space diagram. The curves are similar to those obtained with zirconium and thorium.

An interesting series of experiments made by C. Fabry and E. Dubreuil (*Compt. Rend.*, vol. 190, p. 91) as to the formation of gold, mercury, and helium from lead by prolonged exposure to sunlight with old roof lead, resulted negatively, notwithstanding Mlle. Maracineanu claimed that solar radiation had revealed spectroscopically the transmutation of lead into gold. According to the investigations of D. G. Hill and G. B. Kistiakowsky (*Journ. Amer. Chem. Soc.*, vol. 52, p. 892) ethylene combines with hydrogen at the surface of cesium at 25° and more rapidly at 200° , but reaction is retarded by the formation of metallic hydride, sodium hydride alone was produced when the cesium was replaced by sodium.

Ammonia was not formed from nitrogen and hydrogen in the presence of cesium. Crystals produced by recrystallization in slightly deformed single crystals, according to K. Tomaka (*Mem. Coll. Sci. Kyoto*, vol. 13, p. 117) tend to have a definite orientation with reference to that of the mother crystal. The orientation is little affected by the direction of the stress applied before annealing, or the type of deformation produced by the stress. Chlorine trifluoride has been prepared by O. Ruff and H. Krug (*Zeit. anorg. Chem.*, vol. 190, p. 270) by heating either chlorine or its monofluoride with excess of fluorine. This trifluoride (ClF_3) is a colorless gas which condenses to a pale green liquid with a boiling point of 11° . The solid is colorless with a melting point of -83° . Its vapor pressures have been determined and the substance is best characterized by the value at 0° , namely $490 \pm 5\text{ mm}$. Chlorine trifluoride is extremely active chemically. Organic

materials are instantly ignited, and most of the elements are attacked explosively.

MINERALOGICAL CHEMISTRY. Study of the composition of minerals and other constituents of the earth's surface are of great value in the study of chemistry as is shown in the items that follow:

The interesting fact that two chemists, Dr. Jacob Papish and Zaida M. Hanford of Cornell University, have completed a series of analyses of six meteorites and have located traces of arsenic and of germanium, the latter an unusually rare element, was announced in February. The six meteorites were studied by placing parts of them in an electric arc. With the aid of a spectroscope the light from the arc was closely studied. Certain lines known to be due to germanium were observed in all the specimens studied. By a complicated chemical treatment quantities of arsenic and germanium were extracted from two meteorites. It was found by G. Tamman and E. Jenckel (*Zeit. anorg. Chem.*, vol. 186, p. 141) that the density of crystalline substances is not altered by subjecting them to a high pressure at a temperature at $10\text{--}30^\circ$ below their melting point, although the density of amorphous glassy substances is thereby increased, a difference naturally is to be expected in their behavior.

From a discussion of available data, C. E. St. John (*Astrophys. Journ.*, vol. 70, p. 160) concludes that the presence of the following elements in the sun is not yet definitely established: argon, krypton, neon, radon, xenon, actinium, arsenic, gold, bismuth, fluorine, chlorine, bromine, iodine, mercury, masarium, phosphorus, protoactinium, radium, polonium, rhenium, tantalum, iridium, selenium, tellurium, thorium, uranium, and the rare earths, holmium, illinium, lutecium, terbium, and thulium. Traces of germanium have been identified by J. Papish and Z. M. Hanford (*Science*, vol. 31, p. 269) in certain meteorites, namely, siderites from Mexico and Ontario, siderolites from Kansas and Chile, and aërolites from Texas and Michigan. Germanium and arsenic have been separated from the first two siderites. A. F. Kavarik describes (*Amer. Journ. Sci.*, vol. 20, p. 81) the data necessary for the calculation of the age of minerals from radioactive studies. He deduces a formula assuming that the radium and actinium are branch series from uranium—II, ending in isotopes of lead of the same atomic weight (206) and that ordinary lead is present in calculable quantity. The minerals peculiar to meteorites and those common to meteorites and the earth are discussed by G. P. Merrill in Bulletin 149 of the U. S. National Museum. The elements occurring in meteorites are also mentioned, and a type classification of meteorites is also given.

ORGANIC CHEMISTRY, or the chemistry of the carbon compounds is that branch of science that deals with the combinations of the element carbon with other elements, and formerly supposed to have had its origin from life processes. Since the synthesis of urea by the great German chemist Wöhler, which later led to the syntheses of artificial alizarin and indigo, it has been a most popular study for investigators. From among the many researches published during the year a few are given to show the trend of the science. H. B. Glass and E. E. Reid (*Journ. Amer. Chem. Soc.*, vol. 51, p. 3428) find that when benzene is heated with sulphur at 350° for 24 hours, thiophenol, diphenyl sulphide and disulphide, diphenylene

disulphide, and hydrogen sulphide are formed. The first product formed is probably thiophenol. With ethylbenzene a good yield of 2:4-diphenylthiophen is obtained as the sole product.

11. Ter Meulen, H. J. Ravensway, and J. R. G. de Veer recommend for the determination of oxygen in organic substances the use of a nickel boat filled with reduced nickel in place of the nickel asbestos mixture generally used; especially as drying is thereby much facilitated. S. Smith (*Journ. Chem. Soc.*, 1930, p. 508) finds that the mixed glucosides of *D. lanata* in crystallization from acetone deposit a fraction rich in a new glucoside which may be readily purified by taking advantage of its sparing solubility in 80 per cent alcohol, chloroform, and ethyl acetate. The colorless crystalline product which he calls digoxin has the composition $C_{41}H_{64}O_{14}$ and a melting point of 265°. Its Keller reaction is greenish yellow.

Most saponins according to the studies of L. Koeler and H. Raum (*Biochem. Zeit.*, vol. 219, p. 335) are not precipitated from alcoholic or other solutions by cholesterol but by the method of Kofler and others it can be shown that the saponins form loose compounds with cholesterol which are broken up even by ether. There is no parallelism between the capability of saponins to combine with cholesterol and the extent of their hemolytic action. Saponins behave towards ergosterol in the same way as towards cholesterol. H. M. de Lissner (*Rev. Cent. Est. Farm. Biochim.*, vol. 18, p. 348) finds that dinitroanthroquinone is both unsuitable and untrustworthy as a general precipitant for alkaloids.

The Liebig method of rapid combustion of organic substances, according to E. V. Zappi and A. Manini (*Anal. Assoc. Quim. Argentina*, vol. 17, p. 234) may be modified by supporting the boat in an expanded extension of the oxygen supply tube, outside of which a current from a bypass also passes. A more rapid current of oxygen may be used when combustion begins, and the analysis is completed in less than one hour. The conclusions reached by J. Kenyon and H. Phillips in a survey (*Trans. Faraday Soc.*, vol. 26, p. 451) of the Walden inversion during a ten-year period are that if, during a displacement reaction, the asymmetric radical separates as a positively-charged ion, the optical activity of the product results from the occurrence of the Walden inversion, and that if the optically active radical separates as a negatively-charged ion an optically active product results without the occurrence of an inversion. S. Erikson describes (*Svensk. farm. Tidskr.*, vol. 34, p. 1) a method for the analysis of mixtures of antipyrine and pyrazolidone which depends on the fact that both substances, but not the products of boiling pyrazolidone with hydrogen peroxide, give sparingly soluble pierates.

PHYSICAL CHEMISTRY deals with the action of physical forces in chemical compounds, thus the action of light on silver salts results in photography and the action of electricity on carbon produces artificial light. It is an important branch of science, some of the advances of which are given in the following items:

The atomic weight of chlorine according to the redeterminations of A. F. Scott and C. R. Johnson (*Journ. Phys. Chem.*, vol. 33, p. 1975) obtained nephelometrically from three samples of nitrosyl chloride is 107.880 with nitrogen = 14.008. J. H. Krepelka finds that the mean value of 13 determinations of the atomic weight of ar-

senic is 74.936, which is essentially the same as Ashton's value of 74.934, determined in 1927. A redetermination of the vapor pressure and vapor density of sodium made by W. H. Rodebush (*Nature*, vol. 125, p. 130) agrees with an apparent molecular weight of 25 for the saturated vapor at 706°. This yields a calculated value of approximately 0.75 volt for the heat of dissociation. An extensive study on the causes of the mercury bands by S. Mrozonski (*Zeit. Physik.*, vol. 60, p. 410) showed that atomic excitation has no effect on the primary spectrum but that it plays an important part in the production of bands. B. B. Ray finds (*Nature*, vol. 125, p. 856) that in passing through carbon, nitrogen, and oxygen, the copper $K\alpha$ radiation produces the new diffuse, and broad lines 1592, 1614, and 1643X, which he attributes to scattering of the radiation by the elements concerned. A portion of the nickel $K\alpha$ radiation in passing through carbon and nitrogen shows the new lines 1719 and 1746X. A quartz gas discharge tube containing nitrogen much diluted with helium was used as the source of light, and E. Ekfors (*Zeit. Physik.*, vol. 63, p. 437) made measurements by means of a vacuum spectrograph. He was successful in finding a few new terms and in establishing a displacement of 32 frequency units of the whole doublet system. The measurements also indicate splitting of the β term of about 7 units.

CHEMISTRY, INDUSTRIAL. In this branch of applied science distinct progress can be announced. The prevalence of research laboratories in large industrial plants has naturally led to the study of problems with the result that improved methods of manufacturing have been obtained, new uses for waste products have been found, and new applications for existing compounds have been developed. It seems probable that the United States, if not the leader among the nations of the world in chemical industry, comes very close to holding the place. Additional evidence of the progress of the chemical industries in the United States is shown by the increasing exportation of American products.

AMERICAN CHEMICAL SOCIETY. As usual, this society held two meetings during the year. The first in Atlanta, Ga., during April 7-11 at which 1449 persons were registered and 389 papers read before 17 divisions. Among the many papers presented at this meeting the following may be noted: W. Donald Munson, research chemist of the Southern Chemical Cotton Company, Chattanooga, Tenn., described progress in the production of chemical cotton. Lauren B. Hitchcock, chairman of the industrial committee of the Virginia section of the society, spoke on "Cellulose in Virginia" and Robert E. Hussey and Philip C. Sherer, research chemists of the Virginia Polytechnic Institute, told of the strides being made by the State's rayon industries. Prof. Charles E. Mullin, of Clemson College, S. C., reported on the development of new uses for artificial silks and wools. A formula for making xylose at about 5 cents a pound, a gift by the U. S. Government to industry, was presented by Dr. W. T. Schreiber of the Bureau of Standards. Trees and many kinds of plants abound with it. It has been found that xylose probably is the third most widely distributed organic compound in nature. Little is yet known of its food values. Even if food uses prove small, xylose is an important commercial discovery. Dr. Schreiber calls it a product whose potentialities are still to be fathomed from a

vast annual supply of a very cheap straw material. It has been sought by industry for acid-making and in some cases considered so useful that a price of 50 cents a pound was rated as economical. The Bureau of Standards formula makes it of cotton-seed hull bran. Dr. Schreiber says the United States can produce between a million and a million-and-a-half tons of this bran a year, now nearly a waste product. The bran is washed with hot water under pressure, and treated with diluted sulphuric acid and lime and finally whirled in a centrifugal. About half of it goes into sugar. The remaining bran is still useful, producing cellulose for clothing, carbon gums, and potash salts.

A meat substitute made from cotton seed was described by David Wasson of Montclair, N. J. It is a sweet, almost tasteless flour-like body which will keep as well as wheat flour. It carries 50 to 60 per cent protein, or two-and-a-half to three times as much as is found in meat and available for human food. When properly prepared it is palatable and nutritious. It not only can be eaten, but has been eaten by many people. A report made by Prof. R. J. Crane of Ohio State University, who is editor of *Chemical Abstracts* for the society and whose function it is to read the publication of American and foreign researches, gave the number of abstracts published in each country which he considered an approximate measure of research activity there. As measured in this way, he said, the United States, which took the lead away from Germany during the World War, had lost it again to Germany comparatively recently. Further, he found the British Empire maintained a steady research productivity, Japan was becoming more active chemically and Russia was showing more scientific activity than might be expected. Dr. Charles L. Clark of the University of Illinois reported on the value of the X-ray to examine the structure of synthetic fabrics and also on the development of synthetic thread which was, in some respects, about six times as strong as flax.

The second meeting of the American Chemical Society was held in Cincinnati, Ohio, during September 8-12 at which 1668 persons were registered and 394 papers read before 19 divisions. At this meeting a vigorous protest was unanimously adopted against the action of the Governor of Mississippi in summarily dismissing members of the faculties of State-supported schools and colleges "without charges being preferred or reasons publicly assigned." The resolution said in part, "this move was dictated entirely by political motives with no relation to the educational interests of the institution or the State. This action has aroused indignant opposition within the State, as expressed by educational leaders and by the press. We wish to add our protest to theirs. Further, we caution members of this division against accepting positions in these institutions until steps have been taken to prevent a recurrence of this unfortunate situation. We wish also to raise the question of the acceptance in the future of transfer credit from these institutions unless this condition is corrected."

Among the papers presented at the Cincinnati meeting were the following: Dr. Emery R. Hayhurst, of Ohio State University, described a new medical soap developed by him out of a new type of sulphur in coal gas. The sulphur resembles moist clay and is composed of much finer particles than other sulphurs. The soap was made by

mixing 25 per cent of this sulphur with castile soap and then perfuming. Dr. Hayhurst said that it produced remarkable effects when applied to cases of simpler chronic skin diseases. Chester H. Penning of the Swann Research Inc., of Anniston, Ala., reported on the physical characteristics and possible commercial uses of a new product or a series of products under the general name of "aroclor" which is a derivative of the new chemical known as diphenyl, a milky-colored substance made by uniting two benzene molecules and used commercially as a substitute for steam for carrying heat in gasoline refining. By adding chlorine in various amounts to diphenyl, the "aroclor" series is obtained, ranging in variety from a substance resembling water to light oils, and from thick sirupy substances and a light, amber-colored solid. Among the commercial applications for the new compound are protective coatings, waterproofing, flame-proofing, molding, electrical insulation, adhesives, printing inks, artificial leather, leather finishing, textile finishing, sealing waxes and chewing gum, as well as a substitute for Canada balsam in mounting microscope slides.

The use of "dry ice," or solid carbon dioxide, as a preserver of beef, was presented by D. E. Killeffer concerning which he said that it is now being employed to safeguard shipments by land and sea, and is being extended to commerce with the tropics. Carbon dioxide gas kills or prevents the growth of many common bacteria on meat, fish, and other fresh foods. It appears that carbon dioxide is absorbed by the surface of the flesh, and creates an acid condition which is very unfavorable to bacterial growth. Spoilage by bacteria can be prevented for a period as long as a week or ten days by immersing meat in an atmosphere of carbon dioxide. An efficient railroad transport car had been devised, and now a fleet of forty such cars was devoted solely to the transportation of "dry ice" to remote points. The transit loss in these cars even on a journey of several days was much less than that in loading and unloading them. By utilizing this method of rail transportation it easily was possible to supply peak demands in Chicago, Baltimore, and Washington from Niagara Falls, and to equalize supply and demand throughout the entire United States.

How to make 150 gallons of gasoline out of only 100 gallons of petroleum, through a recent development of the high pressure hydrogenation process, was described by R. T. Haslam and R. P. Russell of the Standard Oil Company of New Jersey. They explained five recent developments of hydrogenation, developed by Friedrich Bergius of Germany, whereby crude oil is squeezed in a highly heated atmosphere of hydrogen at about 3000 pounds to the square inch. Some of the hydrogen combines with the carbon in the oil to produce more hydrocarbons, thus making gasoline. The extra half gallon of gasoline is accounted for by the volume of the added hydrogen. Four other achievements of high pressure were reported, including one regarded by chemists as epoch-making. It was described as the reverse process, in which gasoline containing too much hydrogen has the extra hydrogen squeezed out of it. Gasoline with too much hydrogen is gummy and "knocks" badly. The new gas wringer squeezes it into a gasoline "dry" enough for use in automobiles. Hydrogenation also turns poor lubricating oil into a high-grade automobile oil, low-

quality kerosene into high-quality and cheap, heavy oils into gas, oil, and gasoline.

The president during the year was Prof. William McPherson of Ohio State University, Columbus, Ohio, and in accordance with the rules, Prof. Moses Gomberg of the University of Michigan was named for the year 1931. The membership of the Society was reported as 17,426.

SOCIETY OF CHEMICAL INDUSTRY. The 49th annual meeting of the Society was held in Birmingham, England, during July 14-19, with President Herbert Levinstein in the chair. The membership was reported as 4596 as against 4550. The Messel medal was awarded to Lord Brotherton "in recognition of his contribution to the prestige of chemical industry." His address, based on personal experience, was an account of the advances made in technical chemistry during the last 50 years. The presidency of the Society passed from Dr. Levinstein to Lord Melchett, better known by his family name of Alfred Mond, famous for his long connection with manufacturing chemistry, while H. G. Pooley was continued as secretary. The annual meeting in 1931 was to be held in London during the week beginning July 13, when the Society would celebrate the fiftieth anniversary of its founding. Active preparations for the "Jubilee" meeting were in hand. For the meeting in 1932 Nottingham, England, was selected.

MEALS. The Acheson medal of the American Electro-Chemical Society was awarded on Sept. 21, 1929 to Edward G. Acheson (the donor of the medal) for his "notable discoveries in electrochemistry, electro-thermics, and electro-metallurgy." Dr. Acheson was the inventor of carborundum. The Perkin medal of the American Chemical Society was on January 10 awarded to Herbert H. Dow of the Dow Chemical Company for his "development of improvements in the production of chlorine, bromine, magnesium, and other chemical materials." The Longstaff medal of the London Chemical Society was presented on March 27 to Dr. W. H. Mills, who by a long and steady series of papers on subjects of the highest importance during the past triennium had done most "to promote chemical science by research." The Society of Arts and Sciences awarded one of its gold medals on April 17 to Gilbert N. Lewis of the University of California as "the outstanding chemist in America." The American Institute of Chemists awarded its medal for "noteworthy and outstanding service to the science of chemistry and the profession of chemistry in America," on May 10, to George Eastman of the Eastman Kodak Company, who had spent great sums of money in developing the American chemical industry to make it independent of Europe. The Willard Gibbs medal of the Chicago Section of the American Chemical Society was awarded on May 24 to Dr. Irving Langmuir of the General Electric Company "for fundamental work on atomic hydrogen and on surface relations, and also on electrical discharge phenomena. Also for his contributions of great importance to nearly all branches of physical chemistry, including high vacuum technique, electronics, thermochemistry, and catalysis. And lastly for his presentation of a theory of atomic structure." The Grasselli medal of the American Section of the Society of Chemical Industry was presented on November 7 to Per K. Frolich for his work on synthesis under high pressure.

BERYLLIUM. This element, the cost of which

was reduced in price from \$100 to \$4 a pound by a new process developed by Alfred Schwarz of Jersey City, N. J., was thought likely to come into more extensive use on account of its valuable qualities. Beryllium is two-thirds the weight of aluminum. It is hard enough to scratch glass with ease. Its elasticity is equal to the highest grades of steel and is four times greater than that of aluminum. A proper alloy with aluminum, consisting of 50 to 70 per cent beryllium will make a structural material for airships and airplanes, which, because of its lightness and strength, can be used in smaller cross-sections, thus reducing the weight of any given ship by about one-half. This will make a very large additional carrying capacity available for "pay load." It means that all metal, fireproof planes can be built stronger and yet lighter, thus affording a larger "pay load" capacity. In other words, beryllium seems to be the metal that will make commercial airplanes out of the present-day flying gasoline tanks. Unlike aluminum this metal resists corrosion to a marked degree. Aluminum is also subject to an internal disease, known as "fatigue," which makes it treacherous. It begins disintegrating internally from the very beginning so that at any time some part of it may give way. Copper when alloyed with only 1 to 3 per cent of beryllium may be employed for the manufacture of automobile springs, lighter and stronger than any steel springs known today. This means great uplift to the copper industry. For the first year it was expected that the metal could be produced at \$4 to \$6 a pound, but later the cost would be reduced to \$2 a pound. Aeronautical engineers agreed that the use of this metal would greatly benefit the aviation industry and would probably put it in the place it deserves.

POTASSIUM. An extensive research on the extraction of potash from minerals had been organized by the U. S. Bureau of Mines. (See *YEAR BOOK* for 1928, p. 153, and for 1929, p. 169.) Special attention was given to Texas polyhalite, Wyoming leucite, and New Jersey greensands as raw sources of potash. This work, which was being conducted at the Bureau's non-metallic minerals experiment station in cooperation with Rutgers University in New Brunswick, N. J., indicated three economically feasible processes for the extraction of potash from polyhalite. According to a report issued in June, the progress on the extraction of potash from polyhalite had been very rapid, but so far as greensands and leucite were concerned the development of economically feasible processes necessarily was slow. Details of the polyhalite work were soon to be published. With regard to greensands and leucite, detailed economic surveys and analyses had been made of the various proposed processes and a limited number of the latter were selected as desirable subjects for laboratory investigations. The potash research organization was essentially as follows: First, the mining section which had done the core drilling in Texas and cooperated with the U. S. Geological Survey in estimating the character and extent of the potash deposits. Second, the economic and statistical section, which conducted economic analyses of proposed processes. Third, the chemical research division, which investigated the fundamentals of the chemistry involved in any process. Fourth, the chemical engineering laboratory which tests the more favorable processes semi-commercially.

RADIUM. It was announced in March by the Associated Press that an improved process of obtaining radium had been devised by Arthur Hand Burton, metallurgical chemist of San Francisco, Calif. The cost of recovering radium, valued at about \$65,000 a gram, depends largely upon the amount of ore which must be treated to produce a given quantity of radium, but the time required for the treatment is a formidable factor. From a normal period of 90 days the process of recovery was shortened in the recent experiments to less than 30 from mine to radium salts and it was expected that it would be reduced still further.

Announcement was made through the daily press in September of the discovery near Wilberforce, Ontario, of radium deposits which gave promise of exceeding those of the Belgian Congo, the world's richest supply. It was reported that investigations extending over several years have uncovered an apparently extensive deposit which averages 186 milligrams of radium to the ton of ore which is higher than found in the Congo. These deposits, it was claimed, would produce sufficient radium to supply the entire British Empire. It was believed that the Government could take over the property under legislation passed some years ago. The announcement of the discovery of this deposit followed closely that by Premier Ferguson that the province of Ontario proposed spending \$500,000 for the purchase of radium to equip a \$500,000 radium center in Toronto.

OIL HYDROGENATION. For ten or more years the oil refiners had been struggling with three problems, namely: (1) A rapidly increasing call from the motoring public for more gas—a demand that has multiplied nearly four times in the past decade. (2) Inability, with existing processes to draw more than approximately 42 per cent of gasoline from the average barrel of crude oil. (3) Consequent overproduction of heavy fuel oil and other residues exceeding the market demand for such products. For these problems hydrogenation provides a ready and satisfactory solution. This may be described as follows: Hydrogen in gaseous form is combined with the basis petroleum stock and subject to 3000 pounds pressure to the square inch. By varying the amount of hydrogen added it is possible to obtain products of predetermined and superior quality. It may be added that the essential difference between the cracking process and the hydrogenation process in general lies in the fact that cracking "breaks down" the petroleum atoms, while hydrogenation builds them up. Cracking with 1000 pounds pressure applied decomposes oil to yield some 60 per cent of gasoline and 40 per cent low-quality residue. In hydrogenation the pressure and temperatures used make it possible, in the presence of the catalyst, to add hydrogen to oils and produce yields running much higher.

Cracking was the first major attempt on the part of the petroleum refiner to alter the chemical structure of either petroleum or its distillates. Hydrogenation is a long step forward in this same direction. It is, however, a "building up" rather than a "breaking down" process, and an extremely close control can be exercised over the chemical composition of the product. The supply of crude oil is not unlimited. It is possible that the supply of certain crudes will be exhausted within two or more generations. Consider then the hydrogenation process, which may use low-

grade oils, coal, even such inferior grades as lignite, and in fact any carbonaceous materials, and produce high-grade petroleum products. Unrestricted by crude oil supply, the process utilizes equally well the lowest grades of crude oil, coal, shale, or even peat. It is a process of sufficient flexibility to allow, with the same equipment, the production of motor oil, kerosene, and anti-knock gasoline by merely varying the operating conditions.

The history of the development of this process is interesting. It began in the laboratories of the *Interessen Gemeinschaft Farbenindustrie Aktien-gesellschaft*. Germany has ample beds of cheap brown coal close to the surface and easily mined with mechanical equipment. Accordingly, the "I. G." concentrated at first on the conversion of coal into oil. In 1928 its experiments resulted in the erection and operation of a coal hydrogenation plant near Merseburg. More than 300,000 barrels of gasoline, similar in every way to petroleum gasoline, were produced from coal and coal tar in that year, and this amount has since been increased. The Standard Oil Company of New Jersey, having entered into an agreement with the "I. G.," studied the process in its development laboratories and for three years tested its application to the problem of reducing petroleum.

In the autumn of 1929, in Bayway, N. J., work was begun on the first large-scale commercial plant designed solely for the hydrogenation of petroleum. Two similar plants were constructed in Baton Rouge, La., and in Baytown, Texas. The Merseburg plant of the I. G. Farbenindustrie had extended its operations to cover both coal and oil. Operation of the first commercial petroleum hydrogenation plant in the world at the Bayway, N. J., refinery of the Standard Oil Company of New Jersey became an accomplished fact on Aug. 7, 1930. The establishment of these close relations between manufacturers of chemical products in Germany and similar concerns in the United States tending to monopoly, is very largely the element that has developed criticism on the part of other manufacturers in the United States. See "Action of United States on German Patents" in this article.

MOTOR FUEL. Announcement of new motor fuels are perennial, most of which are blends. The following was a typical specimen which seemed to have merit. It was a gift to the petroleum industry from the Department of Engineering Research of the University of Michigan. It was non-commercial, any one who wishes being free to use it. It was sponsored by the Natural Gasoline Association of America, and was developed under direction of Prof. George Granger Brown, director of research for the Association. His findings enable oil refiners to produce gasoline not only specially adapted to the modern automobile, but particularly fitted for all ranges of temperature encountered in the United States. He restores to gasoline two ingredients which have been largely removed in recent years by the methods of production and refining. One of these is natural gasoline, found in the natural gas removed at the well mouth. It is highly volatile, vaporizing so readily that it fires easily in cold weather. The other restored substance which gives the added power in hot weather is naphtha, usually removed in the refining and sold as such or included in kerosene. Its effect contrary to that of natural gasoline, retards vaporization.

According to a press announcement from Ottawa, Canada, of May 24 the production of gasoline in sufficient quantities to supply the market of Western Canada is possible in consequence of a statement by Dr. E. H. Boomer of the University of Alberta that a method had been discovered to extract the fuel from tar sand. He had developed a process for the application of hydrogen to the tar obtained from the sand, producing light oil that readily cracks to yield gasoline. Tar sand deposits in Northern Alberta were estimated by geologists to be virtually inexhaustible and hydrogen for the process is derived from the huge quantities of natural gas available in the region.

PREVENTION OF THE FORMATION OF CARBON DIOXIDE. A practical means of eliminating carbon monoxide, the poisonous gas that is formed when automobile engines are left running in closed garages, was announced in January. Dr. J. C. W. Frazer of the Johns Hopkins University announced that tests had shown a motor equipped with his device could run indefinitely in a closed garage without liberating carbon monoxide. Offensive odors from automobile exhausts, which abound in heavy traffic, could be suppressed by the chemical action and smoke also would be entirely consumed. Carbon monoxide is produced by incomplete combustion and by the use of a chemical catalyst which, when the exhaust vapors pass over it mixed with air, converts the monoxide to harmless carbon dioxide.

RUBBER. Great interest continued to be manifested in efforts to produce a cheaper method of obtaining rubber. Thomas A. Edison, who found that common flowers contain commercial rubber, had a "rubber mill" ready to run tests on a giant species of golden rod which he discovered in 1930 growing 14 feet high in Polk County, Fla. The rubber mill was a miniature plant by which the inventor hopes to extract live rubber from dried and pulverized golden rod leaves and stems. "I have just made a great discovery in this giant golden rod plant," he said. "I hope to cross-breed it with a variety containing high percentage of latex to produce an emergency rubber supply for the United States which farmers can grow and harvest in six months." Rubber plants of a species so productive that it had been exploited almost to the point of extinction in Madagascar were growing in Southern California and Florida and had withstood the climate during the winter of 1929-30 with no apparent damage, was announced in April by the Department of Agriculture. Only a few plants had been established, but this number was to be rapidly increased. The plants belong to the species *Euphorbia intisy*, and were brought to the United States by Dr. Charles F. Swingle, botanist of the department, who made a plant exploration trip to Madagascar with Prof. Henri Humbert of the University of Algiers.

The manner of obtaining "intisy" rubber is very simple and is one of the factors that led to the commercial disappearance of this plant. The latex, which flows from any cut, coagulates in the air without further treatment. All that one has to do is to make cuts in the stem, return in a few days and pull off bands of rubber of very high quality, especially desirable for the manufacture of automobile tires. The yield of rubber from stems less than one inch in diameter is so slight that it does not pay to tap them. However, during the time of commercial exploitation spiral

cuts were made all the way up the tree, and yields of 15 pounds or more of rubber could be obtained from a single tree.

An interesting press dispatch in October from Moscow reported that a number of Soviet scientific expeditions sent in search of rubber-bearing plants, had discovered several that rival even the well-established varieties in rubber content. Two known as "hondrilla" and "tau-sagyz," possess high percentages of rubber. The full extent of the hondrilla and tau-sagyz resources of the country were not established, but incomplete data showed that there were about 100,000,000 hondrilla bushes and 80,000,000 tau-sagyz bushes in the Soviet Union, which it was estimated contain about 30,000 tons of pure rubber. In 1930 five big rubber plantations, four of hondrilla of 61,750 acres and one of tau-sagyz of 12,355 acres, were established. In mountainous Transcaucasia a scientific station was opened for the cultivation of guayulla, another rubber plant. During 1930 this station raised more than 2,000,000 guayulla seeds. By the following spring about 20,000,000 guayulla seeds would be sown in the plantation of the station. The first factory for the production of rubber from tau-sagyz was completed and in 1931 eight factories more for extracting tau-sagyz rubber and four factories for the extraction of rubber from hondrilla were to be built.

In September Dr. George K. Burgess, director of the U. S. Bureau of Standards, announced in an address before the Inter-American Conference on Agriculture, Forestry, and Animal Industry at the Pan-American Union that rubber crystals had been evolved at the Bureau from crude petroleum by the extraction of certain hydrocarbons, with "solid rubber" an almost certainty if the work could be extended. Thus far "we have only the crystals. We cannot predict what the eventual product will be. It may be something having properties possessed by none of the metals, a new material with properties all its own, and nobody can say what these would be."

PAPER. An improved process of making pulp from yellow birch wood was announced from the State College of Forestry, Syracuse University, N. Y., in October. The investigation covered the conversion of yellow birch into paper pulp by using liquid chlorine as a pulping agent. The investigators found that the birch wood when pulped by this process gave a product four times as strong as when pulped by the soda process commonly employed in the conversion of hard woods. In addition to the extraordinary strength, it was found that the fibres were more flexible and bleached with less difficulty than the ordinary soda woodpulp from the same wood. It was believed that the process has good commercial possibilities.

ARTIFICIAL SILK. At the annual Canadian Chemical Convention held in Ottawa on May 27, Dr. Harold Hibbert, Professor of Industrial and Cellulose Chemistry at McGill University, reported that artificial silk could be made from water and carbon dioxide, the gas obtained from burning coal. Dr. Hibbert pointed out the manner in which plant life is able to manufacture cotton and wood from carbon dioxide and water of the atmosphere. It was long known that the plant forms a sugar from these units and the more difficult step was a method of converting these sugars and other natural plant products. After years of experimenting this step was brought about by adding a common bacterium to the

sugar. The discovery also means that it is possible to take ordinary cane or other sugars and convert them into cellulose, from which artificial silk and other materials are made. In the making of artificial silk from carbon dioxide and water, it is first necessary to form a sugar, as do the plants. Dr. E. C. C. Bailey did this by exposing the mixture of carbon dioxide and water to ultra-violet radiation, which resulted in the formation of a synthetic sugar. Professor Hibbert's experiment accomplished the second stage, the conversion of sugar into cotton and wood cellulose.

ARTIFICIAL WOOD. The study of commercial uses for corn-stalk products carried on by Burton F. and George N. Peek of Moline, Ill., in association with Chester C. Davis and Byron Hunicks of Chicago and Willis S. Brown of Belvedere, Ill., disclosed that practical processes for the manufacture of wall board and other materials had been developed at Iowa State College, Ames, under the direction of Prof. O. R. Sweeney. The patents and processes owned by the college were to be used by a corporation but the college was to supervise the development of the products past the experimental stages. Beside wall board, many other products may be manufactured, such as machine gears, pressed board, and imitation wood. Similarly it was found that by burning corn stalks in a septic tank there would be generated methane or marsh gas which was available for illuminating purposes, while the refuse may be made into paper.

NEW BUILDING MATERIAL. It was announced in August that fire, load, and water tests, conducted by Prof. Albin H. Beyer of Columbia University, on a new building material, disclosed that the new compound, after being subjected for four hours to temperatures averaging 1804°F. showed an increase in surface temperature of no more than 11°. The new material is composed primarily of Portland cement and concrete, with the addition of lime and a small quantity of aluminum powder and soda. When poured out in a semi-liquid form, the aluminum powder generates hydrogen in the liquid mass, causing the compound to rise like bread to two or three times its original volume. A layer of liquid floor-filling two inches deep will rise within an hour to a height of five inches or more, drying rapidly as it expands. The new material is from 66 to 75 per cent lighter than concrete, and so hard that a weight of 370 pounds to the square inch leaves no impression on its surface.

NEW DENATURANT. That a new non-poisonous denaturant for industrial alcohol, more effective than any previously in use, had been discovered by Dr. James M. Doran of the U. S. Prohibition Bureau, was announced in March at a conference of industrial alcohol producers. The denaturant is a product of petroleum and makes alcohol extremely difficult of conversion for drinking purposes. The producers offered assurance they would cooperate in the use of the new denaturant. Commissioner Doran declined to explain anything about the new denaturant beyond that it would first be used in ethyl acetate, a subsidiary formula of ethyl alcohol. Later it was planned to extend its use. Whether it would eventually supplant alcohol and denatol, the two denaturants now most commonly used, had not been decided.

AMERICAN LITIGATION ON GERMAN PATENTS. In previous issues of the YEAR BOOK, notably

1922 (p. 137), 1923 (p. 139), 1924 (p. 144), 1925 (p. 143), and 1926 (p. 156), this subject was presented and it seems therefore proper to give further development in the matter; which had again been brought into the Courts. Attorney General Hamilton Ward of New York State refused on January 30 to investigate the issuance of \$30,000,000 of debentures of the American I. G. Chemical Corporation by the National City Company, as demanded by Francis P. Garvan, president of the Chemical Foundation. Mr. Garvan charged that the issue was advertised deceptively, that the money was to be used to assist German manufacturers in competing with the American chemical industry, and that the transaction was otherwise improper.

AMERICAN PROCESSES IN GERMANY. An interesting report on the German market for American Chemical Processes appeared in *Commerce Reports* for July 28. It appeared that Germany had become an increasing receptive market for American chemical processes, particularly in recent years. Among these may be mentioned: (1) The American nitro-cellulose lacquer process; (2) a perfected American nitric acid oxidation process; (3) an American catalytic ammonia synthesis; (4) a perfected American process making titanium white paint; (5) an American process imparting a wood-grain surface to metal and other bases; (6) a petroleum cracking process that promised to be used in Germany to treat heavier fractions occurring in connection with the hydrogenation of tars; (7) the classic precipitator, or electrofilter removing impurities from condensed gases or precipitating therefrom valuable commercial salts; (8) an American flotation system for metal extraction from ores; (9) the American process producing contact sulphuric acid employing a vanadium oxide catalyst; and (10) the classic American process producing plastics by formaldehyde condensation.

There were numbers of other chemical products that were made and sold in Germany, including particularly the toiletries line. Manufacture on the spot according to American formulas is preferred in cases, in order to reduce costs. Occasionally, the American specialty is imported in bulk and packed in Germany. The line of American chemical specialties was becoming so diversified that it included even certain medicinal specialties, while German agents were competing with one another to introduce many of the well-known medicinal and toilet lines of household popularity in the United States. It is hardly necessary to repeat that a steady and thriving trade was maintained in a wide variety of American heavy, prime, raw, and semi-finished chemical materials that were indispensable for further chemical processing, such as, naval stores, sulphur, benzol, carbon black, borax, and phosphate rock. These sales of American chemicals, exclusive of petroleum products, to Germany were estimated at an annual value of about \$20,000,000. This amount excludes the financial returns from American chemical-process operations in Germany.

NECROLOGY. Among American chemists who died during the year and about whom biographical sketches appear elsewhere in this YEAR BOOK, were the following: William Henry Nichols, born in Brooklyn, N. Y., on Jan. 9, 1852; died in Honolulu, H. I., on Feb. 21, 1930; manufacturing chemist and president of General Chemical Com-

pany. John Howard Appleton, born in Portland, Me., on Feb. 3, 1944; died in Providence, R. I., on Feb. 18, 1930; for long years professor of chemistry in Brown University and author of many text books on chemistry. Charles Francis McKenna, born in New York City on June 4, 1861; died there on April 25, 1930, consulting chemist and in 1914 president of the Chemists' Club of New York. William John Matheson, born in Elkhorn, Wis., in 1857; died in Coconut Grove, Fla., on May 14, 1930; an authority on the application of coal tar dyes and a high official in corporations concerned with industrial chemistry. Allerton Seward Cushman, born in Rome, Italy, on June 2, 1867; died in New York City on May 1, 1930; founder of the Institute of Industrial Research and distinguished for his knowledge of industrial chemistry. Harvey Washington Wiley, born in Kent, Ind., on Oct. 18, 1844; died in Washington, D. C., on June 30, 1930; long chief of the division of chemistry in the Department of Agriculture and leading advocate of pure food. Harold Bailey Dixon, born in London on Aug. 11, 1852; died in Lytham, England, on Sept. 18, 1930; for many years professor of chemistry in Manchester University and in 1909-11 president of the London Chemical Society. Richard Kidder Meade, born in Charlottesville, Va., on Nov. 28, 1874; died in Norfolk, Va., on Oct. 13, 1930; consulting chemist with specialty of the manufacture of cement and author of *The Chemist's Pocket Manual* (1900). Herbert Henry Dow, born in Belleville, Ontario, on Feb. 26, 1866; died in Rochester, Minn., on Oct. 15, 1930; an authority on bromine and the world's largest manufacturer of that substance, also recipient of the Perkin Medal in 1930.

Fritz Pregl, born in Laibach, Austria, on Sept. 3, 1869; died in Graz, Austria, on Dec. 13, 1930; the recipient of Nobel prize in chemistry in 1923 for an antiseptic iodine solution which bears his name. Alfred Moritz Mond, Sir Alfred Mond, then first Baron of Landford and Lord Melchett, born in Farnworth, England, on Oct. 28, 1868, and died in London, England, Dec. 24, 1930; a great industrial chemist, successively chairman of Brunner, Mond and Co., the Mond Nickel Company, and the Imperial Chemical Industries; also at the time of his death president of the Society of Chemical Industry. Henry Leffmann, born in Philadelphia, Pa., on Sept. 9, 1849; died there in Dec. 25, 1930; a teacher of chemistry and author of standard works on sanitary chemistry.

BIBLIOGRAPHY. Some of the important books published during the year were: *Allen's Commercial Analysis* (volume 8, 5th ed.); *The Condensed Chemical Dictionary* (2d completely revised and enlarged ed.); Davies, *The Conductivity of Solutions and the Modern Dissociation Theory*; Ellis, *Hydrogenation*; Friend, *A Text-book of Inorganic Chemistry*, vol. II; Goddard, *Organometallic Compounds*; part 2, *Derivatives of Arsenic*; Hackl, *A Chemical Dictionary*; Jaffe, *Crucibles, the Lives and Achievements of the Great Chemists*; Kruyt, *Colloids* (2d ed.); Mellor, *A Comprehensive Treatise on Inorganic and Theoretical Chemistry*, vol. 10; Pregl, *Quantitative Organic Microanalysis* (2d English from 3d German ed.); Treadwell, *Analytical Chemistry, Qualitative Analysis* (vol. 1, 7th ed.).

CHESS. The world's chess title was not contested during 1930 and was retained by Dr. Alexander Alekhine of Paris. The champion

again demonstrated his supremacy, however, by winning all of his games at the international tournament concluded at San Remo, Italy, on February 4 and at the team tournament of the International Chess Federation at Hamburg, Germany, ended July 27. His final score at San Remo was 14-1. The Polish team won the International Chess Federation championship at Hamburg, wresting the title and the Hamilton-Russell Trophy from Hungary, which had held it twice. Akiba Rubinstein led the winning team, the other members being Dr. Savielly Tartakower, David Przepiorka, and Samuel Frydman. Hungary, Germany, Austria, and the United States finished in the order named. Isaac Kashdan, champion of the Manhattan Chess Club and a new member of the United States team at Hamburg, distinguished himself there and subsequently won first prizes in tournaments at Berlin, Gyor, and Stockholm. In the international masters' tournament in Frankfurt, Germany, in September, Kashdan finished second, the winner being Aron Nimzowitsch of Copenhagen, Denmark.

Frank J. Marshall, of New York, retained the championship of the United States. The Intercollegiate Chess League Team title was won by Columbia and the H. Y. P. W. College Chess League Team by Harvard. Martin C. Stark, of Harvard, won the intercollegiate individual championship.

CHESTNUT, CHESTNUT BLIGHT. See FORESTRY.

CHICAGO. See ILLINOIS under *Political and Other Events*; CRIME.

CHICAGO, UNIVERSITY OF. An institution of higher education and research situated on the Midway Plaisance between Washington and Jackson Parks on the south side of Chicago. The University is privately endowed, coeducational and nonsectarian, although one-third of its 30 trustees must be Baptists. John D. Rockefeller founded the University in 1890, and his personal gifts amounted to a total of \$35,000,000 over a period of 20 years.

President Hutchins announced in November, 1930, that the faculty and trustees had approved a revision of the academic structure and educational programme of the university. The traditional graduate schools and undergraduate college were abolished, and a new divisional organization, consisting of the college, four upper divisions in arts and sciences, and the professional schools, was substituted. The college is a new entity, corresponding roughly to what has been called the junior college. The four upper divisions, which have been formed by grouping of departments, are the biological sciences, the physical sciences, the social sciences, and the humanities. The purpose of the college is to complete what may be termed the formal general education of the student, and to aid him in choosing a special field of interest. Requirements for admission to the new college have been simplified. High school graduates who were in the upper half of their class, scholastically, are henceforward eligible for admission as freshmen without further tests. Under the reorganization, the university may find it possible to eliminate the present numerical restriction of the freshman class.

For the average student, the college will require two years of work, probably with instruction in four major lecture courses as a basis, and smaller classes of the proseminar type, for those

interested and able to profit from such opportunities. While examinations will be held from time to time by individual instructors, they will be solely for the purpose of enabling students and instructors to determine what progress is being made. There will be no advancement on the basis of course credits or course examinations, nor will attendance at the lectures or classes be required. The student will leave the college division solely on the basis of a comprehensive examination, which he may take at any time he and his advisers think he is ready for it. Passing the comprehensive examination with a satisfactory degree of excellence, and with some distinction in one special field, will mean admission to one of the upper divisions of the university. Passing with a lower degree of excellence will probably mean either an honorable exit or more work.

In the upper division, the average student will spend two years specializing in one broad field, and will receive the bachelor's degree when he can pass the divisional comprehensive examination. In work beyond this level, there will be differentiation of training, according to the intent of the student to be primarily a teacher or a research worker, with corresponding differentiation in degrees granted. The advanced work (of the present graduate level) will benefit from the revised organization, because emphasis will be placed upon field, as represented in the divisions, rather than upon departments and subjects, as in the old order. For projects and coöperative efforts extending through many related subjects, the divisional organization is regarded as much superior to the former strictly departmental organization. That part of the reorganization programme which applies to the college was to be effective, it was planned, for students entering on Oct. 1, 1931. The divisional organization was already effective in application to the budget and administrative procedure. The professional schools, the organization of which remained unchanged, include law, medicine, divinity, library science, education, commerce and administration, and social service administration. The university year is divided into four quarters of 12 weeks each, permitting a regular term during the summer.

During the summer quarter of 1930, a total of 5310 different students were enrolled; during the autumn quarter of 1930, the enrollment was 7929. The total enrollment for 1929-30 was 14,245 individuals. These figures do not include the enrollment in the home study or correspondence department, which has an average of 7000 students at any one time. The members of the several faculties, exclusive of assistants, numbered 897 on Nov. 1, 1930. In all departments and in all grades of service, the university employed approximately 3000 persons. Important additions to the faculties during the year included the following: Dr. Fred-eric W. Schlutz, professor and chairman of the department of pediatrics; Harold Shepherd, professor of law; Donald Slesinger, professor of law and chairman of the Social Science Research Committee; Edwin H. Sutherland, professor of sociology; Dr. Franz Alexander, of the University of Berlin, as visiting professor of psychoanalysis; George A. Works, professor of education; Dr. Bengt Hamilton, professor of pediatrics; Dr. Richard E. Scammon, professor of anatomy; James W. Young, professor of advertising; Beardsley Ruml, dean of the division of social sciences and professor of education; and William O. Douglas, professor of law.

The assets of the university on June 30, 1930, were \$103,911,084, an increase of \$15,553,746 over the figure for the same date in 1929. These assets were divided as follows: Endowment, \$59,015,297; plant, \$34,654,581; current assets, \$4,650,105; other assets, \$5,591,099. The total income under the University's combined budget for the fiscal year 1929-30 was \$7,231,249, while expenditures amounted to \$7,199,032. Student fees provided 23.33 per cent of the university budget income, and endowment funds provided 42.22 per cent. The salary cost of instruction and research constituted 38.19 per cent of the budget expenditures, or \$2,605,484. The total amount of gifts paid in was \$14,515,758, the largest in the history of the university.

Among the important gifts, pledges, and bequests during the year were the following: From the General Education Board, an appropriation of \$1,500,000 for endowment, buildings, and equipment for the school of education; from an anonymous donor a gift of \$50,000, interest of which is to be used for increasing the salaries of outstanding teachers in the under-graduate colleges; to the Alumni Gift Fund, 800 individual pledges totaling \$41,506; from John D. Rockefeller, Jr., a gift of \$50,000 toward the endowment of the Ernest DeWitt Burton Memorial Professorship, and a pledge of \$290,000 to defray cost of a publication to be known as *Egyptian Paintings*; from Mrs. Anna L. Raymond a gift of \$36,000 to establish the James Nelson Raymond scholarships in the law school; from the Chicago Philanthropic Club, a gift of \$10,000 for support of a cardiac clinic; an allocation of \$250,000 to the school of social service administration from the estate of the late Conrad Hubert; from J. M. Hopkins, \$10,000; from Edward F. Swift, \$25,000; an appropriation of \$25,000 from the Carnegie Corporation, payable in five annual installments, for support of a *Journal of Library Science*; a pledge of \$25,000 from Mrs. William H. Moore to the support of the Oriental Institute.

Completion of five new structures during 1929 brought the number of buildings operated by the university for educational purposes to 82, including the Yerkes Observatory at Williams Bay, Wis.; the buildings of the Rush Medical College on the west side of Chicago; and the expedition headquarters of the Oriental Institute at Luxor, Egypt, Armageddon, Palestine, and Khorsabad, Iraq. The five buildings opened in 1930, valued at \$2,200,000, included the Bobs Roberts Memorial Hospital for Children; the Gertrude Dunn Hicks Memorial and the Nancy Adele McElwee Memorial, two orthopedic units of the University Clinics; Bernard A. Eckhart Hall, for physics, mathematics, and mathematical astronomy; and the botany research laboratory. Buildings under construction, at a total cost of \$5,700,000, included the new Oriental Institute building, the men's group of new residence halls, the graduate education building, the Chicago Lying-In Hospital and Dispensary, and the athletic field house. Contemplated construction for 1931 at a cost of \$4,500,000 included the women's group of new residence halls, the International House, and the art building. By the close of 1931, the university would have spent approximately \$30,000,000 on its programme of physical expansion in seven years.

The University of Chicago Press published 92 books during the year, 50 of these being results of original research and scholarship. The number

of scholarly journals published by the Press was increased to 18, with the addition of *The Library Quarterly*, the first number of which was to be issued in January, 1931. Accessions to the university libraries increased the number of bound volumes to 915,837, the number of pamphlets to approximately 400,000, and the number of periodicals received regularly to 4739. President, Robert Maynard Hutchins, A.M., LL.D.

CHICAGO ART INSTITUTE. See ART MUSEUMS.

CHICAGO DRAINAGE CANAL AND LAKE MICHIGAN. See SEWERAGE AND SEWAGE TREATMENT; ILLINOIS.

CHICAGO EXPOSITION. See EXPOSITIONS.

CHILCOTT, ELLERY CHANNING. An American agriculturist, died in Ann Arbor, Mich., Nov. 14, 1930. He was born in East Hamburgh, N. Y., Apr. 8, 1859. At South Dakota Agricultural College he was professor of agriculture, 1892-97, and professor of geology and agronomy and vice-director, 1897-1905. He was also agriculturist in the United States Experiment Station, South Dakota, 1893-1905, and then was placed in charge of the dry-land agricultural investigations of the Bureau of Plant Industry, U. S. Department of Agriculture. In 1918 he was head of an agricultural mission sent to France and Algeria at the request of the French High Commission, and in 1928-29 organized the Central Great Plains Field Station, near Cheyenne, Wyo., for the U. S. Department of Agriculture.

CHILD LABOR. The great progress made in public sentiment with regard to child labor was evidenced by the new draft of the uniform child labor law adopted at the 1930 meeting of the Commission on Uniform State Laws. The last such uniform code was prepared in 1911. Under the new draft the minimum age for any gainful employment is set at 14 years, with the exception of street trades. It is to be observed that the definition of gainful employment, however, makes no provision for the inclusion of agriculture, domestic service and athletic games, and, therefore, children at the present time being employed in the beet sugar and cotton fields and as house workers, nurse girls and caddies remain without real protection. The chief provision of this new code are to be noted. They include the following: Hours of work and night work regulations which, in the 1911 code, applied to girls under 18 and boys under 16, now are made to include all children under 18. Further, children under 18 who are attending school may not work more than 10 hours a day both at school and under employment. Work permits are now required up to 18 instead of 16, and additional safeguards are provided for physical examination.

Particularly important was the raising of the educational requirement from the fifth to the eighth grade. The age for work in mines and quarries was raised from 16 to 18 years, and the enumeration of dangerous occupations in which children under 16, 18, or 20 years may not be employed was made more specific. It is to be noted that the code provides for relaxation of provisions affecting children engaged in street trades. Under the 1911 code, boys under 12 could not sell papers and boys under 14 could not work as boot-blacks. Under the new provisions boys of 9 years are permitted to sell papers. The official bulletin of the National Child Labor Committee, which has for twenty-five years consistently devoted itself to the protection of children employed in in-

dustry and to the raising of standards, comments on this new code in this fashion:

Although the new draft is a long step forward compared with its forerunner of 1911, it does not, as did the original uniform law, accept the highest standards existing in any State as the basis for its provisions. Four States, for instance, have adopted a 44-hour week for children and three States have either an 8- or 9-hour day for work and school combined as compared with the 48-hour week and 10-hour day for work and school combined provided for in the uniform law. Before criticizing this feature of the uniform law too harshly, however, it must be noted that in the uniform law, regulation applies to children up to 18 years, whereas in the States with higher standards such regulation applies only to children under 16. On the whole, however, the provisions of the uniform child labor law are more advanced than the existing legislation and except for the section dealing with street trades, in most States its adoption would mean a distinct advance.

LEGISLATIVE HISTORY. In the States of Massachusetts, New Jersey, and New York, in the legislative year 1930, the friends of child labor met with defeat in efforts to raise the entrance age into industry. In New York a bill fixing the minimum age for employment at 15 years passed the senate but did not come to a vote in the assembly. In Massachusetts a measure raising the minimum age to 15 years and the grade requirement from the sixth to the seventh grade was first weakened by amendment and then unfavorably reported on in the senate. The result was that the measure was lost. In New Jersey a bill was submitted to raise the educational requirement for children of 14 leaving school from the sixth to the eighth grade but failed to receive attention. In Massachusetts two bills were passed and signed by the governor: one lengthened the period of compulsory school attendance in cities, and the other made illegal the employment of children except in compliance with the compulsory educational law.

Legislative calendars in other States carried the usual child labor law projects but none of them met with success. The following is a list of some of these measures that failed of passage: in Rhode Island a bill for double-treble compensation for minors illegally employed involved in accidents; in Kentucky, Massachusetts, Mississippi and South Carolina, restrictions on the working hours of women and girls over 16; in Mississippi and North Carolina, the establishment of workmen's compensation systems, affording protection for children suffering injuries growing out of employment.

WISCONSIN. The Industrial Commission of Wisconsin reported that in the year 1929 it had issued 15,151 child labor permits of which 6173 were confined to Milwaukee. This compares with 14,326 permits in 1928 and 15,073 permits in 1925. In Milwaukee the number of permits issued in 1929 showed a slight falling off from the number of permits issued in 1925, while in the rest of the State there had been an increase. It is interesting to look into the results displayed of physical examinations given to the children. In Milwaukee, in 1929, out of 3623 children examined for permits only 6.7 per cent were free from any defects. The most common defects recorded were by per cents as follows: 62.5 per cent of the total group showed dental defects; 14.1 per cent had throat defects; 6.5 per cent eye troubles; 3.7 per cent showed malnutrition; and 1.3 per cent were suffering from heart trouble.

CHILDREN IN MARYLAND CANNERIES. An inquiry conducted by the Maryland Commission of Labor and Statistics indicated that, in the year 1929,

in the 405 canneries that were visited there were found to be 1276 children under 16 years of age at work. The Department pointed out that this situation was particularly lamentable in view of the fact that children employed in this activity labored under peculiar handicaps. The educational difficulty was particularly serious because the children were confined in the labor camps connected with the canneries until the close of the season.

FARM LABOR IN COLORADO. The National Child Labor Committee published during the year the results of a study of child labor on farms and in the beet fields of Colorado, made in the fall of 1924. A total of 329 families, including in all 1141 children, was investigated. Children, aged 6 to 15 inclusive, numbered 819 and of these 80.3 per cent were working in the fields. The report discovered that the children worked long hours, the average being 9 hours a day. It was significant to observe that of the 329 families, 155 fell in the contract and wage labor group. Almost without exception the heads of the families were Mexicans or Spanish Americans. The report characterizes these families as follows:

They represented the lowest economic grade, with unsatisfactory standards of living, poor housing, and all the disadvantages natural to an isolated group, tolerated mainly because of their industrial usefulness.

A particular difficulty, which is characteristic of all children working on farms, is the fact that the families are usually made up of migratory workers so that school retardation is the rule rather than otherwise. The report points out that the Colorado law exempts from its child labor statutes children under 14 working in fruit orchards, gardens, fields, or farms. However, as far as occupations in beet fields are concerned, the working conditions are in almost every particular comparable to employment in factory occupations. In this sense, therefore, remedial legislation was deemed to be of the utmost importance.

MINORS ILLEGALLY EMPLOYED. Illinois. The Illinois workmen's compensation act, amended in 1928, provides for the payment of 50 per cent additional compensation to minors injured while illegally employed. During the fiscal year July 1, 1928, to June 30, 1930, it was reported that 117 children had suffered injury from industrial accidents and that of this number, 77 were illegally employed. Thirty-eight accidents occurred to children while engaged in legal employment.

Pennsylvania. In 1928 there were 4760 accidents to minors under 18 years of age recorded by the State Department of Labor and Industry. Of a group of 156 cases investigated by the Department, it was found that 44 were non-compensable because the loss of time due to the accident was not in excess of 7 days. Of the remaining 112 cases, compensation was paid to 95 and compensation was refused to 17. The following indicates the nature of the settlements made in the 17 refused cases: more than under workmen's compensation, 2; approximately the same as under workmen's compensation, 4; less than under workmen's compensation, 1; only medical fees, 2; only funeral expenses, 1; no redress, 5; not determined, 2. The Bureau report recording this situation declares:

The present compensation status of illegally employed minors is far from satisfactory. Their exclusion from workmen's compensation benefits apparently has brought them no advantage, and certainly in some instances has brought them some hardships. . . . If the illegally em-

ployed minor is to receive justice and if the careless and unscrupulous employer is to be deterred from similar violation of the law, it is evident that some remedial legislation should be enacted. Such action does not lack precedent. Seven States already have legislation which has as its object the redress of illegally employed minors injured in the course of their employment.

Wisconsin. The compensation law of this State provided that a minor of permit age (children under 17 years of age) who was injured while employed without a labor permit was entitled to double indemnity. A minor of permit age or over who was injured while employed in a prohibited occupation was entitled to triple indemnity. As a result of the vigilance displayed by the Industrial Commission, the number of accidents to minors in which double or triple compensation was allowed had fallen off appreciably. In 1929 there were 39 cases of injuries to minors illegally employed as against 97 in 1921. In 1929 the amount of compensation allowed in such cases was \$19,250.

NATIONAL CHILD LABOR COMMITTEE CONFERENCE. The National Child Labor Committee, to whose activities must be attributed the great progress made in child labor legislation in the United States, held its twenty-fifth annual conference in New York City at the beginning of the year. Owen R. Lovejoy, long the Committee's leader and at the present time secretary of the Children's Aid Society of New York, insisted that only a Federal amendment could really cope with the problem. Governor Roosevelt, of New York, one of the speakers at the conference, declared that factories had been moving from the North to the South because of the absence in the Southern States of laws protecting child labor and workmen injured in industry. Governor Roosevelt expressed the opinion of leaders of the social legislation movement when he said:

I have said simply from the bottom of my heart, and some say that it is treason, that I would rather have the factories go. I have seen Northern mills that have gone South, and I have seen the conditions of employment that they have set up in those mills, not just for children, but for men and women, and I want to tell you that the time will come when public opinion in the South, with the growth of education of the average citizen, is going to bring the laws of the South and the standards of the South on the par of the laws and the standards of the North.

THE SCHOOLS AND CHILD LABOR. A bulletin issued by the Federal Children's Bureau applied itself to answering the question, Why do children leave school to go to work prematurely? The report cited the following as the chief reason, based on elaborate inquiries which it had been making over many years. Children left school because many school systems were not yet providing adequate training adapted to the needs of an industrial society. Other reasons cited were restlessness, impatience with discipline, and personal and family ignorance of the value of continued school training. The report further pointed out that illiteracy and the lack of the rudiments of a general education were characteristic usually of children inducted into industry at an early age. Thus, less than three-fourth of the 14- and 15-year-old children taking out employment certificates to go to work in 1927 in a number of industrial communities in the United States had completed the eighth or a higher grade, and one-fourth had completed only the sixth grade. The Children's Bureau outlined the following four programmes for the prevention of child labor:

1. The necessity for legislation aimed at child labor and for the strengthening of school attendance laws. 2. A sufficiently high wage for the chief breadwinner of the family to eliminate the necessity for income contributions from the labor of children. 3. The general acceptance of mothers' assistance acts by the States and the granting of sufficiently large pensions to allow children to remain in school up to the age of at least 16 years. 4. A recasting of our educational system in order to prepare children adequately to cope with the present-day problems of our civilization.

OTHER COUNTRIES. In 1930 the *Colombian Congress* was considering a new labor code, modeled after the draft conventions of the International Labor Organization, which was designed to prohibit night work for women and children between 10 P.M. and 5 A.M. In *Finland* a law was passed in 1929 to raise the minimum age for entrance into industry from 13 to 14 years in most industrial occupations. In *Great Britain* a measure passed in 1930 extended to 18 years the regulations under which young people might be sent abroad for the purpose of appearing in theatrical performances. The British education bill, providing for the raising of the entrance age into industry to 15 years, failed of passage because of obstacles raised by religious bodies not associated with the Church of England. Apparently the raising of the school-leaving age threatened to place additional financial burdens on these schools. The result was the withdrawal of the bill and an effort to formulate a compromise. See **CHILD WELFARE**.

CHILD NUTRITION. See **FOOD AND NUTRITION**.

CHILD PSYCHOLOGY. See **PSYCHOLOGY**.

CHILDREN'S BUREAU, UNITED STATES. See **CHILD WELFARE; CRIME**.

CHILD WELFARE. **WHITE HOUSE CONFERENCE.** At Washington, on November 19, there was held the White House Conference on Child Health and Protection. President Hoover addressed the opening session of the Conference and at other meetings speeches were delivered by Secretary of the Interior Wilbur, Secretary of Labor Davis, and Miss Grace Abbott, Chief of the Children's Bureau. President Hoover stated that as against 35,000,000 children in the country classified as reasonably normal there were in addition 6,000,000 other children who might be regarded as being inadequately nourished and another 4,000,000 who were handicapped by defective speech, heart defects, behavior problems, tubercular infections, deafness, blindness, crippled limbs, and delinquency or dependency. He declared that at least four-fifths of these handicapped children were not receiving the attention or treatment they needed and he called upon the conferees to put the stamp of their expert approval upon the proposals and recommendations for child welfare which had been brought together as a result of a year's discussion and research conducted by the various divisions of the Conference. In one portion of his address President Hoover declared:

If we could have but one generation of properly born, trained, educated, and healthy children a thousand of the problems of government would vanish. We would insure ourselves of healthier minds and more vigorous bodies to direct the energies to yet greater heights of achievement.

The work of the Conference was divided into the following four sections: Section I, dealing

with medical service; Section II, dealing with public health service; Section III, dealing with education and training; and Section IV, dealing with the handicapped. An idea of the complexity of the Conference's preliminary activities may be obtained from the fact that under Section III, namely, education and training, some 80 subcommittees alone met to formulate suggestions. The Conference drew up what it called its "Children's Charter" made up of what was considered the 19 minimum requirements for a healthy and happy childhood. Some of these included the following:

Every prospective mother should have suitable information, medical supervision during the pre-natal period, competent care at confinement. Every mother should have post-natal medical supervision for herself and child.

Every child should have proper sleeping room, diet, hours of sleep and play and parents should receive expert information as to needs of children of various ages as to these questions.

The School should be so organized as to discover and develop the special abilities of each child and should assist in vocational guidance, but children, like men, succeed by the use of their strongest qualities and special interest.

Every child should have some form of religious, moral and character training.

Every child should be protected against labor that stunts growth, either physical or mental, that limits education, that deprives children of the right of comradeship, of joy and play.

Every waif and orphan in need must be supported.

Every child is entitled to the feeling that he has a home. The extension of the services in the community should supplement and not supplant parents.

Children who habitually fail to meet normal standards of human behavior should be provided special care under the guidance of the school, the community health or welfare center or other agency for continued supervision or, if necessary, control.

A Committee on Vocational Guidance and Child Labor formulated a thoroughgoing series of recommendations for the regulating of the labor of children. These standards called for the following: An age minimum of 16 years; compulsory school attendance up to 18 years except for children of 16 years who are employed or who are high school graduates; a maximum working day of 8 hours and a 44-hour week for children under 18 years; an 8-hour day for school and work combined for children under 16 years; night work restriction for children under 18 years; employment certificates for children under 18; physical examinations before employment; establishment of adequate machinery and personnel for enforcement of child labor and school attendance laws.

Only one controversial incident developed to mar the general unanimity expressed by the persons in attendance at the Conference. This was the difference of opinion that developed out of the recommendation submitted by the Public Health Service Section that the health activities of the Children's Bureau be transferred to the Public Health Service in the Treasury Department. The recommendation was supported by officials of the Public Health Service and by Dr. Haven Emerson, a public health authority of New York City, who urged that all Federal health activities might well be concentrated under the aegis of a single public agency and specifically recommended that the health activities of the Division of Child Hygiene and of Maternity and Infancy of the Children's Bureau be thus transferred. Opposition at once manifested itself to this proposal. Secretary of Labor Davis, Miss Grace Abbott, and representatives from a variety of social work and women's agencies pointed out

that the work of the Children's Bureau was directed by a single guiding principle and that severance from it of any of its activities would result in a loss of this point of view. In view of the fact that under the rules of the Conference no controversial questions could be decided, the matter was referred for further consideration to a continuing committee.

BIRTH AND INFANT MORTALITY. From statistics published by the Census Bureau, it was established that the birth and infant mortality rates for the United States were the lowest in 1929, with one exception, since the establishment of the registration area in 1915. In 1929 the mortality rate for infants under one year was 68 per 1000 births. Only in 1927 was the rate lower when it was 65. The birth rate was 18.9 per 1000 population, the lowest for any year since 1915. It was interesting to note that in a solid bloc of nine Southern States infant mortality decreased from 2 to 7 points per 1000 live births in 1929 as compared with 1928. In Arkansas the rate was 70 per 1000 live births; and in North Carolina, it was 79. Each of these States, however, represented the decrease of 7 points from 1928. In South Carolina the rate was 91, which was a decrease of 6 points over the previous year; in Georgia it was 77, which was a decrease of 5 points; in Tennessee it was 77, which was a decrease of 4 points; in Louisiana it was 74, which was also a decrease of 4 points. In Florida it was 65; in Mississippi it was 72; and in Alabama it was 73; each State showing a 2-point drop from 1928. By contrast one may note that Oregon's death rate was 48 and Washington's rate was 49. In New York the death rate was 61; in New Jersey, 60; in Connecticut, 64; in Iowa it was 53; in Kansas, 58; and in Nebraska, 52.

MATERNAL AND INFANT HEALTH. Previous YEAR BOOKS have devoted attention to the Maternity and Infancy Act of 1921. It was pointed out last year that the Act terminated on June 30, 1929, and was not renewed by Congress. When Congress adjourned in 1930 there were pending in the Senate two bills calling for the continuance of the appropriations by the Federal Government. However, at the close of the year Congress had yet not taken action on either of these measures. However, it is interesting to note that in a number of States larger State appropriations were made available for the continuance of the programme. Thus, nineteen States and the Territory of Hawaii reported that their legislatures appropriated for the continuance of the maternity and infancy work, amounts equal or exceeding the combined State and federal appropriations. These States were: Delaware, Kentucky, Maine, Maryland, Michigan, Missouri, New Hampshire, New Jersey, New Mexico, New York, North Carolina, North Dakota, Pennsylvania, Rhode Island, South Dakota, Tennessee, Vermont, Virginia, and Wisconsin.

WORK OF THE CHILDREN'S BUREAU. As indicative of the widening scope of the activities being conducted under the Federal Children's Bureau mention may be made of some of the more important studies either in process of investigation or completion: Study of the case histories of 7537 maternal deaths, which represented one-fourth of all the maternal deaths in the birth registration area in 1927 and 1928; study of the frequency of rickets in New Haven and Porto Rico; study, through an examination

of autopsy records, of stillbirths and neo-natal mortality; study of injured miners under workmen's compensation laws; study of juvenile delinquency with particular bearing on the results of institutional treatment for delinquent boys in State industrial schools.

LEGISLATION RELATING TO CHILDREN. During 1930, legislative sessions were held in the States of Kentucky, Louisiana, Massachusetts, Mississippi, New Jersey, New York, Rhode Island, South Carolina and Virginia, and in most of these statutes were passed affecting the welfare of children. The more important of these laws that were added to children's codes already in existence are summarized below.

Child Hygiene. New Jersey provided for the employment of registered nurses in schools. New York provided for the employment of dental hygienists and clinic physicians by county boards and supervisors.

Child Labor and Compulsory School Attendance. Mississippi prohibited the employment of a child between 14 and 16 years of age in a factory workshop unless he had complied with the compulsory school attendance law. Another law in this State required attendance for the full school term in school districts having a population of 10,000 and over. The New Jersey legislature passed a resolution creating a commission to investigate the employment of migratory children. In Louisiana the maximum hours of work for girls 16 years of age and over were reduced to a nine-hour day and 54-hour week. The same law, however, removed the limitation of a maximum of ten-hour day and 60-hour week for boys 16 and 17 years of age.

Dependent Children. The Louisiana legislature enacted a new mothers' aid law. This law also authorized State aid to parishes and to the City of New Orleans, which were already appropriating sums for the work, and \$200,000 was voted for the biennium for State contributions. In New York the mothers' aid code was liberalized by the passage of two amendments which authorized aid to deserted wives whose husbands had been away two years instead of five and also for aid to a relative within the second degree when the mother was dead or permanently incapacitated. In South Carolina there was created an independent Children's Bureau. In Porto Rico there was created a special commission to take a census of all neglected and homeless children in the Island.

Juvenile Delinquency. A New York law authorized the State Department of Social Welfare to study the causes of juvenile delinquency and to collect and disseminate information relating to the question. New Jersey passed a law sponsored by the National Crime Commission regulating the sale and possession of firearms.

Mentally Defective Children. Congress enacted a law to establish a hospital for defective delinquents. The Virginia Colony for Epileptics and Feeble-minded was restricted to white persons not under 10 years and to feeble-minded white females not under 10 years and over 45 and white males not under 10.

GREAT BRITAIN. The House of Commons on Nov. 11, 1930, passed on its first reading a bill to make attendance in school compulsory up to the fifteenth birthday. A final vote was not reached by the end of the year. The act provided for the spending by the government of \$18,500,000 a year as maintenance grants for parents whose children

are to be kept in school the additional year. The law heretofore had fixed the compulsory school attendance age up to the fourteenth birthday. See **FOOD AND NUTRITION.**

CHILE, che'la, or chil'l. A South American republic, occupying the Pacific coastal region from Peru to the southernmost point of the continent. Capital, Santiago.

AREA AND POPULATION. With the extreme length of 2628 miles and an average width of 177 miles, Chile had a total area of 290,195 square miles, after the Tacna-Arica boundary adjustment of 1929. The population was 3,753,799 at the census of 1920 and was estimated at 4,364,395 on June 1, 1929. With the exception of several hundred thousand nomadic Fuegians, civilized Changos, and Araucans, the people are largely of European descent. In 1929 the birth rate per 1000 of population was 47.9 (52.2 in 1928); the death rate, 25.1 (23.7); and the marriage rate, 9.6 (11.1). The excess of immigrants over emigrants was 4177, as compared with 728 in 1928. Santiago in 1929 had about 739,492 inhabitants (507,296 in 1920) and Valparaiso, 286,947 (182,422 in 1920). Other towns, with their 1920 populations, are: Concepción, 64,074; Iquique, 37,421; Talca, 36,079; Chillan, 30,881; Antofagasta, 51,531; and Viña del Mar, 35,441.

EDUCATION. Primary education is compulsory for children between the ages of 7 and 15 and children under 16 years of age cannot be employed unless their school requirements have been met, under a law which became effective in December, 1929. The educational system was completely reorganized during the years 1928-30, some 600 modern primary schools were constructed, and intensive adult education reduced illiteracy from 60 to 20 per cent. The enrollment in the 3629 state primary schools in 1929 was 434,124; in 1928 there were 474 private primary schools, with 57,442 pupils. The State University of Chile had 2700 students (1928). A Catholic University, two industrial universities, and various lyceums and colleges are maintained.

PRODUCTION. Chile is divided into three economic zones, the northern mineral regions, the central agricultural area, and the southern pastoral and lumbering zone. While agriculture and stock raising are the main supports of the population, the mining industry furnishes nearly 90 per cent of all Chilean exports as well as funds for most of the imports. Manufacturing is important in the central and southern areas. The Chilean Statistical Bureau estimated the total value of mining production in 1927 at 1,256,300,000 pesos; of agricultural production, 1,115,000,000 pesos, and of the value added in manufacturing processes, 650,000,000 pesos. In 1930, the economic organization of the nation was being profoundly modified as a result of the trend toward consolidation of the mining industry, the growth of manufactures, and the problems created by surplus agricultural yields during the preceding three years.

Chile's annual mineral output is valued at two-thirds that of the entire mineral production of the continent. Huge nitrate deposits in the rainless northern provinces, estimated at over 3,000,000,000 tons, constitute the most valuable mineral resource. Between 1880 and 1930 the Government collected approximately \$1,000,000,000 on nitrate export duties. In the latter year the industry represented an investment of about \$175,000,000 and employed 65,000 persons.

After 1926 the nitrate industry faced increasing difficulties, due to the development in Europe and the United States of synthetic processes for the manufacture of nitrogen. In 1929, the 69 Chilean nitrate plants produced 3,237,594 metric tons, as compared with 3,164,800 tons in 1928, an increase of 2.3 per cent. Exports, however, increased by only 0.3 per cent, while total world stocks increased by 23 per cent. A severe crisis in the industry early in 1930 resulted in the Government's intervening with a programme of rationalization.

The principal metals mined are copper (in the production of which Chile ranks second), gold, silver, cobalt, iron, and manganese. Iron-ore deposits are estimated at over 1,000,000,000 tons. Coal, borate, salt, sulphur, and guano are other products. The iodine output constitutes about 80 per cent of the world's supply. Production of the principal minerals in 1929, with comparative figures for 1928 in parentheses, was as follows: Iodine, 1387 metric tons (994.5); copper bar, 303,200 tons (274,900); coal, 1,506,400 tons (1,375,600); nitrate of soda, 3,238,000 metric tons (3,163,000).

Of approximately 95,000,000 acres of arable land, only a small proportion is cultivated, including 2,500,000 acres under artificial irrigation. About 1,750,000 acres are devoted to barley, wheat, and oats. In 1929, the wheat crop totaled 808,000 metric tons; potatoes, 434,000 metric tons; alfalfa (1928), 398,000 metric tons. Fruits, grapes, vegetables, and tobacco are extensively grown, the estimated wine production in 1927-28 being 76,463,877 gallons. At the beginning of 1926, livestock comprised 4,092,872 sheep, 1,918,433 cattle, 323,581 horses, and 246,636 swine. Manufacturing establishments in 1927 numbered 9093, as against 7068 in 1925. In the latter year, 89,278 persons were employed in factories, with wages and salaries of 215,149,351 pesos. British investments in Chile in 1929 were estimated at £97,000,000 (about \$485,000,000) and American investments in 1930 at a total of about \$442,600,000.

Favorable conditions characterizing most branches of industry, commerce, and agriculture in 1929 gave way in 1930 to a depression caused by lower world prices for leading farm and mineral products. Workers released through the curtailment of nitrate and copper production were only partially absorbed by agriculture and the government's public works programme. Manufacturers reduced production, the farmers besought Government aid, and the Government was forced to curtail its public-works projects somewhat and to reduce the wages of the state employees.

COMMERCE. Chile's total foreign trade in 1929 amounted to \$468,000,000, of which \$167,370,000 represented the share of the United States. Exports were valued at \$275,305,000 (\$238,659,000 in 1928) and imports at \$193,102,000 (\$145,804,000 in 1928). The favorable balance of trade in 1929 was \$82,203,000, as compared with \$92,855,000 in 1928. In 1930 the value of exports suffered a precipitate drop, the balance of trade for the first six months being unfavorable by \$2,430,000, as against a favorable balance of \$56,812,400 during the same period of 1929.

Nitrate exports in 1929 were valued at \$114,872,000, or 42 per cent of the total; copper exports were \$105,489,000, or 38 per cent; iodine, \$9,459,000, or 3.5 per cent; wool, \$8,886,000;

meat, \$2,553,000; hides and skins, \$1,723,000; and iron ore, \$1,841,000. Coal and agricultural products comprise the remaining exports. Leading imports in 1929, in order of value, were textiles, automobiles, sacks, cattle, crude petroleum, sugar, iron and steel sheets, automobile chassis, cement, benzine, and foodstuffs. The United States furnished 33.9 per cent of the imports (30.7 in 1928); United Kingdom, 18.1 per cent (17.7); Germany, 16 per cent (13.9), and France, 5 per cent (4.8). Mineral exports in 1929 increased by 20 per cent over 1928, while among the imports, metallurgical products showed a 53.3 per cent increase, machinery and tools, 64.6 per cent; automobiles, 84 per cent; and cement, 143 per cent.

FINANCE. In the ordinary budget for 1930, adopted by Congress late in 1929, revenues were calculated at 1,214,650,000 pesos and expenditures at 1,159,323,798 pesos, respectively, the estimated accumulated surplus being 55,326,202 pesos. The 1930 extraordinary budget authorized total expenditures of 390,797,575 pesos, 250,000,000 pesos of which were to be borrowed. In May, 1930, however, the President announced the reduction of budgeted expenditures by 50,000,000 pesos "as a measure of foresight in the face of the economic crisis." The ordinary budget for 1931, as submitted to Congress Nov. 6, 1930, called for expenditures of 1,039,448,159 pesos (about \$124,734,000) and estimated receipts at 1,039,617,387 pesos (\$124,754,000). The extraordinary budget for 1931 totaled about 275,000,000 pesos, largely for public works to be financed by loans. The year 1930 ended with a surplus of about 2,500,000 pesos.

Ordinary revenues and expenditures during 1929 totaled 1,267,556,419 pesos and 1,189,934,016 pesos, respectively, leaving a surplus of 77,622,403 pesos, as against an anticipated surplus of 51,687,500 pesos. The surplus included 34,006,015 pesos carried over from 1928, while the expenditures included 15,406,000 pesos set aside for the purchase of state bonds with which to create an emergency fund. Extraordinary expenditures, mainly for public improvements, totaled 406,161,655 pesos, as against net revenues from loans and bankers' advances of 343,182,897 pesos and some 37,949,451 pesos carried over from 1928. The deficit of 25,029,307 pesos was met out of ordinary revenues.

On Dec. 31, 1929, the total direct state debt stood at 2,688,133,570 pesos, an increase of 202,740,128 pesos during the year, while the total indirect debt amounted to 1,132,842,818 pesos, an increase of 108,631,580 pesos during the year. The monetary unit is the peso, which was stabilized at \$0.1217 in 1925; the average exchange value in 1929 was \$0.1206.

COMMUNICATIONS. Railway lines in operation in 1930 totaled 6831 miles, of which nearly 70 per cent were state owned, 22 per cent British owned, and the remainder represented American investment. A railway construction programme inaugurated in 1928 called for the completion of 559 additional miles of track within six years at a cost of \$22,143,000. A three and one-half mile tunnel connecting Chile and Argentina via the Lonquimay Valley was to be finished by 1932 at a cost of over \$2,400,000. Passengers carried by all railways in 1929 numbered 918,000,000 (945,500,000 in 1928) and freight, 1,681,000,000 tons (1,511,400,000 tons in 1928). The state railways (1929) carried 842,500,000 passengers and

hauled a total of 1,056,600,000 tons of freight.

The total length of the Chilean highway system in 1930 was 24,800 miles, of which 13,286 miles were first-class roads, and 11,075 miles second class. A highway programme adopted in 1928 called for 4352 additional miles of modern roadway by 1935. Direct radio-telegraphic service between Chile and the United States was opened Feb. 3, 1930, and on May 3 and 11, respectively, radio-telephone service with the United States and with Spain was inaugurated.

The net tonnage of vessels in the foreign trade entering and clearing Chilean ports in 1929 was 3,438,000, and of those in the coastwise trade, 17,762,300.

GOVERNMENT. Under the Constitution of Oct. 18, 1925, executive power is vested in a president, assisted by a cabinet responsible to him, and legislative power in a national congress, consisting of a senate of 45 members, representing the nine provincial groups, and a chamber of deputies of 132 members, elected by departments. The President, who is elected for six years, is ineligible to succeed himself. President in 1930, General Carlos Ibañez del Campo, who assumed office July 21, 1927. A non-political cabinet, nominally headed by Minister of Interior Burmúdez, was appointed May 23, 1927, and reorganized Aug. 23, 1929.

HISTORY

POLITICAL DEVELOPMENTS. Despite advanced social legislation and the comparatively honest and efficient administration of President Ibañez, Chile in 1930 was not immune to the wave of revolutionary sentiment which overturned the governments in four neighboring states during the year. A revolutionary coup attempted by a number of prominent exiles at Concepción September 21 was foiled through quick action on the part of Gen. Victor Figueroa, Governor of the Province, and Gen. José María Barcelo, the military commander there. Subsequent agitation by students and political leaders caused the Government to take elaborate precautions against revolution, including the transfer of numerous army officers to other posts. A plot to blow up a bridge over which the President's train was scheduled to pass on December 9 was frustrated by the police and 15 alleged conspirators were arrested.

The uprising at Concepción was engineered by five Chileans who flew from Argentina in a plane piloted by two citizens of the United States. The leaders were Gen. Redrado Enrique Bravo and Col. Marmaduke Grove, both important officers in the Chilean army, who had been deported by President Ibañez. They were accompanied by three civilian exiles, Luis Salas Romo, Carlos Vicuña Fuentes, and Pedro Leon Ugalde. Romo was Minister of Justice under President Alessandri. Several army units were apparently pledged to the revolution and the Chacabuco regiment of infantry, garrisoned at Concepción, was reported to have revolted immediately upon the arrival of the airplane. The uprising was quelled, however by marines dispatched from the nearby naval base at Talcahuano, and the ringleaders were captured and imprisoned on the cruiser *Riveros* at the naval base. A rigorous censorship prevented the extent of the conspiracy from becoming known. It was announced in Santiago September 25 that 17 army officers were involved in the plot and had been relieved of their commands. Several

officers of the Chacabuco regiment were arrested, along with various civilians charged with complicity.

The trial in November of Senator José Maza, one of the arrested civilians, was marked by disorders on the part of students and political elements opposed to the government. On November 5 eight men, including Cornelio Saavedra, a former Cabinet Minister, were arrested for their alleged efforts to precipitate a revolution in connection with the trial.

President Ibañez in February assumed extraordinary executive powers for a period of six months, as a result of evidences of growing unrest. These powers expired on August 22. On September 28 it was announced that Congress would be dissolved and popular elections held under a new bill to be submitted to Congress by the President. The bill provided for the amendment of the Constitution so as to authorize the President to dissolve Congress whenever the interests of the country were held to require such action. In the meantime, student disorders at the University of Chile, growing out of the refusal to allow the establishment of a student council, caused the President to close the institution until April, 1931. An extraordinary session of Congress was convened November 17 to consider the suggested amendment to the Constitution, budget legislation, the establishment of a petroleum refinery, and upward revision of the tariff.

The assumption of extraordinary powers by the President in February was followed (February 24) by the resignation of Minister of the Interior Burmúdez and Minister of Justice Koch and later by the dissolution of the Cabinet. President Ibañez then summoned David Hermosillo, Mayor of Valparaíso, to form a new Ministry. The Cabinet functioned without an official premier, the Minister of the Interior being regarded as its nominal head.

OTHER EVENTS. The Department of Arica, administered by the Chilean Foreign Office for nearly 50 years pending settlement of the Tacna-Arica dispute in 1929, was incorporated in the Province of Tarapaca, effective May 1, 1930. One of the consequences of the Tacna-Arica settlement was the material reduction of the Chilean army. In 1930, a new law made the year of compulsory military service, formerly required of all male citizens reaching the age of 20, applicable to only 30 per cent of the male population of that age. Chile's growing influence was evidenced by the appointment of the first British Ambassador to Santiago. The Chilean representative at the Court of St. James's was raised to an equal rank.

Chile in 1930 had one of the world's most comprehensive social insurance systems. Over a million laborers, or 84 per cent of the calculated insurable labor population, as well as a large proportion of both public and private salaried employees were insured against old age, sickness, disability, and various other contingencies. Juan Luis Sanfuentes (q.v.), President of Chile during the years 1915 to 1920, died in Santiago, July 16, 1930. See EARTHQUAKES.

CHINA. A state of eastern Asia, established as a republic Feb. 2, 1912. Capital, under the Nationalist Government, Nanking. The name of Peking, the former capital, was changed to Peiping in 1929 by a Nationalist decree.

AREA AND POPULATION. China comprises 30 provinces, including three in Manchuria, and the dependencies of Mongolia, Sinkiang, and Tibet

over which it exercises nominal authority. It has an area of over 4,200,000 square miles, or nearly that of the United States and Mexico combined, and a population variously estimated from 442,000,000 to 485,000,000 or about one-fourth of the population of the earth. The 21 provinces of China proper embrace less than 1,900,000 square miles, but contain 435,000,000 of the population, while the remaining 2,300,000 square miles supports less than one-fortieth of the total inhabitants. The area and population by provinces and dependencies is shown in the accompanying table from the *Commerce Yearbook* for 1930. The table does not include the six new provinces created from former administrative districts in the north and west in 1929, as follows: Tsinghai (capital, Sining); Ningsia (Ningsiafu); Jehol (Chengtch); Suiyuan (Kweisu); Chaihar (Kalgan); and Sikang (Kangting). The population figures, however, are included in the grand total.

AREA AND POPULATION OF CHINA BY PROVINCES

| Province (capital) | Area square miles | Population, approximate, thousands |
|---|-------------------|------------------------------------|
| Anhui (Anking) | 54,826 | 19,833 |
| Chekiang (Hangchow) | 36,680 | 22,043 |
| Hopei (Peiping) | 115,830 | 34,187 |
| Liao-Ning (Mukden) | 56,000 | 13,800 |
| Fukien (Foochow) | 46,332 | 13,158 |
| Heilungkiang (Tsitsihar) | 203,000 | 2,500 |
| Honan (Kaifeng) | 67,954 | 30,832 |
| Hunan (Changsha) | 83,398 | 28,443 |
| Hupeh (Wuchang) | 71,428 | 27,167 |
| Kansu (Lanchow) | 125,483 | 5,928 |
| Kiangsi (Nanchang) | 69,498 | 24,467 |
| Kiangsu (Chinkiang) | 38,610 | 33,786 |
| Kirin (Kirin) | 105,000 | 7,500 |
| Kwangsi (Nanning) | 77,220 | 12,258 |
| Kwangtung (Canton) | 100,000 | 37,168 |
| Kweichow (Kweiyang) | 67,182 | 11,115 |
| Shansi (Taiyuan) | 81,853 | 11,081 |
| Shantung (Tsinan) | 55,984 | 30,803 |
| Shensi (Sian) | 75,290 | 9,466 |
| Szechwan (Chengtu) | 218,533 | 49,783 |
| Yunnan (Yunnanfu) | 146,714 | 9,839 |
| Total, China proper (approximate) | 1,897,000 | 435,000 |
| Sinkiang (Tihwa) | 550,000 | 2,500 |
| Mongolia (Urga) | 1,370,000 | 2,500 |
| Tibet (Lassa) | 465,000 | 1,500 |
| Grand total (approximate) ... | 4,300,000 | 442,000 |

As no general census has been taken, the above figures are but rough estimates. The Chinese Maritime Customs estimated the total population in 1928 at 451,842,000, inclusive of 19,290,000 in Manchuria, while the 1925 estimate of the Chinese Post Office was 485,508,838. Estimates for the chief cities show similar divergencies. Those prepared by the Chinese Post Office are: Shanghai district, 5,550,200; Shanghai (proper), 1,538,500; Foochow, 1,491,143; Canton, 1,367,680; Changsha, 1,271,903; Peiping (proper), 1,181,400; Peiping district, 4,014,619; Soochow, 1,027,091; Nanking, 902,441; Hong Kong, 874,420; Tientsin, 838,629; Mukden, 773,846; Hangchow, 729,948; Chungking, 716,585; Tsinan, 621,039; Wuchang, 597,907; Hankow (1930 census), 550,169. About 80 per cent of the total population of China are laborers or farmers. Chinese immigrating to British Malaya in 1929 numbered 293,167. Chinese abroad (1928) totaled about 6,246,682.

Foreigners in China in 1928 were estimated by the Customs authorities at 349,735, including 239,180 Japanese, 77,891 Russians, 12,383 British,

6023 Americans, 3026 Germans, and 2584 French. The Chinese press in 1930 estimated the foreign populations of Shanghai as follows: Japanese, 17,721; British, 6903; American, 3322; French, 1163; German, 1100; and Italian, 320. Effective Jan. 1, 1930, the Nationalist Government withdrew extra-territorial privileges of all foreigners in China.

Confucianism, Buddhism, and Taoism are the three indigenous religions, with Buddhism predominant. Mohammedans, found in every Province, are estimated at 20,000,000. In 1923, there were 2,208,800 native Roman Catholics, and in 1920, 618,601 native Protestants.

EDUCATION. The Nationalist government in 1930 continued its reorganization of the educational system on the French model wherever possible. There were nine government universities, and various private institutions of higher learning. The numerous Christian mission schools, colleges, and universities at Shanghai and other ports had about half a million students. Higher primary schools in 1923 numbered 10,236, with 582,579 pupils, and lower primary schools numbered 167,076, with 5,814,375 pupils.

PRODUCTION. China has an estimated area of 192,060 miles of arable land, divided into small holdings averaging about two acres and supporting directly about four-fifths of the population. Production is on a highly intensive basis, there being from two to four crops annually. The republic is the world's largest producer of rice, soy beans, tea, and tung oil, ranks second to Japan in the production of raw silk, and third or fourth in cotton and wheat. Wheat, barley, maize, millet, peas, and beans are chiefly cultivated in the north and sugar, rice, tea, and indigo in the south. Fruit and fibre crops are important. The estimated average annual production of the leading crops, with the percentage exported, is given by the *Commerce Yearbook* as follows: Wheat, 300,000,000 bushels, none; rice, 800,000,000 bushels, none; corn, 100,000,000 bushels, none; peanuts, 600,000 tons, 33 per cent; soy beans, 5,000,000 tons, 65 to 80 per cent; kaoliang, 200,000,000 bushels, 1 per cent; tea, 800,000,000 pounds, 15 per cent; tobacco, 500,000,000 pounds, 6 per cent; silk, 42,000,000 pounds, 48 per cent; cotton, 2,500,000 bales, 10 per cent. Pigs are raised everywhere and pig bristles are an important export.

Due to the occupation of great areas of virgin land in Manchuria by millions of Chinese settlers, the agricultural production of the country is rapidly expanding.

The process of industrialization is proceeding rapidly in the larger cities. The chief manufactures are cotton and woolen cloth, silk filatures, flour, iron products, and glass. There were (December, 1928) 120 cotton mills in China (43 Japanese-owned, 74 Chinese-owned, and 3 British-owned), with a total of 3,638,098 spindles and 29,788 looms. About 150 modern flour mills, 50 of them in Manchuria, were operated in 1925. Large iron works are located at Hanyang, near Hankow. Glass factories number about 400. Cigarette factories in Shanghai employed about 30,000 workers.

Coal deposits are widely scattered throughout China proper, the fields covering an area of 133,513 acres and the annual output totaling about 10,000,000 tons. There are large iron-ore deposits, production from which averages about 1,500,000 tons annually. Petroleum is being exploited on the Upper Yangtze and oil shale in South Manchuria

and Shansi Province. Copper and tin are mined in Yunnan, the tin output being about 10,000 tons annually. More than 60 per cent of the world's total production of antimony is supplied by China, which has a normal output of 25,000 tons. Gold, silver, lead, wolfram, molybdenum, bismuth, and salt are worked also. Salt production is estimated at 3,122,307 metric tons annually. See *AGRICULTURE* under *World Agriculture*.

COMMERCE. China's merchandise exports in 1929 totaled 1,015,687,000 Haikwan taels (\$650,040,000 at the average value of \$0.64 for the Haikwan tael for the year), as compared with 991,355,000 taels (\$634,476,000) in 1928, according to preliminary figures. Imports were valued at 1,281,321,000 taels (\$820,046,000), or 5.9 per cent in excess of the 1928 total of 1,195,969,000 taels (\$765,420,000). The import increase occurred in spite of higher customs duties and lower exchange rates. Exports of silver and gold, not included in the merchandise totals, amounted to 2,523,152,000 taels (\$1,614,817,000). The total trade for 1929, including junk trade (671,000 taels) and specie movements, amounted to 2,806,510,000 taels (\$1,796,166,000).

Business and commerce continued to suffer in 1929 from administrative complications, disruption of transportation, and internal disorder, but favorable crops in 1930 and the apparent termination of civil warfare induced optimism among Chinese business men. Japan continued as China's principal customer in 1929, taking 25.2 per cent of all Chinese exports (28 per cent in 1928) and furnishing 25.2 per cent of China's imports (27.8 in 1928). The remaining imports were supplied chiefly by the United States, 18 per cent (17 per cent in 1928); Hong Kong, 16.7 (20); Great Britain, 9.3 (9.5); Germany, 5.2 (4.6); Netherlands East Indies, 4.4 (4.4); India, 4.3 (4); and Belgium, 3.9 (1.4). After Japan, exports went principally to Hong Kong, which took 17.1 per cent in 1929 (18.4 per cent in 1928); the United States, 14 (13); Great Britain, 7.3 (6.2); Soviet Russia, 5.5 (9); France 5.5 (7.3); and the Netherlands, 3.9 (2.4). Germany increased her total trade with China by about 20 per cent, and Canada by 134 per cent. Due to the fact that a portion of the United States trade with China passes through Japan and Hong Kong and is included in the trade figures for those countries, the above percentages do not indicate the actual relative position of America's trade. Leading imports in 1929 were cotton and cotton manufactures, foodstuffs, petroleum products, metals and manufacturers, machinery and electrical equipment, and tobacco and tobacco products. Exports were chiefly textiles and materials, beans and bean products, vegetable food products (exclusive of beans), animal food products, hides and skins, metals and minerals, undressed furs, and pig bristles.

FINANCE. The report of Finance Minister T. V. Soong for the fiscal year ended June 30, 1929, placed actual revenues at 434,000,000 Yuan dollars (1 Yuan dollar exchanged at \$0.4716 in 1929) and expenditures at some 514,000,000 dollars. The 80,000,000-dollar deficit was met by flotation of additional loans. In the budget estimates for 1928-29, revenues were calculated at 457,740,000 dollars and expenditures at 507,870,000 dollars, the estimated deficit being 50,130,000 dollars. Of the actual expenditures, some 209,000,000 dollars represented military outlays, 28,000,000 went for civil expenses of the government, and

the remainder was devoted to the service of loans. The military expense account did not include outlays in Manchuria or in 11 other Chinese provinces which maintained their own armies or in which civil war occurred during the year. Customs receipts for 1929 were reported at 152,760,000 Haikwan taels (1 Haikwan tael exchanged at approximately \$0.65 in 1929), as compared with 82,332,526 Haikwan taels in 1928. Salt revenue collected throughout the whole of China in 1929 was placed at 133,000,000 Mexican dollars, compared with 113,000,000 dollars in 1928 and 86,000,000 dollars in 1927. (One Mexican dollar exchanged at about \$.42 in 1929, \$.46 in 1928, and \$.45 in 1927.)

On Jan. 1, 1929, the public debt was reported at \$1,034,569,000, converted at par, of which \$166,580,000 represented internal loans, and \$867,989,000 external loans. An unofficial estimate fixed the total debt in October, 1929, at \$1,232,000,000 (gold), of which approximately \$545,000,000 was secured upon the Maritime Customs Revenue. Another estimate (see Arthur G. Coons, *The Foreign Public Debt of China*, University of Pennsylvania Press, 1930) placed the total at over \$1,000,000,000.

COMMUNICATIONS. Railways in operation at the beginning of 1928 had 8750 miles of line, of which 5555 miles were government railways, 2305 miles were concessioned lines, and 890 were operated by commercial and industrial concerns. About half of the total mileage was in Manchuria (see MANCHURIA). The report of government railways for 1925, issued in 1930, placed the gross revenues of the 4347 miles of line reporting at 124,565,253 silver dollars (equivalent to about \$0.57 each) and the operating expenses at 70,378,396 dollars, leaving net revenues of 54,168,864 dollars. Passengers carried during the year totaled 39,715,720 and freight, 27,718,185 long tons. Concessioned railways in 1927 carried 21,434 tons of freight.

The huge internal trade is carried on mainly by navigable rivers, canals, and numerous badly kept roads. Improvements on the road system were vigorously pushed by the Nationalist government in 1929 and 1930. The Changsha-Chengchow highway in Hunan Province was completed in May, 1930, cutting the travel time between Hankow and Canton from 18 to 7 days. Other considerable programmes were under way in Szechwan Province, where about 1400 miles of dirt motor roads were completed, and in Kwangtung, Yunnan, and Kiangsu Provinces.

A contract providing for the extension of the Shanghai-Hankow air-mail and passenger line to Chungking and Cheungtu in Szechwan Province and the addition of two new air-mail and passenger routes was signed between the Nationalist Minister of Communications and the Curtiss aviation interests of the United States in September, 1930. The new lines were to run from Nanking to Peiping via Tsinan and Tientsin, and from Shanghai to Canton along the coast line, with stops at Ningpo, Wenchow, Foochow, Amoy, and Swatow. There is a fairly well developed telegraph service, with 52,050 miles of line. Direct radio communication with San Francisco, Berlin, and Paris was opened in October, 1930, with the completion of a government radio transmitting station near Shanghai. Telephones are in use in the principal cities. On June 27, 1930, the International Telephone and Telegraph Corporation took over the Shanghai Mutual Telephone Company operating in the International and French Settlements of

that city. The system included 36,219 phones and was connected with the government lines in the native section of Shanghai and points in the Yangtze Valley as far as Nanking. The transfer was consummated in the face of protests by the Chinese Ministry of Communications.

During 1928, a total of 186,851 vessels of 152,630,001 tons entered and cleared Chinese ports, including 141,106 steamers of 148,200,000 tons and 45,745 Chinese junks, of 4,360,000 tons. Of the foreign shipping, 48,523 vessels of 56,030,567 tons were British, 29,839 of 39,065,724 tons were Japanese, and 6377 of 6,364,102 tons were American.

GOVERNMENT. The "Organic Law of the Nationalist government of the Republic China" was promulgated Oct. 4, 1928, by the Executive Committee of the Kuomintang party, which exercises all political power and which assumed control and supervision of the new system of government. The law provided for the establishment of a state council as the highest unit of the National government, composed of from 12 to 16 members, from whom the presidents and vice presidents of five subordinate Yuan, or branches of the government, are selected. The chairman of the State Council is designated head of the government for purposes of representation, with the duties of Commander-in-Chief of the army and navy. The five Yuan (branches) of the government are the Executive, Legislative, Judicial, Examination, and Control Yuan. The Executive Yuan is assisted in the executive work of the government by 10 ministries and 4 boards. The Legislative Yuan, which is the highest legislative organ, consists of between 49 and 99 members appointed by the National government at the instance of the President of the Yuan. The system is to function only during the period of "political tutelage" of the Chinese people, which is limited to six years.

The Chairman of the State Council in 1930 was Gen. Chiang Kai-shek. Other members at the beginning of the year were T'an Yèn-k'ai, Hu Han-min, Ts'ai Yuan-p'ei, Tai Chi-t'ao, Wang Ch'ung-hui, Sun Fo, Ch'ên Kuo-fu, Ho Ying-ch'ên, Yang Shu-chuang, Lin Sên, Yen Hsi-shan, Chang Hsüeh-liang, Chang Chi, and Chao Tai-wên. Chairman of the five Yuan were: Executive, T'an Yèn-k'ai; Legislative, Hu Han-min; Judicial, Wang Ch'ung-hui; Examination, Tai Chi-t'ao; and Control, Chao Tai-wên. The Ministers functioning under the Executive Council at the beginning of 1930 were Foreign Affairs, C. T. Wang; Finance, T. V. Soong; War, Ho Ying-ching; Agriculture and Mines, Yi Fei-chi; Labor and Industries, Dr. H. H. Kung; Education, Chiang Meng-ling; Interior, Yen Hsi-shan; Railways, Sun Fo; Communications, Wang Po-chun; Health, Hsueh Tuh-pi.

HISTORY

The Nationalist (Nanking) government, headed by President Chiang Kai-shek, emerged victorious in 1930 from the most sanguinary civil war since the Boxer Rebellion. It was the ninth separate rebellion or mutiny against Nanking's authority since Chinese unity was proclaimed in June, 1928. The struggle left the Nanking régime in desperate financial straits and badly disrupted commerce and business. The outcome held forth greater promise than formerly, however, for the eventual establishment of real national unity. Meanwhile there was steady progress in freeing China of foreign restraints upon its sovereignty

Definite aid extended the Nationalist government by Japan seemed to evidence a growing rapprochement between the two Far Eastern powers, and relations with Soviet Russia, while by no means friendly, failed to reach the breaking point, as in 1929.

THE CIVIL WAR. The Nanking régime found itself at the beginning of 1930 with its prestige badly shaken by the events of 1929. President Chiang Kai-shek had narrowly averted a crushing military disaster. He had been shorn of all except nominal authority in Manchuria and north China, where Chang Hsüeh-liang, governor of Manchuria, Yen Hsi-shan, so-called "model governor" of Shansi Province, and Marshal Feng Yu-hsiang, the "Christian general," ruled as virtually independent war lords. A thinly-veiled understanding between Yen and Feng threatened an attack by their combined forces at the first favorable opportunity. There were serious defections from Chiang's supporters of the Right Wing of the Kuomintang, or Nationalist party, to the communistically-inclined Left Wing headed by Wang Ching-wei. Still other factors presaged the renewal of civil war—personal hostility toward Chiang Kai-shek by numerous military leaders, the traditional antagonism between north and south China, resentment in Peiping (Peking) at the removal of the capital to Nanking, and efforts of the Nanking government to consolidate its control of China through further political centralization and the disbandment of the personal armies of various war lords.

In February the radical General Chang Fa-kwei's "Ironsides" joined with the Kwangsi rebels under Pei Tsung-chi and launched an offensive against government forces defending Canton. In the same month General Shih Yu-shan led a rebellion against Nationalist authority in eastern Honan. These were minor threats, with which General Chiang Kai-shek was well able to cope.

A more portentous development came in the middle of February in the form of a telegram from Yen Hsi-shan urging Chiang Kai-shek to resign as President of China and generalissimo of the Nationalist forces and retire from politics. Yen promised that, if Chiang agreed, he would do the same. The Nanking leader declined and commenced energetic preparations to defend the capital against a northern attack. As Yen had, outwardly at least, previously maintained a neutral attitude toward Chiang, his telegram had the effect of openly aligning the whole of north China against the Nationalist general.

During March and April the nominal authority of the Nanking government in north China was completely eliminated. Local authorities, acting under orders from Yen Hsi-shan, took over the various offices and administrative bureaus maintained by the Central government in Peiping (Peking). On April 2, Yen announced that he had been chosen to head a military coalition against Nanking. He denounced Chiang Kai-shek as a dictator and the Nanking government as corrupt and too weak to rid the provinces of banditry. Two days later the Nanking State Council approved a mandate for "the arrest and subjugation" of the Shansi governor. The latter, on April 14, ordered that all customs revenue at Tientsin, except that assigned by the Nanking government to cover the foreign and domestic debt, be retained for his use.

The outbreak of hostilities on a large scale was delayed for more than a month, while both sides

angled for the support of Chang Hsüeh-liang. Apparently assured at last of the Manchurian's neutrality, the Northern alliance launched its major offensive on May 8, attacking Nationalist forces on three fronts in Kiangsu and western Shantung Provinces. The civil war thus inaugurated continued on a scale unprecedented for China through the summer. While the Northern forces considerably outnumbered those led by General Chiang Kai-shek, the latter held obvious advantages. His troops were better trained and equipped, particularly in airplanes, and his staff officers included 46 German veterans of the World War. He held control of the rich revenues of the Yangtze valley, and above all, he enjoyed the support of the Chinese trading and banking classes, who strongly desired the elimination of the rival war lords, so long a menace to their safety and prosperity.

The Northern generals, with their allies in south China, gained important victories during the early stages of the campaign. While Gen. Chiang Kai-shek was straining every resource to check the northern advance along the Peking-Hankow Railway in Honan Province and the Lunghai Railway, Gen. Chang Fa-kwei and his allies advanced from the south and on May 31 captured Changsha, capital of Hunan. A few days later Yochow, also in Hunan, capitulated to the southerners and the important cities of the Hankow area were threatened. To meet this situation, Chiang weakened his northern defenses and dispatched troops to Hankow, while his allies in Canton rushed reinforcement northward from the Shiuchow railroad in Kwangtung Province. Chang Fa-kwei and the Kwangsi rebels were driven from Yochow and Changsha in the middle of June. Their retreat southward blocked by the Cantonese, they were caught and decisively defeated in a three-day battle near Hengchow, Hunan, in the first days of July.

This victory, freeing 50,000 Nationalist troops for use on the hard-pressed northern fronts, came in the nick of time. For on June 28, Yen Hsi-shan drove the Nationalists from Tsinan, capital of Shantung Province, and pushed south and eastward toward the Yangtze and the sea, while on the Lunghai front in northern Honan the greatest battle of the war had been raging indecisively for more than a week. Almost simultaneously with the defeat of the Kwangsi rebels in Hunan, the Nationalists gained the advantage in the Lunghai battle, in which 300,000 troops were engaged over a 46-mile front. Feng Yu-hsiang's advance was checked and his Kuomintang armies were rolled back some distance toward the Yellow River.

Moving all available forces to the northern fronts, General Chiang launched a major offensive intended to recapture Tsinan and decisively defeat Marshal Feng. Feng counter-attacked to divert Nationalist troops from their Tsinan objective and the Lunghai battle was resumed on an extensive scale, only to end in a stalemate toward the middle of July. General Chiang made gradual progress in his campaign against Yen Hsi-shan and on August 15 recaptured Tsinan, thus insuring Nanking's control of central and southern Shantung and ending the Northern generals' effort to capture Hsuehchow, the strategic rail connection of the Tientsin-Pukow and Lunghai lines north of Nanking.

Meanwhile the concentration of Nationalist troops in the north gave free reign south of the Yangtze to hordes of bandits and peasants in-

flamed by Communist propaganda, who ravaged whole provinces at will, driving out the Nationalist authorities and in many instances establishing local governments on the Soviet model. The peasant revolt was directed mainly against the landlords, who were killed or driven out and their title deeds destroyed. Changsha fell again on July 28 before the assault of so-called Communists armies, who slaughtered hundreds of inhabitants, burned a large part of the city, and looted on an extensive scale. Refugees poured into Hankow and other Yangtze ports and foreigners were evacuated from a wide area in the interior. The "Red" armies were driven back from Hankow without difficulty, while government authorities there and in other cities of the disturbed area executed hundreds of persons suspected of planning Communist uprisings. Changsha was recaptured by Nationalist troops August 5, but the depredations of bandit and "Red" bands continued virtually unchecked in many of the central and western provinces. In Fnkien Province bandits murdered two British missionaries, Miss Edith Nettleton and Miss Eleanor Harrison, after holding them for ransom. About 22 other missionaries were captured and their missions and schools looted or destroyed, foreign ships on the upper Yangtze were fired upon, and the activities of pirates along the coast made commerce more than usually perilous. One American sailor was killed and a number were wounded during encounters between gunboats and anti-foreign forces along the Yangtze.

Another development threatening Chiang Kai-shek's position was Wang Ching-wei's decision, late in June, to accept the invitation of the Northern generals to aid in the establishment in Peiping of a rival national government to that at Nanking. As head of the "reorganization group," or Left Wing of the Kuomintang party, Wang Ching-wei was credited with having the support of students and local Kuomintang organs throughout the country. The Northern generals promised that the personnel of the new government would be chosen at a convocation of a People's Conference of all shades of political opinion—an item in Sun Yat-sen's programme which Chiang Kai-shek had ignored. Dissension among the disaffected Kuomintang groups and the northern generals delayed the formation of the new government until September 1, when a governmental framework similar to that of Nanking was established, with Yen Hsi-shan as chairman of the State Council.

The Peiping government was scarcely established before it was wrecked by the intervention of Chang Hsueh-liang in the civil war. On September 1 the Manchurian leader notified Nanking, in accordance with that government's rules of procedure, that his troops were occupying the territory around Peiping and Tientsin. On September 19 he issued a circular telegram demanding an immediate armistice and a conference to arrange a peaceful settlement. Manchurian forces occupied Tientsin September 21 and two days later assumed control of Peiping, apparently by arrangement with Yen Hsi-shan. The latter, with Wang Ching-wei and other members of the newly organized Peiping government, withdrew to General Yen's home province of Shansi.

The intervention of General Chang Hsueh-liang, while ostensibly in aid of neither side, redounded to the immediate advantage of Nanking. Chang announced that he would direct the mili-

tary affairs of Hopei (Chihli) Province and of adjacent territory occupied by his troops, but that civil affairs would be handled from Nanking. The Nanking government, in turn, appointed Chang "rehabilitation commissioner for the North," paying him \$3,000,000 to defray costs of the occupation of Chihli. With General Yen's armies out of the struggle, Chiang Kai-shek concentrated his forces against Gen. Feng Yu-hsiang in the northwest and by capturing Chengchow and Loyang early in October drove Feng's broken armies in pell-mell retreat toward Shensi Province. On October 9, Marshal Chang Hsueh-liang took the oath of vice commander of the army and navy in Nanking's forces, and General Chiang Kai-shek announced that the complete restoration of peace was assured.

As in the military crisis of 1929, General Chiang's tenacity and resourcefulness had triumphed over seemingly insurmountable obstacles. He emerged from the civil war with greatly increased prestige. But while he had overthrown his two most formidable rivals, a third had arisen in the person of Chang Hsueh-liang. With the best equipped army and the undepleted military and economic resources of Manchuria at his back, and with control of north China to the Yellow River, the young marshal wielded a power hardly second to that of Nanking. On what disposition he would make of it depended all hope of an early establishment of a truly national government for China.

Continued additions to Marshal Chang's troops in the Peiping and Tientsin areas and their occupation of strategic points created much uneasiness in Nanking, despite Chang's announced intention of cooperating with General Chiang Kai-shek. The Nanking leader met this threat by sending large forces into Shensi and Kansu Provinces, where they were in a position not only to prevent the reorganization of Feng Yu-hsiang's broken Kuominchun armies but also to render Shansi Province untenable in case of a clash between Nanking and Mukden. Other Nanking armies crossed the Yellow River to within striking distance of Shihchiachuang, the railway junction for roads leading to Peiping and Shansi Province.

At this juncture, Marshal Chang set fears of the renewal of civil war at rest by visiting Nanking and concluding an agreement with General Chiang Kai-shek (November 20). It was reported that Chang was recognized as the virtually autonomous ruler of Chihli, and other Provinces north of the Yellow River, with control of the railway revenues in that area and a free hand in the settlement of the dispute with Russia over the Chinese Eastern Railway. In return, he promised to drive the remnants of General Yen Hsi-shan's armies from Shansi. This news was followed by the announcement that 26 generals who had fought under Feng and Yen had pledged their allegiance to Nanking. On November 24, it was officially announced that 40 German military advisers of the Nanking government would go to Mukden to reorganize the arsenal there and that the office of the Nanking Vice Minister of War would be moved to Peiping. With the conclusion of the agreement between the two most powerful leaders in China, Wang Ching-wei left Peiping for Japan and General Yen was reported as leaving for a sojourn abroad.

Nanking's offensive against the Communist hordes ravaging large sections of the Yangtze

Valley got under way early in November, but no great headway appeared to have been made by the end of the year. On November 14, the capture of Kianfu, Kiangsi Province, by a Communist army numbering 30,000 was reported and a few days later the danger of a new Communist attack on Changsha caused many Chinese merchants to flee the city. Racial and religious strife between Moslems and Chinese in Kansu Province in December was reported to have cost the lives of some 30,000 Chinese and many Moslems. On December 29, the Nanking government ordered the dispatch of a military expedition against the Moslems.

While China was again torn by civil war and banditry on an unprecedented scale spread throughout the country, the famine, which during 1929 took a toll of more than 2,000,000 lives in the western provinces of Shansi and Shensi, continued its ravages. It was estimated that 7,000,000 persons died of starvation in north China during 1929 and previous to the harvest of 1930. Missionaries and investigators reported that cannibalism was widespread throughout the famine-stricken area. Banditry and the complete breakdown of transportation hindered relief work.

GOVERNMENTAL REORGANIZATION. With his war-worn troops enroute to south China to suppress bandit and Communist activities, President Chiang Kai-shek took steps to liberalize the Nationalist government, in accordance with a promise made late in 1929 and with the demands voiced in Chang Hsüeh-liang's peace circular of September 19. He addressed a manifesto to the people (on October 12) outlining five main features of the government's immediate programme as follows: (1) eradication of Communism and banditry; (2) rehabilitation of the national finances and their administration; (3) eradication of corruption and lethargy from the government; (4) economic development, which he considered necessitated the participation of foreign capital on "honorable terms"; (5) enforcement of district autonomy through a system of education and self-government by local units. The President's proposals, involving the promulgation of a new Constitution, immediately aroused opposition from Hu Han-min, chairman of the Legislative Yuan, and a conservative group of Kuomintang leaders. With T. V. Soong, the brilliant Finance Minister, and other influential liberals in the party supporting Chiang, a second split in the Kuomintang ranks threatened. On October 14, Soong, who was serving also as acting chairman of the Executive Yuan following the death of T'an Yën-k'ai, submitted his resignation, declaring he would no longer assume responsibility for financing the government unless given absolute control of the expenditure and allotment of funds. He was persuaded to continue his invaluable services to the Nationalist régime, his budget measures having been adopted at the plenary session of the Kuomintang party held in November.

The Kuomintang at the same time voted to suppress banditry and Communism within six months, to suppress the opium evil by the beginning of 1934, and to abolish likin (taxes on goods transported) in all Provinces on Jan. 1, 1931. A plan for the disbandment of surplus troops was also adopted, and the ancient system of holding villagers collectively responsible for the crimes of any one of their number was again proclaimed in force. A general amnesty for all political prisoners, except Communists and outstanding in-

surgent leaders, was to be issued Jan. 1, 1931. To end corruption, a law was enacted authorizing the State Council to sentence to life imprisonment or death any public official guilty of embezzlement or of receiving bribes. Increasing dissatisfaction with the pernicious activities of local Kuomintang organizations was voiced in the official report of the proceedings at the plenary session.

SINO-RUSSIAN RELATIONS. The terms of the Khabarovsk protocol of December, 1929, settling the immediate dispute over the Chinese Eastern Railway (see 1929 YEAR BOOK) was approved by Nanking after some months of delay. Soviet authorities were restored to joint supervision of the line, pending a final settlement of the dispute at the conference scheduled to open in Moscow, Mar. 15, 1930. The Chinese delegates, who apparently took their orders from Chang Hsüeh-liang in Harbin rather than from Nanking, did not reach Moscow until May 15 and then delayed the opening of the conference until October 11. The delay was undoubtedly inspired by a desire to await the outcome of the Chinese civil war. In the interval the activities of Russian White Guard elements in Manchuria led the Soviet press to charge that Chang Hsüeh-liang was encouraging White Guard forays into Soviet territory and the coercion of Soviet employees on the Chinese Eastern Railway. A sharp Russian note demanding suppression of White Guard bands in Manchuria was delivered to Chang shortly after the pick of his troops had been sent to occupy the northern provinces of China. Whereupon the Chinese delegates were reported to have suggested the immediate opening of the conference. The negotiations resulted in a deadlock before the end of the month and the renewal of armed demonstrations by Chinese and Russian forces along the Siberian-Manchurian border was reported.

OTHER DEVELOPMENTS. Other developments of the year included the return of Weihaiwei to China on October 1 in accordance with an agreement signed by the British Minister to Nanking on April 19. The harbor of Weihaiwei was leased to Great Britain on July 1, 1898, to be held so long as Russia occupied Port Arthur on the opposite coast. Following the capture of Port Arthur by the Japanese the lease was made to run as long as the Japanese remained in control. For some years Weihaiwei had been used mainly as a health station for British sailors in Far Eastern waters.

Reorganization of the Shanghai Provisional Court in deference to Chinese demands for greater control of the court was provided for by an agreement signed February 17 by representatives of the United States, Brazil, Great Britain, France, Holland, and Norway. The deputy judge system, under which foreign consular officers were permitted to intervene in all cases, was abolished, and Chinese law was made mandatory in disposing of all matters before the court.

An evidence of improved relations with Japan was seen in the signing of a Sino-Japanese tariff treaty at Nanking on March 12. It was reported that the treaty provided for the recognition by Japan of China's tariff independence, the abolition of likin and other irregular internal Chinese taxes, the approval by China of the famous Nishihara loans of 1918 and 1919, and reciprocal most-favored-nation treatment. The abolition of the likin, formally announced for October 10, was ordered postponed to Jan. 1, 1931, due to the Nanking government's acute need for funds. The

Nanking government on Dec. 29, 1930, promulgated new and higher tariff schedules to go into effect Jan. 1, 1931. The tariff increases were effected under an agreement for the extension of tariff autonomy to China, contingent upon the abolition of the likin, reached by the Powers in 1925. On Dec. 4, 1930, the Japanese government rejected a request for the return of Japan's Han-kow concession to China.

The adoption of the Christian religion by General Chiang Kai-shek, announced in Shanghai October 23, aroused hopes among Christian missionary circles that there would be a relaxation of the restrictive legislation affecting mission schools and churches in that part of China under Nationalist control. The Nanking leader, whose wife Mei Ling Soong was an American-educated Christian, was baptized by a Chinese pastor of the Methodist Church.

The State Department at Washington announced November 13 that it had submitted proposals for the gradual relinquishment of extra-territoriality in China. These proposals, it was stated, were similar to but not identical with the proposals made to the Chinese government by the British government on Sept. 11, 1930. Return to China of the British share of the Boxer indemnity as from Dec. 1, 1922, was agreed upon in an exchange of notes between the two governments on Sept. 19 and 22, 1930. The remitted funds were to be used to create an educational endowment through investment in Chinese railway construction projects. The Chinese government agreed to purchase materials used in connection with the expenditure of the funds in the United Kingdom.

The report of the Kemmerer Financial Commission, which concluded in December, 1929, a survey of the financial system undertaken at the request of the Nanking government, was published by the Ministry of Finance on March 29. Among its recommendations were the reorganization of the currency on a gold basis and reorganization of the Central Bank with exclusive power to issue paper notes, establishment of a gold standard trust representing at least 35 per cent of the value of coins in circulation, and administration of the fund by the Minister of Finance under supervision of representatives of three Shanghai bankers' associations. It was suggested that no actual minting of new gold coins take place and that the currency be maintained at parity by means of unlimited drafts on gold standard countries, with New York and London at the principal centres. At the end of 1930, \$424 in Chinese silver currency was worth only \$100 in gold.

The financial crisis caused by the drop in the value of silver induced Minister of Finance T. V. Soong to order the collection of import duties on a gold basis beginning with February 1. A new gold unit equivalent to \$0.40 replaced the haikwan (customs) tael. The silver decline caused distress throughout the country, resulting in the failure of a number of banks in Peiping. While the political developments of the year attracted the greater attention, a no less significant revolution in the social and economic life of the nation was taking place. Factors motivating this change were primarily the replacement of small workshops by large factories, the substitution of handicraft by machine technique, and the rise of a class of wage earners in place of the independent craftsmen. External evidences of the economic

revolution were the rise of a labor movement, increasing resort to strikes and lockouts, the growing demand for the alleviation of the evils of child and female labor, and the incorporation of labor legislation as an integral part of the government's social policy.

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CHISHOLM, chí'z'om, GEORGE GOUDIE. A Scottish geographer, died in Edinburgh, Feb. 12, 1930. He was born May 1, 1850, and was educated at the University of Edinburgh. From 1895 to 1908, he was a university extension lecturer in London, after which, until 1921, he lectured in geography at the University of Edinburgh and, in 1921-23, was a reader in geography. He was also secretary of the Royal Scottish Geographical Society during 1910-25. Dr. Chisholm was a fellow of the Royal Society of Edinburgh and had been awarded the Gill Memorial by the Royal Geographical Society (1903), the silver medal by the Royal Scottish Geographical Society (1908), the Charles P. Daly Gold Medal by the American Geographical Society of New York (1917), and the Helen Culver Gold Medal by the Geographic Society of Chicago (1918). In addition to articles written for geographical journals and books of reference, he published *Handbook of Commercial Geography* (1st ed., 1889; 11th ed., 1928; Arabic trans, 1911). He was editor of Longman's *Gazetteer of the World*, first appearing in 1895 and thereafter often reissued.

CHORAL SINGING. See MUSIC.

CHOSEN. See KOREA.

CHRISTENSEN, JENS CHRISTIAN. A Danish statesman, died in West Jutland, Dec. 19, 1930. He was born near Ringkjøbing, Nov. 21, 1856. In 1890 he became leader of the Reform party, and in 1905 was a member of Denmark's first Liberal-Left Cabinet. He conducted negotiations with Germany in 1906 for the return of north Schleswig, and two years later, as Premier and Minister of Defense, inaugurated certain tariff and election reforms and defensive measures. He later served as a member of the Zahle Cabinet (1916-18) and of the Neergaard Cabinet (1920-22).

CHRISTIAN CHURCH. A Church originating in three religious movements: that of the Rev. James O'Kelly of Virginia, who in 1792 withdrew from the Methodist Episcopal Church; that of Abner Jones, who withdrawing from the Baptist denomination organized a separate church in Lyndon, Vt., in 1801; and that of a group of Kentucky Presbyterian ministers who formed a new denomination in 1804. These groups eventually united, all holding that minor differences in opinion should be subordinated to Christian Brotherhood. In 1929 the Christian Church had 1283 church organizations, 110,326 members, 1047 ministers, 1324 Sunday schools, 801 Christian Endeavor societies, and 307 women's societies. It sponsors home and foreign missions, educational work, publications, evangelism, Christian unity, social service and other general activities. Its home-mission work includes new Americans in the East, the lumber camps in Washington, Indians, mountaineers, and Negroes; its foreign field includes Japan, Porto Rico, South America, India, Africa, China.

The church has always made Christian union

one of its foundational principles. Several years ago through its commission on Christian Unity it proposed the rudiments of a plan looking toward the union of denominations in an overture to 22 denominations. The Congregational Church responded favorably. Conferences and negotiations followed between the two bodies which resulted in a unanimous vote for organic union in the general conventions of each church in 1929. During 1930 this coöperative movement was in process. The departments of home missions, foreign missions, and Christian education were united. The *Congregationalist* and *Herald of Gospel Liberty* were combined into one publication known as *The Congregationalist and Herald of Gospel Liberty*, with Dr. William E. Gilroy as editor-in-chief and Dr. F. G. Coffin, associate editor, and Mrs. Hermon Eldredge, news editor for the Christian Church constituency. The *Christian Sun* and *Southern Congregationalist* were also united into one publication. The Sunday-school literature was combined and was being distributed through the publishing houses of both denominations, each printing a part of it. State districts and local churches of the two churches united in a number of instances, and the process was to continue. Plans were being perfected to unite several educational institutions.

The first General Council of Congregational and Christian Churches was to be held in Seattle, Wash., in June, 1931, when a more complete cohesion of the two denominations would be effected. For obvious legal reasons the identity of the two churches must be preserved for some time, though the operation of all departments and programmes would be through the one church. Headquarters of the General Convention of the Christian Church are at Dayton, Ohio.

CHRISTIAN ENDEAVOR, INTERNATIONAL SOCIETY OF. An organization comprised of all Christian Endeavor societies in the United States and Canada, found among the evangelical and reformed denominations, and a member of the World's Christian Endeavor Union, comprised of Christian Endeavor societies in 87 countries. The first society was organized in Portland, Me., Feb. 2, 1881, by the Rev. Francis E. Clark, a Congregational minister, for the purpose of training young people in the duties of church membership and the activities of the Christian life. The present name was adopted by vote of the board of trustees in August, 1927, previous to which time it was known as the United Society of Christian Endeavor.

The International society consists of active organizations for each State and each Canadian Province. These, in turn, in 1930 were divided into 1200 city, county, and district unions, each including from 3 or 4 to 500 societies, with a membership in the United States and Canada of 2,500,000. Throughout the world there were in the same year approximately 80,000 societies, with a membership of 4,000,000. The international society is organized into the following departments to carry on its work: Christian vocations, which yearly gives vocational counsel to thousands of young people in high schools and colleges; travel and recreation, which supplies, free of charge, monthly church-centred recreation service to Christian Endeavor societies and church workers and conducts world-friendship tours to Europe for young people at cost; citizenship, which interests young people in citizenship problems, aids first voters, and works for moral

reform; army and navy, which promotes societies in army posts and navy yards and conducts meetings on thousands of merchant vessels (in some cities sailors' homes are conducted by Endeavorers); social service and prison work, which conducts classes for foreigners, helps in community enterprises, and conducts meetings and organizes societies in prisons. The society also promotes systematic and proportionate giving through the Tenth Legion, in which 77,532 have been enrolled; emphasizes regular habits of prayer and daily Bible reading through the Quiet Hour, in which 267,224 have been enrolled; and recruits for the Christian ministry and missionary work through the Life Work Recruits, in which 10,190 have been enrolled.

The world's convention, which was held in Berlin, Germany, Aug. 5-10, 1930, had an attendance of 17,000 delegates, representing 50 different countries. On this occasion there was launched a great Crusade-with-Christ for evangelism, world-friendship, and peace. The convention celebrating the fiftieth anniversary of the organization was to be held in San Francisco in July, 1931. The official periodical of the international society is the *Christian Endeavor World*. The officers for 1930 were: President, the Rev. Daniel A. Poling; vice presidents, the Rev. William Hiram Foulkes and the Rev. Howard B. Grose; treasurer, A. J. Shartle; and secretary, Edward P. Gates. Headquarters are at 41 Mount Vernon Street, Boston, Mass.

CHRISTIANS. See DISCIPLES OF CHRIST.

CHRISTIAN SCIENCE. A system of metaphysical or spiritual healing discovered by Mrs. Mary Baker Eddy in 1866. The first church was established by Mrs. Eddy in Boston in 1879 and given a charter by the Commonwealth of Massachusetts. In 1892 it was reorganized as a voluntary religious association known as The First Church of Christ, Scientist, in Boston, called more frequently by its adherents "The Mother Church." Mrs. Eddy wrote the textbook of the movement, *Science and Health with Key to the Scriptures*, published in 1875. The Sunday services of the church are conducted by first and second readers, the former reading from *Science and Health*, and the latter from the authorized version of the Bible. In 1930 there were approximately 10,000 practitioners of Christian Science in the United States and other countries, who devoted their entire time to healing the sick through prayer.

A board of directors administers the affairs of The Mother Church. Its annual meeting was held in Boston June 2. Reports indicated expenditures totaling \$1,839,503 from the general fund of the church during the year and \$928,905 from the permanent special funds. During the fiscal year ending May 31, 82 churches and Christian Science societies, including five university societies, were recognized as branches of The Mother Church; 21 new organizations were located in Europe, 2 in Africa, 5 in Australia, 4 in Canada, and 50 in the United States. The total number of recognized branches, including 39 college and university societies, was 2451. Three departments conduct the principal activities of the movement: the Board of Education, Board of Lectureship, and Committee on Publication. The Board of Education instructs and authorizes students to teach Christian Science; the Board of Lectureship consists of 26 members who deliver free lectures on Christian Science through-

out the world. During the year, 3822 lectures were delivered, of which 3412 were in the United States, Canada, and Alaska, and 410 in foreign fields. Lectures were given for the first time in Czechoslovakia and Poland.

The Committee on Publication aims to correct impositions on the public in regard to Christian Science. It also endeavors to guard the rights of Christian Scientists against restriction by public authority. The Christian Science Publishing Society, which publishes and issues the authorized literature of The Mother Church, operates under a deed of trust granted by Mrs. Eddy; its affairs are now administered by a board of trustees according to the Manual of the church. The publishing society issues the daily paper of the organization, *The Christian Science Monitor*; other periodicals include: *The Christian Science Journal*, *Christian Science Sentinel*, *Der Herold der Christian Science*, *Le Héraut de Christian Science*, and *The Herald of Christian Science* (Scandinavian edition). The Benevolent Association of the Church conducts sanatoria in Brookline, Mass., and San Francisco, Calif. Pleasant View Home in Concord, N. H., is a home for Christian Scientists of advanced years. The Hon. William W. Davis was president of The Mother Church for the year ending May 31, 1930. The headquarters of the church are located at 206 Massachusetts Avenue, Boston.

CHRISTMAS ISLAND. An island in the Indian Ocean lying 223 miles south of Java, annexed by Great Britain in 1888. Area, 58 square miles; population in 1928, 1421. Christmas Island is important because of its large deposits of phosphate of lime which constitute its only export. In 1928 exports were valued at £211,000; imports, £14,120. For administrative purposes, the island was incorporated within the Settlement of Singapore in 1900.

Christmas Island is also the name of the largest atoll in the Pacific Ocean. It belongs to the British colony of Gilbert and Ellice Islands.

CHURCH ARCHITECTURE. See ARCHITECTURE.

CHURCHES OF CHRIST. See DISCIPLES OF CHRIST.

CHURCHES OF CHRIST IN AMERICA, FEDERAL COUNCIL OF THE. See FEDERAL COUNCIL OF THE CHURCHES OF CHRIST IN AMERICA.

CHURCH OF ENGLAND. See ENGLAND, CHURCH OF.

CHURCH OF GOD. See ADVENTISTS.

CHURCH OF INDIA, BURMA, AND CEYLON. See INDIA under *History*.

CHURCH OF JESUS CHRIST OF LATTER-DAY SAINTS. See LATTER-DAY SAINTS, CHURCH OF JESUS CHRIST OF.

CIGARS, CIGARETTES. See TOBACCO.

CINCINNATI, UNIVERSITY OF. An institution for the higher education of men and women in Cincinnati, Ohio, founded in 1870. The registration for the autumn of 1930 was 10,135. The summer-school enrollment for 1930 was 1252. There were 596 members on the faculty. The endowment funds of the university for the year ending Dec. 31, 1929, amounted to \$6,767,034; the income for the same period was \$2,242,978. The library contained 164,117 volumes. During 1930 a new library building was completed, while Teachers College and Wilson Auditorium were under construction. A gift of \$2,000,000 also was received from Mrs. Annie Sinton Taft to endow the study and teaching of the humanities as a

memorial to her husband, Charles Phelps Taft. President in 1930, Herman Schneider, Sc.D.

CINCINNATI PROGRAMME FOR UNEMPLOYMENT. See UNEMPLOYMENT.

CINEMAS. See MOTION PICTURES.

CINEMATOGRAPHY. See PHOTOGRAPHY; MOTION PICTURES.

CITRUS FRUITS. See ENTOMOLOGY, ECONOMIC; HORTICULTURE.

CITY AND REGIONAL PLANNING. Although approximately 750 municipalities in the United States had planning departments at the close of the year 1930, New York City was without one until September 1, when a local law creating a single-headed department became operative, and the office was filled by the appointment of an engineer as commissioner. A master plan of the city will be prepared by the commissioner who will also coordinate projects of the various city departments in so far as they affect the plan of the city. The commissioner can make recommendations only. Under the new act the mayor has appointed an advisory commission of nine members, including the city planning expert who was director of the Regional Plan of New York and Environs. See 1929 YEAR BOOK. Enactment of zoning ordinances by about 60 municipalities during the year brought the total number of zoned places to some 900. Regional planning agencies, including counties, number about 50. In California, under a statute of 1929, 22 counties have appointed commissions, serving about half the area and more than half the population of the State.

Radburn, the "Town for the Motor Age" near Paterson, in the New Jersey metropolitan area, was making good progress. Its site, an area of 2 square miles of farm land, was laid out in 1928 for a population of 30,000, with provision for business and industry. The first family settled there on April 25, 1929, and was followed by 201 more within a year. The features of layout which justify the title, "Town for the Motor Age," are the separation of through from local traffic, with underpasses for the latter, and the further separation of pedestrian from vehicular traffic by putting service driveways and garages at the rear of the houses, throwing the space in front of the houses into lawns and gardens, which in turn connect with parks, the whole so arranged that foot traffic, and particularly children, can move across footways through lawns and parks to schools and other points with few street crossings and none at grade across through-traffic streets. Liberal provision for community recreation, outdoor and in, is provided, with capital and maintenance cost included in house rentals. Living quarters may be bought or leased.

Division of the entire state of New Jersey into four regional districts, each with power to provide and operate public works and utilities, was proposed in a bill submitted to the legislature by a legislative committee created in 1929 to study regional needs. Each district would have power to do anything lawful for cities, counties and other minor civil divisions of the state. Action was deferred and further study ordered.

County park systems have been growing rapidly of late, the number of counties having park systems or commissions to establish them having more than doubled in four or five years. The pioneer in this work was Essex County, N. J., in 1895. A comprehensive review of the subject, entitled *County Parks*, was published in 1930 by

the Playground and Recreation Association of America. The book lists 66 counties in the United States with park systems having a total area of 106,000 acres.

Zoning ordinances had been adopted by some 900 cities by the end of the year. Los Angeles, Calif., which as early as 1904 prohibited manufacturing in residential districts, thus anticipating, in part, the comprehensive zoning movement that began ten or a dozen years later, adopted a new zoning ordinance in May, 1930, adding building height and area limitations to those on use of land already in force. (See *Engineering News-Record*, Dec. 4, 1930, p. 891.)

Canberra, the new capital district of the Commonwealth of Australia, had a population of some 6000 early in 1930. Provision for the capital became effective Jan. 1, 1911; construction was started ten years later; and the seat of government was moved to Canberra in May, 1927. Construction progress on the town site, buildings, water supply, sewerage and sewage treatment systems, and other public works was reviewed, with plans and views, in *Engineering News-Record*, Dec. 4, 1930, p. 876.

For classified analysis of legal decisions on zoning and city planning, from June, 1923, to December, 1929, and for outlines of civic centre development or the grouping of public buildings in 54 cities of the United States, see *The Municipal Index*, 1930 (New York). For certain developments in Russia, see "City Planning in Soviet Russia," by Bertram W. Maxwell, in *National Municipal Review* for September. Among new books see Duffus, *Mastering a Metropolis* (New York), a popular account of the Regional Plan of New York and Its Environs; Guerard, *L'Avenir de Paris* (Paris); Brinckmann, *Stadtbaukunst vom bis zur Neu Zeit* (Potsdam), second edition of a book devoted not only to the horizontal layout of cities but also, as expressed in a notice in the *British Town Planning Review* for November, to "the 'townscape' or 'street-scape,' that is to say, to the general impression of so much of the town as meets the eye at any particular moment"; Ferriss, *The Metropolis of Tomorrow* (New York); Metzenbaum, *The Law of Zoning* (New York), a comprehensive review by the attorney for the village of Euclid, Ohio, in the case in which the validity of zoning was upheld by the U. S. Supreme Court.

CITY GOVERNMENT. See MUNICIPAL GOVERNMENT.

CITY MANAGER. See MUNICIPAL GOVERNMENT.

CIVIC FEDERATION, THE NATIONAL. See NATIONAL CIVIC FEDERATION, THE.

CIVIL ENGINEERS, AMERICAN SOCIETY OF. An association of professional engineers, founded in 1852 to advance engineering and architectural knowledge and practice, to maintain high professional standards, and to encourage intercourse between men of practical science. It is made up of: Members, including civil, military, naval, mining, mechanical, electrical, and other engineers, in active practice twelve years, and qualified to design as well as to direct engineering work; associate members, those who have been practicing eight years; juniors, beginners in the profession; affiliates, persons qualified to cooperate with engineers, but not themselves engineers; fellows, contributors to the permanent funds of the society, who may not be eligible to member-

ship; and honorary members, persons of acknowledged eminence in engineering. The membership as of Dec. 16, 1930, was divided as follows: Honorary members, 17; members, 5826; associate members, 6196; juniors, 2492; affiliates, 138; fellows, 7. There were 51 local sections, and 95 affiliated student chapters in colleges throughout the United States.

Four general meetings of the society are held each year, including the annual meeting, annual convention, and spring and fall meetings. At the annual meeting, which was held in New York City, Jan. 15-17, 1930, awards were made of the following medals and prizes: The Norman Medal, to G. T. Rude; the Thomas Fitch Rowland Prize, to D. B. Steinman and William G. Grove; the James Laurie Prize, to R. H. Keays; the Arthur M. Wellington Prize, to F. C. Carstarphen; the Collingwood Prize for Juniors, to William J. Cox.

The spring meeting was held in Sacramento, Calif., April 23-25. The general sessions of this meeting considered the conservation of water resources and State supervision of the design and construction of dams. At the sixtieth annual convention, in Cleveland, Ohio, July 9-11, the chief topic of discussion was the coordination of city planning with rapid transit by rail. Presentation was made at this time of the Fowler Awards, as follows: The Phebe Hobson Fowler Professional Award—First Prize, to Arthur W. Berresford; Second Prize, to J. Vipond Davies; The Phebe Hobson Fowler Architectural Award—First Prize, to Morris Goodkind; Second Prize, to Charles M. Spofford; Third Prize, to G. F. Burch. The fall meeting, held in St. Louis, Mo., October 1-4, was devoted to the problems of a large city.

At each of the meetings some sessions were under the direction of one or more of the nine technical divisions, which presented papers on their special branches of engineering; conferences were held of representatives from local sections or student chapters; and special excursions were provided, to points of engineering interest. In addition to the general meetings of the society, both sections and chapters held meetings of their own at frequent intervals. Seven research committees, with a total personnel of about 60, were engaged throughout the year in special investigations. Nearly 100 members served on joint boards and committees, with representatives of other societies, for research and standardization.

The society publishes two monthly magazines: *Proceedings*, containing technical papers which are later collated, with discussions, in the yearly volume of *Transactions*; and *Civil Engineering*, which presents news of society affairs and articles of more popular appeal. The *Year Book* contains a list of members and general information about the society. A series of *Manuals*, published at irregular intervals, deals with various topics of engineering interest. The officers of the society in 1930 were: President, J. F. Coleman; vice-President, Arthur J. Dyer, A. J. Hammond, J. M. Howe, and Frank E. Winsor; secretary, George T. Seabury; treasurer, Otis E. Hovey. Headquarters are in the Engineering Societies Building, 33 West 39th Street, New York City, of which, with three other national engineering societies, it is joint owner.

CIVILIZATION STUDIES. See PHILOLOGY, MODERN.

CIVIL SERVICE REFORM LEAGUE, NATIONAL. Organized in 1881 for the purpose of put-

ting to an end the so-called spoils system of making appointments to public office, this organization has sought to accomplish its end by promoting administrative efficiency through the application of the merit system to the appointment, promotion, and tenure of government officials. It also has advocated, on the principle that public office is a public trust, that those best fitted through demonstrated ability and capacity should serve the State.

During 1930 the league sponsored legislation placing postmasters of the first, second, and third classes in the competitive civil service, and authorizing the President to include in the competitive classified civil service any office statutorily exempted from civil service rules. It urged upon the Attorney General elimination of a special rule by which "confidential" positions in the Department of Justice might be filled without examination, although similar positions in other Federal departments were required to be filled through examination. It urged the retention in the competitive classified service of all employees of the Prohibition Enforcement Bureau, when that bureau was transferred from the Treasury Department to the Department of Justice. It actively opposed the proposal in Congress to except from the merit system Federal probation officers. It sought the modification of the executive order giving war veterans greater preference in appointment to Federal civil service positions.

Through its field division the league endeavors to secure the adoption and improvements of civil service laws in various States and cities. Reports of its work are issued periodically. *Good Government* is the official organ. The officers in 1930 were: George McNaney, president; W. W. Montgomery, Jr., chairman of the executive committee; Howard R. Guild, chairman of the council; A. S. Frissell, treasurer; and H. Eliot Kaplan, secretary. Headquarters are at 521 Fifth Avenue, New York City.

CIVITAN INTERNATIONAL. An organization composed of selected professional and business men, throughout the United States and Canada, who have dedicated themselves to unselfish service to their city, county, State, and nation. The first Civitan Club was founded in Birmingham, Ala., in 1917, the word "civitan" being coined by one of the founders from the Latin "civitas." The motto of the organization is "Builders of Good Citizenship." The organization of field work was begun in 1920 when the international association was formed in Birmingham, and by 1921, when the first annual convention was held, there were 30 clubs. A total of 253 clubs had been chartered by 1930. The primary requisite for membership is that every applicant be a "duly qualified and registered voter."

Among the activities of the Civitan clubs in 1930 were constructive health programmes, including the prevention and cure of tuberculosis; care of crippled and under-privileged children; baby clinics; programmes for the curbing of crime, including juvenile delinquency; scout work and Boy Scout camps; pig, corn, and cotton clubs; juvenile court work; Americanization work; city beautification; street paving; building of municipal golf courses; the raising of scholarship funds; and the sponsoring of essay contests on good citizenship. The 1930 international convention was held in Asheville, N. C., June 15 to 18, while the 1931 convention was to

be held in St. Louis, Mo., June 21 to 24. The official organ is *The Civitan*, published monthly in Atlanta, Ga., Bruce Moran, editor. The officers for 1930 were: President, George W. Simons, Jr., Jacksonville, Fla.; vice presidents, Cary H. Howard, Tulsa, Okla., Claude B. Squires, Charlotte, N. C., Harold Tschudi, Baltimore, Md.; international secretary, Arthur Cundy, Birmingham, Ala.; and international treasurer, Claude L. Hagan, Birmingham, Ala. Headquarters are at 1007 Jackson Building, Birmingham, Ala.

CLAAR, klär, EMIL. A German dramatist and manager, died July 26, 1930. He was born in Lemberg Oct. 7, 1842, and made his first appearance as an actor at the Burgtheater, Vienna. After acting in various theatres from 1879 to 1900 he was director of the two principal theatres at Frankfurt-on-Main, but afterward confined himself solely to the management of the Schauspielhaus in that city. He wrote: *Samson und Delila*, a comedy (1872); *Shelley*, a tragedy (1876); *Die Schwestern*, a melodrama (1892); *Königsleid*, a tragedy (1895); and *Weltliche Legenden* (1898).

CLARK, CLARENCE DON. An American legislator, died in Evanston, Wyo., Nov. 18, 1930. He was born in Sandy Creek, N. Y., Apr. 16, 1851, and attended Iowa State University. On being admitted to the bar in 1874, he practiced in Delaware Co., Iowa, until 1881 and in Evanston, Wyo., until his death. From 1882 to 1886 he was prosecuting attorney of Uinta Co., Wyo. Upon the admission of Wyoming as a State he was elected to the Fifty-first and Fifty-second Congresses (1889-93). In 1895 he was elected to the U. S. Senate to fill a vacancy caused by the failure of the State legislature to elect, and was reelected for the terms 1899-1905, 1905-11, and 1911-17. In the Senate he was chairman of the committee on judiciary and was a member of the committees on finance, public lands, and railroads. In 1919 he was appointed a member of the International Joint Commission, serving as chairman of the United States section until his retirement in 1929.

CLARK, EDGAR ERASTUS. An American lawyer and public official, died in Monrovia, Calif., Dec. 1, 1930. He was born in Lima, N. Y., Feb. 18, 1856, and in 1873 entered the railroad service, serving for several years as brakeman and conductor. In 1889 he became Grand Senior Conductor of the Order of Railway Conductors of America and the following year was appointed Grand Chief Conductor, holding that office until 1906. In 1902 he was a member of the commission appointed by President Roosevelt to determine the issues involved in the strike of anthracite coal miners. Four years later he became a member of the Interstate Commerce Commission, receiving his appointment as a representative of labor and being reappointed by Presidents Taft and Wilson. He was a member of the board appointed in 1916 to report on the Adamson Eight-Hour Law, and in 1917 was an ex-officio member of the Railroad War Board where he advocated fair treatment of the railroads. After serving as chairman of the commission during the post-war period, he resigned in 1921 to engage in the private practice of law in Washington.

CLARKSON, COKER FIFIELD. An American lawyer and engineer, died at Scarborough-on-Hudson, N. Y., June 4, 1930. He was born in Des Moines, Iowa, May 11, 1870, and was graduated from Harvard University in 1894. After two years (1894-96) in the Harvard law school, he

was admitted to the Philadelphia bar in 1896, practicing there with the firm of Alexander & Magill until 1898. That year he began the practice of law in New York City, at first with the firm of Tracy, Boardman & Platt and, later, in his own office as a technical, corporation, and patent attorney. Becoming head of the engineering department of the Association of Licensed Automobile Manufacturers, he edited four annual volumes of the *Handbook of Gasoline Automobiles* and two volumes of mechanical branch bulletins and reports of tests. He also founded and edited the association's *Digest of Current Technical Literature*, in addition to writing widely on technical subjects. In 1909 he was made manager and head of the publicity department and, the following year, secretary and general manager of the Society of Automotive Engineers, which took over the engineering work of the Association of Licensed Automobile Manufacturers. He conducted research in electrical engineering, in standardizing material used in the automotive industry, and in telegraph and telephone construction.

CLARK UNIVERSITY. A nonsectarian university in Worcester, Mass.; founded in 1889. It comprises a college for men, a coeducational graduate division of arts and sciences, and a coeducational senior college (extension courses) granting the degree of bachelor of education. The registration for the autumn of 1930 was 500 including 250 undergraduates, 66 graduate students, 9 special students, and 175 extension students. The enrollment for the summer session was 216. There were 36 members on the faculty. The productive funds amounted to approximately \$5,000,000. The library contained 130,000 volumes. President, Wallace W. Atwood, Ph.D.

CLASSICAL ANTIQUITIES. See **ARCHAEOLOGY**.

CLASSICAL STUDIES. See **PHILOLOGY, CLASSICAL**.

CLEVELAND MUSEUM OF ART. See **ART MUSEUMS**.

CLIMATE. See **METEOROLOGY**.

CLODD, EDWARD. An English writer on evolution and allied subjects, died in Aldeburgh, Suffolk, Mar. 16, 1930. He was born in Margate, Kent, July 1, 1840, but spent his childhood in Aldeburgh, attending the grammar school there until he was 15 years of age. In 1855 he went to London and, after working in various offices, in 1862 became a clerk in the London Joint-Stock Bank. Appointed secretary of the bank in 1872, he remained in that position until 1915. Following the publication of Darwin's *Origin of Species* in 1859, Mr. Clodd became interested in the theory of evolution. Without any scientific training, he acquired through reading and discussion an understanding of the new science of his day and became known for his anti-clerical views. His books on evolution, written in a popular style and designed especially for the young, include *The Childhood of the World: A Simple Account of Man in Early Times* (1873, rewritten, 1914); *The Childhood of Religions: Embracing a Simple Account of the Birth and Growth of Myths and Legends* (1875); *Jesus of Nazareth* (1880); *The Story of Creation: A Plain Account of Evolution* (1888); *A Primer of Evolution* (1895); *The Story of Primitive Man* (1895); and *Pioneers of Evolution from Thales to Huxley* (1897). He was a member of the Folk-lore Society, serving as president in 1895 and in 1896. He con-

tributed to the journal of the society and wrote several books on folk beliefs. They are *Myths and Dreams* (1885); *Tom Tit Tot, an Essay on Savage Philosophy in Folk-Tale* (1898); *Animism: the Sced of Religion* (1905); and *Magic in Names, and in Other Things* (1920). His *Memoirs*, published in 1916, gives a record of his friendship with literary and scientific men of the nineteenth century, such men as Thomas Henry Huxley, George Meredith, Thomas Hardy, Samuel Butler, and Andrew Lang. He was also the author of biographies of Henry Walter Bates, written in 1892 as a preface to an edition of Bates's *Naturalist on the Amazons*, of Grant Allen (1900), and of Thomas Henry Huxley (1902). He contributed to the *Quarterly Review* and *Fortnightly Review*, and to books of reference.

COAL. Obviously with a world-wide industrial depression the coal industry was bound to suffer, but it was gratifying to record that in the United States production fell off less proportionately than was the case with other commodities. But slight decreases were noted in shipments to the Great Lakes, New England and foreign countries, while the decline in domestic consumption was in no way striking. The leading and important decreases scored, however, were in consumption by railroads and public utilities. The *Coal Age* noted the average bituminous spot price at \$1.75 as against \$1.79 in 1929. Exports of bituminous coal from the United States in 1930 were 14,176,256 gross tons, as against 15,561,873 tons valued at \$65,741,852, Canada as usual taking the greatest amount—namely, 12,145,641 tons. During the year there was an absence of labor troubles in the coal industry. In Europe the coal industry also suffered correspondingly.

In 1930 the coal mining industry in the United States had 2014 deaths in and about mines, or with a production of 531,432,000 tons of coal a fatality rate of 3.79 per 1,000,000 tons, comparing with 3.59 in 1929. During the year there were 12 major disasters in the United States with 225 fatalities in 1929, 7 major disasters and 151 deaths.

PRODUCTION OF SOFT COAL IN 1930. The total production of soft coal during the calendar year 1930, including lignite and coal coked at the mines, was estimated by the U. S. Bureau of Mines at 461,630,000 net tons. This figure represented the total of the Bureau's current estimates for the fifty-two weeks in the year, and was subject to slight revision. Compared with the output in 1929, as shown by the annual canvass of mines for that year, the 1930 figure indicated a decrease of 73,359,000 tons, or 13.7 per cent. Figures for recent calendar years are given below:

| | Net tons | | Net tons |
|------|-------------|------|-------------|
| 1929 | 534,989,000 | 1926 | 573,367,000 |
| 1928 | 500,745,000 | 1925 | 520,053,000 |
| 1927 | 517,763,000 | 1924 | 483,687,000 |

ANTHRACITE. The production of anthracite in 1930, as estimated by the Anthracite Bureau of Information in Philadelphia, fell short of that of the preceding year by about 3,500,000 gross tons. The total production of anthracite for eleven months, January–November, 1930, as estimated by the U. S. Bureau of Mines (these figures including coal sold at the mines for local delivery and that consumed in the operation of the properties, and which are not included in the shipment figures) amounted to 56,663,000 gross tons. The

COAL AND LIGNITE PRODUCED IN THE PRINCIPAL COUNTRIES OF THE WORLD IN THE CALENDAR YEARS 1925-1929, IN METRIC TONS

[Compiled by L. M. Jones, of the Bureau of Mines]

| Country | 1925 | 1926 | 1927 | 1928 | 1929 |
|--------------------------------|------------------------|------------------------|------------------------|----------------------|----------------------|
| North America: | | | | | |
| Canada— | | | | | |
| Coal | 8,627,519 | 11,687,032 | 12,340,507 | 12,439,470 | 12,272,806 |
| Lignite | 3,288,262 | 3,261,599 | 3,468,793 | 3,494,505 | 3,599,720 |
| Greenland | 2,100 | 1,500 | 2,900 | 3,000 | 3,600 |
| Mexico | 1,444,498 | 1,309,138 | 1,031,308 | 1,022,475 | 1,054,196 |
| United States— | | | | | |
| Anthracite | 56,079,281 | 76,599,968 | 72,661,094 | 68,354,261 | 66,975,462 |
| Bituminous and lignite | 471,781,446 | 520,147,061 | 469,704,558 | 454,265,822 | 485,330,952 |
| South America: | | | | | |
| Argentina | (*) | (*) | (*) | (*) | (*) |
| Brazil | 392,376 | 400,000 ^b | 400,000 ^b | 400,000 ^b | 400,000 ^b |
| Chile | 1,458,228 | 1,490,509 | 1,481,511 | 1,375,616 | 1,325,611 |
| Colombia | (*) | (*) | (*) | (*) | (*) |
| Peru | 100,081 | 170,070 | 158,601 | 177,513 | 219,654 |
| Venezuela ^a | 16,798 | 15,928 | 16,104 | 15,812 | 16,859 |
| Europe: | | | | | |
| Albania—Lignite | (*) | 1,578 | 3,056 | 3,035 | 3,000 ^b |
| Austria— | | | | | |
| Coal | 145,200 | 157,308 | 175,601 | 202,098 | 208,020 |
| Lignite | 3,033,378 | 2,957,728 | 3,064,068 | 3,262,570 | 3,524,792 |
| Belgium | 23,097,040 | 25,259,600 | 27,550,960 | 27,578,300 | 26,931,460 |
| Bulgaria— | | | | | |
| Coal | 73,000 | 62,150 | 69,192 | 70,336 | 72,478 |
| Lignite | 1,156,006 | 1,140,093 | 1,168,454 | 1,360,790 | 1,572,964 |
| Czechoslovakia— | | | | | |
| Coal | 12,558,992 | 14,176,998 | 14,016,300 | 14,560,305 | 16,521,457 |
| Lignite | 18,604,678 | 18,515,666 | 19,620,637 | 20,451,421 | 22,560,796 |
| France— | | | | | |
| Coal | 47,097,297 | 51,391,523 | 51,778,530 | 51,365,427 | 53,736,497 |
| Lignite | 993,352 | 1,061,122 | 1,067,290 | 1,074,627 | 1,187,406 |
| Germany ^d — | | | | | |
| Coal | 132,622,125 | 145,295,724 | 153,599,355 | 150,860,599 | 163,437,056 |
| Lignite | 139,724,614 | 139,150,557 | 150,503,914 | 165,588,097 | 175,177,932 |
| Saar ^e | 12,989,850 | 13,680,874 | 13,595,824 | 13,106,718 | 13,579,348 |
| Greece—Lignite | 142,076 | 153,321 | 143,346 | 120,639 | (*) |
| Hungary— | | | | | |
| Coal | 805,050 | 827,710 | 785,922 | 783,279 | 826,270 |
| Lignite | 5,518,607 | 5,822,159 | 6,244,275 | 6,510,070 | 6,993,940 |
| Irish Free State | (*) | 79,715 | (*) | (*) | (*) |
| Italy— | | | | | |
| Coal | 188,522 | 209,260 | 164,089 | 127,932 | 215,640 |
| Lignite | 1,105,474 | 1,181,342 | 912,458 | 697,033 | 740,240 |
| Netherlands— | | | | | |
| Coal | 7,116,970 | 8,842,687 | 9,488,412 | 10,920,054 | 11,581,202 |
| Lignite | 207,623 | 211,194 | 201,382 | 196,696 | 156,568 |
| Poland— | | | | | |
| Coal | 29,081,327 | 35,747,348 | 38,084,086 | 40,616,384 | 46,236,037 |
| Lignite | 65,675 | 76,026 | 78,464 | 73,560 | 74,321 |
| Portugal— | | | | | |
| Coal | 123,450 | 201,732 | 178,554 | 201,348 | 196,901 |
| Lignite | 16,970 | 30,699 | 25,713 | 26,450 | 29,343 |
| Rumania— | | | | | |
| Coal | 313,572 | 322,191 | 373,457 | 397,564 | 370,947 |
| Lignite | 2,615,278 | 2,731,362 | 2,850,011 | 2,629,676 | 2,675,080 |
| Russia ^f — | | | | | |
| Coal | 13,354,011 | 20,614,717 | 25,944,341 | 30,566,000 | 38,423,000 |
| Lignite | 983,020 | 1,605,327 | 1,763,196 | | |
| Spain— | | | | | |
| Coal | 6,117,342 | 6,536,087 | 6,562,936 | 6,370,508 | 7,058,316 |
| Lignite | 402,690 | 399,830 | 429,602 | 422,504 | 438,951 |
| Svalbard (Spitzbergen) | 413,412 ^g | 291,211 ^g | 303,000 ^g | 274,000 ^g | 236,000 ^h |
| Sweden | 263,879 | 383,673 | 398,298 | 358,513 | 394,975 |
| Switzerland | (*) | (*) | 7,000 ^b | 7,000 ^b | 7,000 ^b |
| Turkey—Lignite | 2,000 | 4,638 | 4,000 | (*) | 312 |
| United Kingdom— | | | | | |
| Great Britain | 247,079,210 | 128,305,291 | 255,264,615 | 241,283,355 | 262,046,206 |
| Northern Ireland—Lignite | (*) | (*) | 510 | 650 | (*) |
| Yugoslavia— | | | | | |
| Coal | 178,456 | 190,814 | 287,728 | 457,472 | 408,611 |
| Lignite | 3,973,870 | 3,976,938 | 4,458,481 | 4,694,408 | 5,242,527 |
| Asia: | | | | | |
| British Borneo | 101,904 | 92,583 | 80,466 | 79,721 | 73,100 |
| China | 24,255,000 | 23,040,119 | 24,172,009 | 25,091,760 | (*) |
| Chosen | 634,257 | 682,896 | 709,578 | 815,817 | 937,902 |
| Federated Malay States | 414,634 | 471,736 | 470,432 | 565,523 | 672,131 |
| India, British | 21,239,892 | 21,336,204 | 22,436,757 | 22,904,685 | 22,495,347 |
| Indo-China— | | | | | |
| Coal | 1,357,231 | 1,284,661 | 1,482,900 | 1,954,098 | 1,941,310 |
| Lignite | 5,739 | 5,598 | 7,000 | 15,472 | 30,713 |
| Japan — | | | | | |
| Japan proper— | | | | | |
| Coal | 31,369,538 | 31,296,168 | 33,387,160 | 33,694,298 | (*) |
| Lignite | 169,426 | 161,134 | 178,613 | 121,923 | (*) |
| Karafuto | 250,615 | 275,823 | 357,046 | 539,481 | 632,930 |
| Taiwan | 1,704,581 | 1,794,511 | 1,857,257 | 1,583,598 | 1,530,025 |
| Netherlands East Indies | 1,400,725 | 1,466,359 | 1,620,205 | 1,703,526 | 1,831,504 |
| Philippine Islands | 48,681 | 28,577 | 23,410 | 27,857 | (*) |
| Russia ^f — | | | | | |
| Coal | 1,611,793 [†] | 2,849,399 [†] | 3,907,499 [†] | 4,675,000 | 5,489,000 |
| Lignite | 533,880 [†] | 687,648 [†] | 869,262 [†] | | |
| Sakhalin | 17,762 | 19,624 | 46,274 | | |

COAL AND LIGNITE PRODUCED IN THE PRINCIPAL COUNTRIES OF THE WORLD IN THE CALENDAR YEARS 1925-1929, IN METRIC TONS—(Continued)

| Country | 1925 | 1926 | 1927 | 1928 | 1929 |
|--|---------------|---------------|----------------------|----------------------|----------------------|
| Straits Settlements (Labuan) | 41 | ..... | ..... | ..... | ..... |
| Turkey— | | | | | |
| Coal | 703,444 | 1,222,387 | 896,074 ¹ | 923,403 ¹ | 985,035 ¹ |
| Lignite | 4,062 | 7,569 | 6,555 | 5,169 | 7,659 |
| Africa: | | | | | |
| Algeria | 10,037 | 13,731 | 21,269 | 16,631 | 16,128 |
| Belgian Congo— | | | | | |
| Coal | 65,100 | 90,250 | 86,950 | 97,780 | 102,500 |
| Lignite | ..... | ..... | ..... | ..... | 2,800 |
| Madagascar | ..... | ..... | 5 | 33 | 26 |
| Nigeria | 242,833 | 329,784 | 363,643 | 365,088 | 352,686 ² |
| Portuguese East Africa | 18,086 | 10,868 | 15,834 | 6,455 | (³) |
| Southern Rhodesia | 689,201 | 874,140 | 908,744 | 1,094,843 | 1,036,816 |
| Union of South Africa | 12,321,728 | 12,949,950 | 12,580,314 | 12,606,576 | 13,018,328 |
| Oceania: | | | | | |
| Australia— | | | | | |
| New South Wales | 11,579,108 | 11,060,483 | 11,304,688 | 9,599,841 | 7,740,000 |
| Queensland | 1,196,067 | 1,240,657 | 1,116,680 | 1,093,615 | 1,390,713 |
| Tasmania | 83,009 | 104,000 | 113,854 | 130,562 | 132,382 |
| Victoria— | | | | | |
| Coal | 542,821 | 600,487 | 695,227 | 668,889 | 715,124 |
| Lignite | 890,535 | 973,310 | 1,478,842 | 1,617,407 | 1,769,122 |
| Western Australia | 444,482 | 482,440 | 509,554 | 536,901 | 553,462 |
| New Caledonia | 1,300 | 15,000 | (⁴) | 16,500 | (⁵) |
| New Zealand— | | | | | |
| Coal | 1,044,726 | 1,215,590 | 1,299,044 | 1,370,379 | 1,389,107 |
| Lignite | 1,070,269 | 1,060,361 | 1,104,142 | 1,105,483 | 1,187,458 |
| Total, all grades | 1,372,000,000 | 1,364,000,000 | 1,477,000,000 | 1,464,000,000 | 1,559,000,000 |
| Lignite (total of items shown above) | 185,000,000 | 185,000,000 | 200,000,000 | 216,000,000 | 231,000,000 |
| Bituminous and anthracite (by subtraction) | 1,187,000,000 | 1,179,000,000 | 1,277,000,000 | 1,248,000,000 | 1,328,000,000 |

¹ Estimate included in total.

² Approximate production.

³ Exclusive of output of State of Falcon (about 8,000 tons), for which estimate is included in total.

⁴ Exclusive of mines in the Saar under French control.

⁵ Mines under French control.

⁶ Year ended September 30.

⁷ Production less consumption at mines, for which data are not available.

⁸ Exports

⁹ Exclusive of Sakhalin.

¹⁰ Shipments

¹¹ Year ended March 31 of year following that stated.

total production in December, 1929, as estimated by the Bureau of Mines, was 6,837,500 gross tons, which was somewhat above the average for that month. Weather conditions in the closing month of 1930, while recording a few days of snappy temperatures, were generally favorable to the consumers rather than the producers of anthracite. Production declined accordingly and, it was estimated, would not exceed 5,800,000 tons, bringing the total for the year up to 62,463,000 tons which, when compared with that of 1929 (65,918,000 gross tons), showed a decrease of between 3,400,000 and 3,600,000 gross tons, or about 5½ per cent.

When the general depression which prevailed in 1930, the restricted purchasing power of the anthracite-consuming public, and the growing habit of hand-to-mouth buying were taken into consideration, and when compared with declines in other industries, this loss in anthracite production became practically negligible. And, moreover, the first four of the coal-burning months of 1930 were notable for their mild temperatures, resulting in a decreased production in those months of a little over 2,650,000 gross tons, or more than 75 per cent of the decrease for the entire year. It would appear from this that, all outward conditions considered, the anthracite industry in 1930 held up remarkably well.

Shipments, as reported to the Anthracite Bureau of Information, for the eleven months from January to November, 1929, amounted to 53,070,728 gross tons. For the eleven months, January to November, inclusive, in 1930 they amounted to a total of 49,456,323 tons.

The shipments of anthracite by months from Jan. 1, 1929 to November, 1930, were as follows:

| 1929 | Gross tons | 1930 | Gross tons |
|-----------|------------|-----------|------------|
| January | 5,811,972 | January | 5,405,788 |
| February | 5,168,197 | February | 4,708,707 |
| March | 3,628,691 | March | 3,430,940 |
| April | 5,160,520 | April | 3,662,647 |
| May | 4,817,334 | May | 4,750,368 |
| June | 3,778,679 | June | 4,052,939 |
| July | 3,687,586 | July | 4,345,841 |
| August | 4,564,426 | August | 4,821,790 |
| September | 5,360,130 | September | 3,899,405 |
| October | 6,477,729 | October | 6,177,851 |
| November | 4,615,464 | November | 4,200,047 |
| December | 5,831,534 | December | 4,889,057 |

The anthracite industry in 1930 was neither decadent nor despondent. Its confidence in the future was attested by the large capital investments made during the year. That the industry was faced with serious problems was granted by its best authorities but it has faced other problems in earlier stages in its history, as when it was, at recurring periods, driven from the blast furnace, the locomotive, the ocean liners, and the gas works. The problems of the industry in 1930 had their beginning principally in the labor troubles of 1922 and 1925-26, which for a period of more than five months in each instance shut off completely the supply of hard coal and produced in the minds of the anthracite-consuming public a feeling of antagonism for the time being and a not unreasonable doubt as to the advisability of depending upon anthracite for the supplying of future fuel requirements.

On Aug. 8, 1930, a notable agreement was entered into between the anthracite operators and their employees, which renewed for a period of five and a half years, or for six winters, assurances of industrial peace and an uninterrupted supply of that domestic fuel—Pennsylvania anthracite—for which there is no satisfactory substitute. The conditions under which the negotiations were conducted and the agreement reached were unusual. There was no strike or suspension, and there were no sensational or public features prior to the reaching of an agreement. The negotiations were carried on quietly in a New York office, but when agreement was reached the signing of the contract was made in public in the city of Scranton, and the event was made the occasion for a celebration. It was considered to mark a new era and a new spirit in wage negotiations. Strikes are taboo and the means for avoiding them are provided in the contract. Their utter futility had been demonstrated in the controversies of 1922 and 1925–26. Neither miners nor operators had recovered the losses then sustained. For the use of pulverized coal, see **BOILERS**. Also see **GEOLOGY**.

COCHIN-CHINA, kō'chin-chi'na. The southernmost colony in French Indo-China. Area, estimated at 26,476 square miles; population estimated in 1928 at 4,303,418, consisting chiefly of Annamites, Cambodians, Moïs, Chams, and Chinese, with a few Indians, Malays, Tagals, and 16,062 French (excluding military forces). Saigon, the capital, had a population in 1928 of 130,000, including 12,600 French and 650 other Europeans (exclusive of 3066 troops). Cholon had 192,416 inhabitants. There were about 20,640 schools, with 3750 teachers and 161,144 pupils.

Rice is the chief crop, to which 4,969,347 acres were devoted in 1928; production in 1927, 1,493,327 metric tons. Other crops are maize, beans, sweet potatoes, groundnuts, cotton, rubber, sugar cane, tobacco, coffee, coconuts, pepper, oranges, bananas, etc. Other sources of wealth are livestock and fisheries, the output of the latter being valued at 3,000,000 francs annually. Exports in 1928 totaled 2,798,975,000 francs and imports, 2,283,241,000 francs. The local budget in the same year balanced at 19,810,136 piastres (the piastre was stabilized at 10 gold francs, or \$0.392, on May 31, 1930). Saigon is the chief trading centre, steamers entering in 1928 totaling 933 of 2,288,505 tons. The territory is ruled directly by a governor and a colonial council of 24 members; it is represented in the French Parliament by one deputy. See **FRENCH INDO-CHINA**.

CODDLING MOTH. See **ENTOMOLOGY**, **ECONOMIC**.

COFFEE. See **BRAZIL**; **COLOMBIA**; **COSTA RICA**.

COFFER DAMS. See **FOUNDATIONS**.

COHN, ADOLPHE. An American educator, died Feb. 11, 1930, in Paris, where he was born May 29, 1851. Graduated from the University of Paris, he served in the Franco-German War (1870–71) before going to the United States in 1875. During 1882–84 he was tutor and instructor in French at Columbia University and, after teaching at Harvard University from 1884 to 1891, returned to Columbia as professor of Romance languages and literatures, retiring from that post in 1916. In 1898 he founded the Alliance Française in New York City and was its first president. He was an officer of the Legion of Honor and a Knight of the Crown of Italy. He delivered the French lecture in the Columbia University Lectures on

Literature in 1911. Professor Cohn was the author of *Le Sage's Gil Blas* (with R. Sanderson, 1889); *Voltaire's Prose* (with B. D. Woodward, 1897); and "Montaigne" (in *French Classics for English Readers*, 1907). He edited the Silver Series of Modern Language Textbooks and, with Dr. Curtis Hidden Page, the *French Classics for English Readers*. He translated the French edition of *War and Humanity*, by James M. Beck, and contributed to the first and second editions of the **NEW INTERNATIONAL ENCYCLOPÆDIA**.

COINS, VALUES OF FOREIGN. The legal estimates of the values of foreign coins on Jan. 1, 1931, as issued by the Secretary of the Treasury are given in the table on the following page.

COKE. The production of coke in the United States in 1930, according to preliminary reports received by the U. S. Bureau of Mines, was 48,310,308 net tons, a decrease of 19.3 per cent when compared with 1929. The chief cause of the decrease in coke production was the reduced activity of blast furnaces, the output of pig iron for 1930 decreasing 25.7 per cent below the level of 1929. (See **IRON AND STEEL**.) The production of beehive coke was 2,795,800 net tons in 1930 or but 5.8 per cent of the total production, being the lowest since 1880, and a decrease of 56.8 per cent as compared with 1929. The accompanying tables give the production of coke and pig iron for the years 1925–1930. The changes in relative proportions of beehive and by-product coke II continued. In 1913, the by-product ovens contributed only 27.5 per cent of the total output; in 1930 they contributed 94.2 per cent. The share of the beehive ovens declined in the meantime from 72.5 per cent in 1913 to 5.8 per cent in 1930. Pennsylvania was the leading State in the production of beehive coke, and the combined output of Pennsylvania, Ohio, and West Virginia in 1930 represented about 88 per cent of the total. Pennsylvania, as in other late years, was also the largest producer of by-product coke. The output of its by-product ovens in 1930 was 12,650,000 tons. As a producer of by-product coke, Ohio ranks second, Indiana third, Alabama fourth, and New York fifth.

TABLE 1—PRODUCTION OF BY-PRODUCT AND BEEHIVE COKE AND PIG IRON IN THE UNITED STATES, 1925–30

| Year | Coke—net tons produced | | Total | Pig iron |
|-----------|------------------------|------------|------------|------------|
| | By-product | Beehive | | gross tons |
| 1925 .. | 39,912,159 | 11,354,784 | 51,266,943 | 36,700,566 |
| 1926 .. | 44,376,586 | 12,488,951 | 56,865,537 | 39,372,729 |
| 1927 .. | 43,884,726 | 7,207,417 | 51,092,143 | 36,565,645 |
| 1928 .. | 46,313,025 | 4,492,803 | 52,805,828 | 38,515,714 |
| 1929 .. | 53,411,826 | 6,472,019 | 59,883,845 | 42,613,983 |
| 1930 * .. | 45,514,508 | 2,795,800 | 48,310,308 | 31,399,105 |

* Preliminary figures.

TABLE 11—PRODUCTION OF BEEHIVE COKE, BY GROUPS OF STATES, 1929–30
[Net tons]

| State | 1930 Preliminary | 1929 Final |
|--|---------------------|---------------|
| Pennsylvania, Ohio, and West Virginia | 2,450,500 | 5,865,000 |
| Georgia,* Kentucky,* Tennessee, and Virginia | 240,600 | 410,700 |
| Colorado, Utah, and Washington | 104,700 | 196,300 |
| Total | 2,795,800 | 6,472,000 |

* No production 1929 or 1930.

VALUES OF FOREIGN MONEYS—JAN. 1, 1931

| Country | Legal standard | Monetary unit | Value in U. S. money | Remarks |
|--|------------------|--------------------------------|---------------------------|--|
| Argentine Republic . . . | Gold | Peso | \$0.9648 | Currency: Paper normally convertible at 44% of face value. |
| Austria | Gold | Schilling | 1407 | |
| Belgium | Gold | Belga | 1390 | 1 belga equals 5 Belgian paper francs. |
| Bolivia | Gold | Boliviano | 3650 | 13½ bolivianos equal 1 pound sterling. |
| Brazil | Gold | Milreis | 5462 | Currency convertible at 4.567 paper milreis to the gold milreis (\$0.1196). |
| British Colonies in Australasia and Africa | Gold | Pound sterling | 4.8665 | |
| British Honduras | Gold | Dollar | 1.0000 | |
| Bulgaria | Gold | Lev | .0072 | |
| Canada | Gold | Dollar | 1.0000 | |
| Chile | Gold | Peso | .1217 | |
| China | Silver | Tael | Amoy | The tael is a unit of weight; not a coin. The customs unit has been the haikwan tael. The values of other taels are based on their relation to the value of the haikwan tael. The Yuan silver dollar of 100 cents is the monetary unit of the Chinese Republic; it is equivalent to 63.7 per cent of the haikwan tael. January, 1930, news reports indicate import duties will be collected on a gold basis, the gold unit (unnamed) being equal to \$0.40; and the haikwan tael being initially converted at 1.5 of the new unit, but from Mar. 16, 1930, at 1.75 of the new unit, which is being tentatively called "sun." |
| | | | Canton | |
| | | | Chefoo | |
| | | | Chin Kiang | |
| | | | Fuchau | |
| | | | Haikwan | |
| | | | Hankow | |
| | | | Kiaochow | |
| | | | Nanking | |
| | | | Ninchwang | |
| | | | Ningpo | |
| | | | Peiping | |
| | | | Shanghai | |
| | | | Swatow | |
| | | | Takau | |
| | | | Tientsin | |
| | | | Yuan | |
| | | Dollar | Hong Kong | |
| | | | British Mexican | |
| Colombia | Gold | Peso | .9733 | Currency: Govt. paper and silver. |
| Costa Rica | Gold | Colon | .4653 | Law establishing conversion office fixes ratio 4 colons (nongold) = \$1 U. S. |
| Cuba | Gold | Peso | 1.0000 | |
| Czechoslovakia | Gold | Krone | .0296 | |
| Denmark | Gold | Krone | .2680 | |
| Dominican Republic | Gold | Dollar | 1.0000 | U. S. money chief circulating medium. |
| Ecuador | Gold | Sucres | .2000 | |
| Egypt | Gold | Pound (100 piasters) | 4.9431 | |
| Estonia | Gold | Kroon | .2680 | |
| Finland | Gold | Markka | .0252 | |
| France | Gold | Franc | .0392 | |
| Germany | Gold | Reichsmark | .2382 | |
| Great Britain | Gold | Pound sterling | 4.8665 | |
| Greece | Gold | Drachma | .0130 | |
| Guatemala | Gold | Quetzal | 1.0000 | |
| Haiti | Gold | Gourde | .2000 | Currency: National bank notes redeemable on demand in American dollars. Legally established but not operative. |
| Honduras | Gold | Lempira | .5000 | |
| Hungary | Gold | Pengo | .1749 | |
| India (British) | Gold | Rupee | .3650 | |
| Indo-China | Gold | Piaster | .3918 | By decree of May 1, 1930 |
| Italy | Gold | Lira | .0526 | |
| Japan | Gold | Yen | .4985 | |
| Jugoslavia | Gold | Dinar | .1930 | |
| Latvia | Gold | Lat | .1930 | |
| Liberia | Gold | Dollar | 1.0000 | Currency: Depreciated silver coins. |
| Lithuania | Gold | Litas | .1000 | Currency: Notes of Bank of Lithuania. |
| Mexico | Gold | Peso | .4985 | |
| Netherlands | Gold | Guilder (florin) | .4020 | |
| Newfoundland | Gold | Dollar | 1.000 | |
| Nicaragua | Gold | Cordoba | 1.0000 | |
| Norway | Gold | Krone | .2680 | |
| Panama | Gold | Balboa | 1.0000 | |
| Paraguay | Gold | Peso (Argentine) | .9648 | Currency: Depreciated Paraguayan paper currency. |
| Persia | Gold | Ryal | .2433 | Gold standard established by law of Mar. 18, 1930. Silver kran (about 5¢ U. S.) system still operating; foreign exchange controlled. |
| Peru | Gold | Sol | .4000 | Established by law of Feb. 11, 1930. |
| Philippine Islands | Gold | Peso | .5000 | |
| Poland | Gold | Zloty | .1122 | |
| Portugal | Gold | Escudo | 1.0805 | Currency: Inconvertible paper. |
| Rumania | Gold | Leu | .0080 | |
| Russia | Gold | Ruble | .5146 | Pre-war unit. (One Soviet chervonetz = 10 gold rubles.) |
| Salvador | Gold | Colon | .5000 | |
| Siam | Gold | Baht (Tical) | .4424 | |
| Spain | Gold | Peseta | .1930 | Valuation is for gold peseta; currency is notes of the Bank of Spain. |
| Straits Settlements | Gold | Dollar | .5678 | |
| Sweden | Gold | Krona | .2680 | |
| Switzerland | Gold | Franc | .1930 | |
| Turkey | Gold | Piaster | .0440 | (100 piasters equal to the Turkish £.) |
| Uruguay | Gold | Peso | 1.0842 | Currency: Inconvertible paper. |
| Venezuela | Gold | Bolivar | .1930 | |

Two new by-product plants started operations in 1930. In January, the Wisconsin Public Service Company started a new plant of Koppers ovens at Sheboygan, Wisconsin; in August, the Dupont Ammonia Corporation began making coke at Belle, West Virginia. The total number of ovens added by these operations was 61. In addition, 440 ovens were installed and fired at existing plants. At the close of 1930, there were approximately 370 ovens under construction.

TABLE III—PRODUCTION OF BY-PRODUCT COKE, BY STATES, 1929-30
[Net tons]

| State | 1930 ^a | 1929 |
|--|-------------------|------------|
| Alabama | 3,993,000 | 4,753,967 |
| Colorado | 379,100 | 565,031 |
| Illinois | 3,574,200 | 4,204,116 |
| Indiana | 4,946,500 | 6,455,378 |
| Maryland | 1,169,000 | 1,393,052 |
| Massachusetts | 935,900 | 776,679 |
| Michigan | 2,621,300 | 2,679,971 |
| Minnesota | 635,300 | 746,004 |
| New Jersey | 933,900 | 897,530 |
| New York | 3,788,700 | 4,299,470 |
| Ohio | 6,336,100 | 8,521,132 |
| Pennsylvania | 12,650,100 | 14,489,283 |
| Tennessee | 98,400 | 113,285 |
| Utah | 252,600 | 267,939 |
| Washington | 36,100 | 40,879 |
| West Virginia | 1,479,900 | 1,431,314 |
| Connecticut, Kentucky, Missouri, Rhode Island, and Wisconsin | 1,685,000 | 1,776,796 |
| Total | 45,514,500 | 53,411,826 |

^a From monthly reports furnished by operators.

Allowing for imports and exports, and for changes in producers' stocks, the indicated consumption of coke in 1930 was 46,360,314 tons. Of this, about 34,724,000 tons was consumed by blast furnaces in the manufacture of pig iron and ferro-alloys. The remainder was used in foundries, in smelting the non-ferrous metals, in the manufacture of water gas, in miscellaneous other industrial uses, and for domestic heating. In 1930, the quantity consumed for these purposes was about 11,636,000 tons, or 25.1 per cent of the total, as against 8,221,000 tons, or 18.1 per cent in 1913. The consumption for house heating was probably as great, or greater than in 1929. In that year, 7,376,320 tons of by-product and 134,703 tons of beehive coke were disposed of for domestic use.

COLDs, COMMON. See **MEDICINE, PROGRESS IN.**

COLGATE UNIVERSITY. A nonsectarian institution for the higher education of men in Hamilton, N. Y.; founded in 1819. In the autumn of 1930 there were 1009 students enrolled. The faculty numbered 86 members. The productive funds amounted to approximately \$4,250,000, and the income for the year was approximately \$410,000. The library contained 110,000 volumes. A new chemistry building, costing \$450,000, was opened in 1930. The building formerly used as a chemical laboratory was to be remodeled for use by the department of biology. President, George Barton Cutten, Ph.D., D.D., LL.D.

COLLECTIVE BARGAINING. See **TRADE UNIONS.**

COLLEGES. See **UNIVERSITIES AND COLLEGES.**

COLLOIDS. See **CHEMISTRY; SOILs.**

COLOMBIA. A republic in the northwestern part of South America, third in population and fourth in size among the countries of that continent. Capital, Bogotá.

AREA AND POPULATION. The area of Colombia is 440,846 square miles and the population according to the census of December, 1928, was approximately 7,967,788, as compared with 5,855,

077 in 1918. The total population was distributed as follows: whites, 20 per cent; Negroes, 5 per cent; Indians, 7 per cent; mulattoes, 18 per cent; mestizos, 50 per cent. Bogotá, the capital, had a population of 235,421 at the 1928 census. Other leading cities, with their populations in 1928, were: Barranquilla, 139,491; Cali, 124,857; Medellin, 120,440; Cartagena, 80,467; Manizales, 85,203; Ibaqué, 53,664; Cúcuta, 50,324; Bucaramanga, 44,427.

EDUCATION. Primary and secondary schools in 1927 numbered 7531, with 449,111 pupils; there were 25 industrial schools, with 1392 pupils, and 6 art schools, with 399 pupils, besides 17 normal schools (1926), with 987 pupils. National or departmental universities are conducted at Bogotá, Medellin, Cartagena, Popayan, and Pasto. The state religion is Roman Catholicism and the Church exercises control of practically all the national or partly national secondary schools.

PRODUCTION AND RESOURCES. Colombia is primarily an agricultural country, with coffee as the chief factor in the national economy. Because of its mild flavor, the price of the Colombian crop is largely unaffected by Brazilian overproduction. Coffee constituted 60 per cent of the total value of exports in 1928 and more than 90 per cent of the crop is purchased annually by the United States. Coffee shipments from the interior to the ports in 1929 totaled 2,863,171 bags of 60 kilograms each (2,795,111 bags in 1928). Tobacco, cotton, sugar, cacao, vegetable ivory, bananas, rubber, rice, wheat and maize, and a great variety of fruits are other crops. Colombia ranks second in the production of coffee and of bananas. The total value of agricultural products in 1927-28 was placed at 628,000,000 gold pesos (1 gold peso equals \$0.973), of which maize represented 160,000,000 pesos, coffee 90,000,000 pesos, and cattle, 56,000,000 pesos. There are about 10,000,000 cattle in the country.

According to the Minister of Industry, Colombia in 1929 had the world's largest production of emeralds and platinum, the largest production of gold in South America, and ranked second to Venezuela in the production of petroleum among South American nations. Gold exports in 1928 totaled 1,443,433 pesos. Petroleum production (1929) was 20,384,000 barrels, as against 20,000,000 barrels in 1928 and 323,000 barrels in 1922. Coal resources are estimated at about 27,000,000 metric tons and production is about 35,000,000 tons annually. Water-power resources are estimated at 4,000,000 h.p., of which 25,000 h.p. were developed in 1926. Silver, copper, and salt are other mineral products. Iron and manganese deposits are largely undeveloped. Forests cover about 150,000,000 acres. There are pearl fisheries under Government control on the coasts.

The economic depression, which commenced in 1929, continued during 1930. Coffee prices remained weak on the New York market, proceeds of other agricultural and mineral products were reduced, and the Government curtailed sharply its expenditures for public works and other public services. Unemployment increased during the year.

COMMERCE. Imports in 1929, according to preliminary figures, were valued at \$103,000,000 (\$123,000,000 in 1928) and exports at about \$123,620,000 (\$130,520,000 in 1928). Crude petroleum exports in 1929 amounted to 18,531,000 barrels, as against 17,891,000 in 1928. While exports of coffee and petroleum increased in quantity over 1928, the value was less. The import decrease was

due in part to the curtailment of the public works programme.

For the year ended June 30, 1930, exports to the United States totaled \$105,811,503, as compared with \$91,726,037 in the previous year, an increase of 15 per cent. Imports from the United States declined by 44 per cent to \$33,270,295 in 1929-30 from \$59,834,623 in 1928-29. Approximately 75 per cent of all the export trade consists of agricultural and pastoral products. Textiles, metals, and manufactures are the chief imports. The United States normally purchases about 85 per cent of Colombia's total exports and supplies about 50 per cent of the total imports.

FINANCE. Secretary of Finance Perez, on Sept. 10, 1930, estimated that the cumulative Federal deficit at the end of 1930 would be approximately \$32,000,000, or an increase of more than \$30,000,000 in three years. The budget for 1929 authorized expenditures totaling 106,120,106 pesos (1 peso equals \$0.9733 at par), of which 64,406,242 pesos represented ordinary expenditures and the balance extraordinary expenditures. Actual revenues for the year totaled 75,000,000 pesos (74,345,000 pesos in 1928). Owing to the failure to float contemplated foreign loans, extraordinary revenues fell far short of expectations, with the result that some public works had to be abandoned while others were financed from ordinary revenues. The substantial deficit incurred in 1929 was greatly increased in 1930, when ordinary revenues declined sharply from the 1929 figures. The revised budget for 1930 provided for expenditures of \$62,000,000 of which about \$14,000,000 was allotted to public works. To conform to decreasing revenues, the balanced budget for 1931 was fixed at 51,739,925 pesos, nearly 30,000,000 pesos less than the normal cost of government.

The balance due Dec. 31, 1929, on long-term foreign loans contracted by the national, departmental, and municipal governments and the banks of Colombia totaled 213,799,795 pesos, of which 70,294,535 pesos represented the national foreign debt, according to the *Revista del Banco de la Republica* of Bogotá. The national internal and external debt on the same date was placed by the Ministry of Industries at \$84,456,000, of which \$72,770,171 were held abroad. The Ministry estimated the national wealth at \$5,850,000,000, the per capita wealth at \$803.20, and the per capita public debt at \$10.55.

To meet the accumulated deficit, Congress in September, 1930, authorized the Government to contract a short-term loan up to \$30,000,000 and to effect economies in Government departments. The National City Bank of New York on August 15 delivered 4,000,000 pesos (about \$3,865,200) to the Bank of the Republic in Bogotá to cover the Government's debt to the latter institution, which had reached the legal limit of its loans. This transaction enabled the Bank of the Republic to extend a further credit of 4,000,000 pesos to the Government to meet current expenses. Under an arrangement concluded in July, the National City Bank agreed to honor at 50 per cent of their face value outstanding Government pay warrants totaling \$3,000,000.

COMMUNICATIONS. Fifteen railway lines were in operation in Colombia in 1929 (11 state-owned and 3 British), with a total length of 1750 miles. Most of them served as feeders to the Magdalena River, which is navigable for 900 miles and serves as the main traffic route from the

Caribbean to the interior. A 38-mile stretch of railway between Puerto Lievano on the lower Magdalena River and Facatativa was completed in 1930. Eventually the line will connect with the Cundinamarca railway and afford direct service between Bogotá and the coast. The Colombia National Railway bridge over the Magdalena River at Girardot was completed in 1930 also. New river boats designed to carry merchandise direct from Barranquilla to Girardot without transshipment at La Dorada were launched on the Magdalena in 1930 by German-Colombian interests. Motor roads total about 2340 miles and air lines link Barranquilla, Buenaventura, Girardot, Bucaramanga, and other leading cities. Improvements to the Pacific port of Buenaventura were completed at a cost of about \$4,500,000 in May, 1930, making it one of the most modern ports in Latin America.

GOVERNMENT. Executive power is vested in a president elected for four years by direct popular vote, and ineligible for reelection until four years after the expiration of his term. Legislative power rests with a Congress of two Houses, the Senate of 48 members, elected indirectly by electors for four years, and the House of Representatives of 113 members, elected by direct suffrage for two years. President at the beginning of 1930, Dr. Miguel Abadia Méndez, elected for the term 1926-30.

HISTORY

Profiting by a split in the ranks of the Conservative party, the Liberals returned to power for the first time in four decades in the election of Feb. 9, 1930. Their successful presidential candidate was Dr. Enrique Olaya Herrera, Colombian Minister to the United States, who previously had served twice as Minister of Foreign Affairs.

The Liberals, who had refused to participate in elections since 1921 because of alleged election frauds, entered their candidate late in the campaign, after Congress had met their demands by adopting a law requiring every voter to present a certificate of identification. Dr. Olaya Herrera conducted a spectacular campaign, traveling about the country mostly by airplane. Returns from 80 per cent of the election districts gave him 307,306 votes, to 157,508 for Gen. Alfredo Vasquez Cobo, insurgent Conservative candidate, and 133,061 for Dr. Guillermo Valencia, the Conservative party's nominee. A fourth candidate nominated by the Socialist Revolutionaries made little impression on the electorate.

A leading issue of the election was the policy to be followed in developing the resources of the country. Dr. Olaya Herrera favored an "open-door" policy for foreign investors, intensive development of the oil industry, and the non-partisan selection of competent men for administrative posts in the Government. He won strong support among the women of Colombia by his stand in support of woman suffrage and most of the progressive elements of the nation rallied behind him. The Roman Catholic Primate of Colombia, Archbishop Perdomo, first lent his support to Dr. Valencia in a circular issued January 22. On February 3 he withdrew his approval and urged members of the Church to switch their support to General Vasquez Cobo. The Liberal party had long advocated the restriction of the power of the Church and of its political influence in Colombia.

Pending his inauguration on August 7, Presi-

dent-elect Olaya Herrera returned to his post at Washington, where he officially repaid the visit made to Colombia early in 1929 by President-elect Hoover.

Once the political campaign was ended, the nation turned its attention to the increasingly alarming economic situation. Early in the year it was estimated that the low price of coffee would reduce the annual national income from that source alone by \$47,000,000, as compared with 1928. Minor economies, including the reduction of the army by 1000 men (the normal force is about 9000), proved insufficient to counterbalance the Government's declining revenues and Finance Minister Pérez on April 2 estimated the deficit at 19,000,000 pesos for the first quarter of the year. On April 4 the entire Conservative Cabinet resigned, principally because of a difference of opinion as to the measures needed to remedy the financial situation. The Cabinet crisis was ended April 14 by the appointment of a coalition Ministry of four Conservatives and four Liberals.

In contrast with the revolutionary disorders in other South American countries, the inauguration of President Olaya Herrera on August 7 was marked by a spirit of friendly coöperation on the part of the Conservatives who were retiring from power for the first time in over 40 years. In his Independence Day message (July 20), President Abadía Méndez promised that the transfer of administrations would take place in peace and harmony and urged national support for his Liberal successor. He said that the relations between Church and State, formerly a source of political controversy, were now acceptable to all parties. On the same day the newspaper *El Tiempo* published a manifesto signed by more than 100 Congressmen representing all factions pledging their support of all administration measures aimed at the improvements of economic and financial conditions. The fairness with which the Conservatives conducted the Presidential election was gratefully testified to by the Liberals.

President Olaya Herrera in his inaugural address said the major problems facing the country were the national finances, the depression in the petroleum and coffee industries, and highway development. He announced a policy of friendly coöperation with the United States. His Cabinet, which included four Liberals and four moderate Conservatives, was composed as follows: Foreign Affairs, Dr. Eduardo Santos; Interior, Dr. Carlos E. Restrepo; Public Works, Dr. Fabio Lozano; Industries, Dr. Francisco Chaux; Education, Dr. Abel Carbonell; War, Gen. Agustín Morales Olaya; Finance and Public Credit, Dr. Francisco de Paula Pérez; and Posts and Telegraphs, Dr. Julio Enrique Tascón.

In June, President-elect Olaya Herrera secured the consent of the coalition Cabinet to engage an American financial mission, headed by Professor Kemmerer of Princeton University, to study Colombian public administration, finance, banking practice, and political economy and propose ways for improvements in these fields. The commission arrived in Colombia in August and devoted some five months to the study, submitting recommendations which formed the basis of new legislation introduced into Congress.

President Olaya Herrera reorganized his Cabinet on December 15 by accepting the resignations of the Ministers of Foreign Relations and

of Public Works. Decrees were issued reorganizing the Public Works Department and the national railways. The North Central and Southern railways were ordered consolidated. The export tax on bananas was raised from two to three cents a bunch by the lower Chamber on December 7, but the constitutionality of the measure was challenged. The Administration's new oil bill, introduced into Congress on Dec. 19, 1930, provided for reductions in royalties to be paid on oil produced from private and public lands and made extensive alterations in the regulations governing the exploitation of oil fields.

While in Washington during the summer, Dr. Olaya Herrera commenced negotiations through the Ecuadorian Minister there for the resumption of diplomatic relations between Ecuador and Colombia, which had been severed in 1924 in connection with a boundary dispute.

COLORADO. POPULATION. According to the Fifteenth Census, the population of the State on Apr. 1, 1930, was 1,035,791. The population on Jan. 1, 1920, was 939,629. The capital is Denver.

AGRICULTURE. The following table gives the acreage, production, and value of the principal crops in 1929 and 1930:

| Crop | Year | Acreage | Prod. Bu. | Value |
|-------------|------|-----------|------------------------|--------------|
| Hay | 1930 | 1,635,000 | 3,089,000 ^a | \$28,247,000 |
| | 1929 | 1,590,000 | 3,103,000 ^a | 35,174,000 |
| Wheat | 1930 | 1,459,000 | 21,780,000 | 11,595,000 |
| | 1929 | 1,397,000 | 18,012,000 | 16,691,000 |
| Sugar beets | 1930 | 243,000 | 3,299,000 ^a | ..... |
| | 1929 | 210,000 | 2,612,000 ^a | 18,106,000 |
| Corn | 1930 | 1,516,000 | 37,142,000 | 23,028,000 |
| | 1929 | 1,366,000 | 23,222,000 | 17,416,000 |
| Potatoes | 1930 | 14,000 | 2,660,000 | 3,059,000 |
| | 1929 | 88,000 | 12,320,000 | 13,552,000 |
| Barley | 1930 | 612,000 | 15,606,000 | 6,242,000 |
| | 1929 | 651,000 | 13,671,000 | 7,382,000 |
| Dry beans | 1930 | 385,000 | 3,927,000 | 5,301,000 |
| | 1929 | 350,000 | 2,345,000 | 6,332,000 |
| Oats | 1930 | 212,000 | 7,102,000 | 2,557,000 |
| | 1929 | 212,000 | 6,572,000 | 3,155,000 |

^a Tons.

Farms in the State numbered 60,563 in 1930, as against 58,020 in 1925 and 59,934 in 1920.

MINERAL PRODUCTION. Coal, the chief mineral product of the State, was mined in 1929 about on the same scale as in 1928. There were produced, in 1929, 9,920,741 net tons of coal, and in 1928, 9,847,707; in value, \$26,254,000 for 1929 and \$27,613,000 for 1928. Gold production in 1929 fell below 1928 and 1927 as well. There were mined, in 1929, 220,285 fine ounces of gold, as against 258,564 in 1928; in value, \$4,553,700 for 1929 and \$5,345,000 for 1928. The output of the silver mining industry showed little change, being 4,415,838 fine ounces for 1929 and 4,384,072 for 1928; in value, \$2,353,642 for 1929, it fell below the total for 1928, \$2,564,682, by reason of lower average price for the metal. The production of lead, fourth in importance among the State's minerals, amounted to 27,651 short tons, valued at \$3,103,100, for 1928 and continued at approximately the same rate for 1929. The production of zinc, the third of the State's minerals in order of importance, was not available for 1929. For 1928, it was 35,731 short tons, and for 1927, 35,865; in value, \$4,359,182 for 1928 and \$4,590,056 for 1927. A substantial quantity of coal was coked; by-product ovens furnished 565,031 short tons in 1929 as against 605,822 in 1928; beehive ovens 144,200 short tons in 1928 and not far from the same quantity in 1929. Iron mines

shipped 50,754 long tons of ore in 1929 as against 52,713 in 1928, and blast furnaces produced secondary quantities of pig iron in each of these years. The petroleum production diminished to 2,298,000 barrels for 1929, from 2,774,000 for 1928; its value fell, for 1929, to \$2,300,000 (estimated), from \$2,750,000 for 1928. The smelters of the State, in addition to other minerals noted, yielded, in 1929, 10,519,784 pounds of copper; in 1928, 10,262,083. Copper produced was somewhat in excess of the yearly mine production of copper in the State. The only other mineral industry normally reported as exceeding \$1,000,000 a year was the manufacture of clay products. These attained, for 1928, the latest year of available figures, \$2,999,242; for 1927, \$2,998,486. The production of natural gas, however, much on the increase in 1928, attained for that year 2,291,000 M cubic feet and a value of \$786,000. The combined mineral products of the State attained for 1928 a value of \$58,594,688; for 1927, of \$58,855,263.

The estimated output of gold, silver, copper, lead, and zinc from Colorado ores and gravels in 1930 in terms of recovered and estimated recoverable metal was placed at 218,471 ounces of gold, 4,290,587 ounces of silver, 44,646,000 pounds of lead, 9,787,000 pounds of copper, and 72,903,000 pounds of zinc, by the U. S. Bureau of Mines. These figures may be compared with 213,690 ounces of gold, 4,397,377 ounces of silver, 48,889,906 pounds of lead, 8,905,074 pounds of copper, and 58,861,000 pounds of zinc in 1929. Compared with 1929 figures, gold showed an increase of \$98,838, silver a decrease of 106,790 ounces, lead a decrease of 4,243,906 pounds, copper an increase of 881,926 pounds, and zinc an increase of 14,042,000 pounds. The gross estimated value of the output of metals in Colorado in 1930 was gold \$4,516,196, silver \$1,651,876, lead \$2,321,592, copper 1,213,588, zinc \$3,426,441, or a total of \$13,129,693, as compared with \$15,293,343 in 1929.

TRANSPORTATION. The total number of miles of railroad line in operation on Jan. 1, 1930, was 4966.58. There were constructed, in 1930, 2.08 miles of additional second track.

EDUCATION. A committee report to the State Education Association proposed a campaign for the equalization of educational opportunity throughout the State. So-called opportunity schools for the instruction of illiterates were established in 1930 in some number. The school population of the State, for the year ending June 30, 1929, was estimated at 306,993 individuals aged from 6 to 21 years. There were enrolled in the public schools in that year 256,134 pupils. Of these, 180,078 were in elementary and 63,463 in high-school grades, while another 12,593 were in night schools. The expenditure of the year, for public school education, was \$25,157,459. The yearly pay of teachers was reported to average \$1400.

POLITICAL AND OTHER EVENTS. The State bound itself in a treaty with New Mexico and Texas, signed Feb. 11, 1929, and ratified by the Federal authorities in 1930, dealing with the allocation of the rights to the waters of the Rio Grande, that it would not increase its areas under irrigation from the river before the termination of the treaty in 1935. In July the disposal of the Moffatt Tunnel was brought before the Interstate Commerce Commission through the application of the Denver and Rio Grande Western

for permission to gain control of the Denver and Salt Lake Railroad, which in turn had a lease of the tunnel. Dispute over the rental and the completion of the cut-off line to connect Denver, through the tunnel, with Salt Lake City, had blocked the progress of the development. On account, partly, of this delay bonds of the Moffatt Tunnel District, the public body that had borne the cost of completing the tunnel, went into default on January 1; a legal action also was started in the interest of residents liable to assessment for these bonds, to have them declared invalid. See CHILD LABOR.

A conflict arose over the course of the Federal government in disposing of public lands in Colorado underlain with petroleum-bearing shale with an alleged content of 40,000,000,000 barrels of oil. Ralph S. Kelley, chief of the field division of the General Land Office, issued on September 28 a statement that petroleum producing interests were gaining concessions in such lands through political pressure and favored treatment. Secretary of the Interior Wilbur directed him to file specific charges. These were examined by the U. S. Attorney-General and declared without merit, and Mr. Kelley was discharged from his post.

A decision of the United States Circuit Court of Appeals at Denver, rendered on December 1, affirmed unanimously the validity of the lease of the Moffatt Tunnel made by the Tunnel Commission in 1926 to the Denver & Salt Lake Railroad Company. The decision recognized that the railroad had contracted for full railroad use of the tunnel and by implication, the right to sublease and to retain to itself any profits obtained through subleasing. The lease as thus affirmed provided for a rental based on an original estimated cost, for the tunnel, of \$6,720,000. The attempt of the Tunnel Commission to require rental based on the much greater actual cost of \$15,470,000 was rejected, and a protracted legal battle brought to an end, save for the possibility of an appeal to the U. S. Supreme Court. The completion of the cut-off route between Denver and Salt Lake City, reducing the rail distance intervening by 173 miles, had been suspended during the progress of the suit.

ELECTIONS. On November 4 Edward P. Costigan, Democratic candidate, was elected United States Senator by an unofficially reported vote of 180,181, to 136,236 for George H. Shaw, Republican. The seat had been filled in the 71st Congress by a Republican, Governor William H. Adams, Democrat, was reelected, defeating Robert Rockwell. The incumbents, three Republicans and one Democrat, were reelected to the House of Representatives. The lower branch of the Legislature passed to Democratic control, but the upper remained Republican. The proposals to hold a constitutional convention and to create an appointive State Board of Education were defeated.

OFFICERS. Governor, William H. Adams; Lieutenant-Governor, George M. Corlett; Secretary of State, Charles M. Armstrong; Treasurer, William D. MacGinnis; Auditor, Joseph P. Jackson; Attorney-General, Robert E. Winborn; Superintendent of Public Instruction, Katherine L. Craig.

JUDICIARY. Supreme Court: Chief Justice, Greeley W. Whitford; Associate Justices, Haslett P. Burke, John Campbell, John H. Denison, John T. Adams, Charles C. Butler, Julian H. Moore.

COLORADO, UNIVERSITY OF. A coeducational, State institution of higher learning in Boulder, Colo.; founded in 1876. The number of students enrolled for the autumn of 1930 was 3213; the summer session enrollment was 3460. There were 301 faculty members, exclusive of assistants. The total income for general maintenance from State tax fees, tuition, etc., was estimated at \$1,503,543, while \$551,025 was received for the operation of hospitals, including fees. The library contained 225,000 volumes, 17,600 pamphlets, and 2550 maps. President, George Norlin, Ph.D., LL.D.

COLORADO METHODISTS. See METHODIST EPISCOPAL CHURCH, COLORED.

COLORADO MOTION PICTURES. See MOTION PICTURES; PHOTOGRAPHY.

COLUMBIA UNIVERSITY. A nonsectarian institution for the higher education of men and women in New York City; founded in 1754. At Morningside Heights, Broadway and 116th Street, are located: Columbia College (for undergraduate men); Barnard College (for undergraduate women); Teachers College, including the departments of education and practical arts; the professional schools of law, engineering, architecture, journalism, business, library service, and optometry; and the non-professional graduate faculties of political science, philosophy, and pure science. The College of Physicians and Surgeons and the School of Dental and Oral Surgery are on West 168th Street, the College of Pharmacy on West 68th Street, Seth Low Junior College in Brooklyn, N. Y., and St. Stephen's College at Annandale-on-Hudson, N. Y. In addition, through university extension classes and the summer session, courses are offered for resident students at Morningside Heights; and other courses are offered at Camp Columbia, as well as at several extramural centres.

On the basis of the enrollment on Nov. 1, 1930, the total number of resident students for the year was estimated at 37,794, distributed as follows: Undergraduates, 3757, of whom 1959 were in Columbia College, 1002 in Barnard College, 377 in Seth Low Junior College, 116 in St. Stephen's College, and 243 in other schools; and graduate students, 3209. The distribution of professional students was as follows: Law, 571; medicine, 432; engineering, 234; architecture, 138; journalism, 150; business, 464; dental and oral surgery, 281; pharmacy, 676; optometry, 36; library service, 289; and Teachers College, 6818. 9714 students were enrolled in university classes and 237 were unclassified. Of the 13,500 non-resident students, 10,000 were registered in home-study courses and 3500 in special and extramural courses. There were 13,887 students registered for the summer session of 1930. The grand total is exclusive of 3099 duplicate registrations.

The faculty and officers of administration in 1930 numbered 2809, of whom all but 49 were in active service. This number was distributed as follows: Professors, 338; associate professors, 144; assistant professors, 237; associates, 121; instructors, 406; lecturers, 82; assistants, 232; curators, 4; associates, instructors, lecturers, and assistants in Teachers College, 262; instructors and lecturers in the college of pharmacy, 22; instructors in extension and home study, not included above, 366; instructors in summer session, not included above, 517. Officers of administration of the university numbered 65.

Among the professorial appointees for the year

1930-31 were: Joseph W. Barker (dean of the School of Engineering); Wilbert Lester Carr (Latin); Lemuel Cross Dillenback (design); Frank Lewis Eidmann (mechanical engineering); Rustin McIntosh (diseases of children); Charles J. Martin (fine arts); Elmer Drew Merrill (botany); Samuel T. Orton (neurology and neuro-pathology); Franz Schrader (zoology); George B. Karelitz (mechanical engineering); Lowell Pierson Beveridge (music); Crawford F. Failey (biological chemistry); and Salo Baron (Jewish history, literature, and institutions). The visiting professors appointed for the year 1930-31 were: William B. Boyd, University of Glasgow; Karl M. Dallenbach, Cornell University; Jan J. L. Duyvendak, University of Leyden; Edmond Faral, Collège de France; William Leonard Langer, Harvard University; Sten Bodvar Lillegren, University of Greifswald; William W. McClelland, St. Andrew's University; Paul Merker, University of Breslau; Albert Jay Nock; John K. Norton, director of the division of research, National Education Association; Fortunat Strowski, Université de Paris; and John D. Willard, field representative, American Association for Adult Education.

In connection with the celebration of the 175th anniversary of the granting of the royal charter by which King's College was established in the province of New York, there was a series of lectures from October, 1929, to March, 1930, outlining the progress of the last quarter century in various branches of knowledge. Other important events of the year included the purchase of the invaluable library built up in the field of economic history, theory, and practice over half a century by Prof. Edwin R. A. Seligman; the dedication of the New York State Psychiatric Institute and Hospital at the Medical Centre; the establishment of a professorship in memory of Robert Johnston Niven to make possible bringing to the university distinguished men of letters and scholars who by their presence would give new stimulus and direction to the study of the humanities; the completion and equipment of the extension to Schermerhorn Hall; the beginning of construction of a residence hall for students at the Medical Centre; and the purchase of the King's Crown Hotel on West 116th Street.

The capital endowment in 1930, excluding value of plant (including Barnard College, Teachers College, College of Pharmacy, and St. Stephen's College), was \$78,513,531; the estimated total resources as of June 30, 1930 (including Barnard College, Teachers College, and College of Pharmacy), were \$137,720,023; and the annual budget for 1930-31 (including Barnard College, Teachers College, College of Pharmacy, and St. Stephen's College) was \$16,523,809. During 1929-30 the university received gifts in money representing a total of \$4,242,991. The principal additions to general endowment were \$370,000 from the estate of Amos F. Eno and \$13,500 from the Alumni Fund Committee. The chief additions to special endowments were the gift from an anonymous donor of \$90,380 to establish the Stanwood Cockey Lodge Foundation; \$63,100 from the estate of Frederick Bertuch to establish the Bertuch Fund; \$200,000 from the estate of Charlotte de Sers to establish the Robert Johnston Niven Fund. There was also a gift of \$109,000 from the late William Boyce Thompson for the departments of civil engineering, mining, and metallurgy, and substantial gifts

from many donors for various research projects. Gifts to income totaled \$1,303,790. The library contained 1,214,524 volumes. President, Nicholas Murray Butler, Ph.D., Hon.D., LL.D., Litt.D.

COMETS. See ASTRONOMY.

COMMISSION PLAN. See MUNICIPAL GOVERNMENT.

COMMODITY PRICES. See BUSINESS REVIEW; FINANCIAL REVIEW.

COMMON COLD. See MEDICINE, PROGRESS OF.

COMMONWEALTH FUND FELLOWSHIPS. See INTERNATIONALISM.

COMMONWEALTH FUND SCHOLARSHIPS. See UNIVERSITIES AND COLLEGES.

COMMUNISM. A world shaken by an abnormal combination of economic, political, and social convulsions provided fertile ground for the growth of the international Communist movement in 1930. Except in Germany, the preceding decade had witnessed a general recession of Communist strength from the peak reached in the immediate postwar years in Europe and in the other industrial nations of the world. The widespread unemployment and want accompanying the economic depression of 1929 and 1930 resulted, on the whole, in a revival of Communist activities and a growth in membership. Communist gains, however, were largely offset by a corresponding growth of Fascist and other anti-Communist groups, while democratic and republican parties lost ground, relatively speaking, to both Communists and Fascists.

In India, the Far East, and Latin America, the agents of the Communist International, which had headquarters in Moscow, derived support from both the economic suffering and growing nationalism of the native populations. Communists played an apparently important part in inciting internal disorders in India, the Afridi raids on the Northwest frontier, native uprisings in Indo-China, the wholesale depredations of peasant and bandit armies in Central and Southern China, and increasing unrest in the Dutch East Indies and among the submerged Indians and mestizos of Latin America. Communist propaganda was likewise held responsible for minor disorders in Turkey and among Negro miners in South Africa.

The difficulties of gauging the strength of the Communist movement were increased by the tendency among governmental authorities to attribute all forms of opposition to Communist influence. Indisputable evidence of the work of Bolshevik agents was furnished, however, by British authorities on the Indian border, and by French military chiefs in French Indo-China. A report on the work of Russian-trained Communist agitators in connection with political and industrial disorders in India and other countries was made by Solomon A. Lozovsky, general secretary of the Red International of Trade Unions, at a Communist International convention in Russia during the summer. World-wide unemployment demonstrations were held under Communist auspices and on orders from Moscow on Mar. 6, 1930, and again in connection with the annual May Day ceremonies.

Mexico severed diplomatic relations with Soviet Russia during the year, on the ground that Communist activities in Mexico and demonstrations before Mexican embassies and consulates in the United States and in Latin America were inspired from Moscow. In France and Great Britain

there were demands for similar action by way of retaliation for Russian-directed Communist propaganda in both countries and their colonies. In this connection, it is interesting to note that the Soviet Government's policy of disavowing responsibility for actions of the Communist International was rendered wholly untenable by developments in Russia. The dismissal on Dec 19, 1930, of Alexei Rykov, president of the People's Council of Commissars, by Josef Stalin, Communist dictator and general-secretary of the Executive Committee of the Russian Communist party, confirmed the contention of non-Russian diplomats that the Soviet Government and the Russian Communist party were one and the same thing. Rykov's office corresponded to that of Premier of Soviet Russia, while Stalin held no official connection with the Soviet Government.

It was widely charged in Europe and America that the flood of low-priced exports with which the Soviet Government demoralized a number of important world markets during the year was calculated to promote industrial maladjustment and political unrest in the capitalistic countries. Russia's need of foreign currency for the purchase of foreign machinery and technical aid was considered by other observers sufficiently desperate to explain the dumping of Soviet exports on world markets at whatever prices they would bring.

COMMUNISM IN THE UNITED STATES. The best evidence indicated that Communism gained comparatively few active adherents in the United States in 1930, despite a vigorous effort to check the steady decline in dues-paying members characteristic of the movement since 1919. The three main factions within the Communist fold varied their internal quarrels with intermittent demonstrations against capitalism and imperialism, in general, and against various government, municipal, and foreign diplomatic and consular officials, in particular. A Communist demonstration before the British Consulate in New York City on June 28, 1930, developed into a battle royal between rival Communist factions. In general, Communist influence within the American labor movement reached its lowest ebb since 1919. In claiming 15,000 members for the Communist movement in the United States, the Moscow *Pravda*, mouthpiece of the Communist International, declared on July 5, 1930, that of this total only 1500 members were organized "within 140 factory cells."

The number of Communist members and sympathizers in the United States was estimated at 500,000 by Representative Hamilton Fish, of New York, chairman of a special Congressional committee appointed to investigate Bolshevik activities. In a radio address on Nov. 29, 1930, Mr. Fish said that in the 1930 elections Communist candidates for Governor or United States Senator in less than half the States of the Union where they were on the ballots, polled an aggregate of about 100,000 votes. In New York City, 16,462 votes were cast for the Communist State ticket. Mr. Fish declared that about 70 per cent of the Communists in the United States were aliens and unable to vote. The actual dues-paying membership of the various Communist factions was estimated at between 10,000 and 12,000 by William Z. Foster, head of the Workers' (Communist) Party of America, in testifying before the Fish committee in Washington December 5.

Most competent non-Communist authorities on the subject placed the membership of the American party in 1930 at under 10,000.

Attention was directed to the Communist movement in the United States by the unemployment demonstrations of Mar. 6, 1930, in which the Communists were successful in enlisting large numbers of idle non-Communists. Demonstrations took place in 38 American cities, according to a survey by the American Civil Liberties Union. In 22 cities, they were prohibited or broken up or the participants clashed with the police. A total of 256 persons were arrested and 155 demonstrators and bystanders were injured seriously enough to require medical attention. Serious charges were lodged against the leaders only in New York City, where Foster and several associates were sentenced to three years in prison, in Buffalo, and Los Angeles. Foster and his aids were paroled within a few months, however. Additional Communist demonstrations were held in various American cities on May 1, but with little disorder.

One result of these demonstrations and of the increased violence displayed by the Communist "regulars" under Foster's leadership in the preceding months was the appointment of the Fish Congressional committee to investigate Communist activities. The committee continued its inquiry in various sections of the country throughout the year. Indications were that in 1931 it would recommend legislation curbing Communist activities and placing them again under the jurisdiction of the Department of Justice, whose authority to suppress revolutionary activities was rescinded in 1925. On May 2, 1930, Police Commissioner Grover A. Whalen of New York City made public documents purporting to implicate the Amtorg Trading Corporation, the Soviet commercial agency in the United States, as an instrument of subversive Communist propaganda. The documents were denounced as forgeries by Amtorg officials and were finally accepted as such, but not before the Amtorg representatives in New York City had been called before the Fish committee in July and the Russian press had threatened to terminate Soviet purchases in the United States.

COMMUNISM IN EUROPE. Outstanding developments with regard to European Communism during the year were the important gains made by the German Communists in the general elections of September 14, and the violent anti-Communist movement in Finland, provoked by increasing Communist activities, which drove Bolshevism completely underground. German Communists increased their strength in the Reichstag from 54 to 76 seats and polled approximately 4,587,000 votes, as against 6,400,000 by Adolph Hitler's Fascists and 8,572,000 by the Social Democrats, the strongest party. Subversive Communist organizations were uncovered during the year in Rumania, Hungary, and Italy. In most other European countries, where Communism enjoyed legal standing as a political party, moderate or insignificant gains were reported. Great Britain continued to show a remarkable immunity to Communist propaganda, despite the establishment of a Communist newspaper in London said to be subsidized from Moscow. In the Norwegian general elections on October 20 the Communist vote shrank to 22,000 from 40,070 in the preceding elections. See RUSSIA, GERMANY, FINLAND, CHINA, INDIA, TURKEY, RUMANIA, ITALY, HUN-

GARY, FRENCH INDO-CHINA, JAPAN, AUSTRALIA, MEXICO, FRANCE, under *History*, and *SOCIALISM*.

COMORO ISLANDS. See MAYOTTE AND COMORO ISLANDS.

COMPANY UNIONS. See TRADE UNION.

COMPENSATION LAWS. See WORKMEN'S COMPENSATION.

COMSTOCK, ANNA BOTSFORD. An American naturalist, died in Ithaca, N. Y., Aug. 24, 1930. She was born in Otto, N. Y., Sept. 1, 1854, and was graduated from Cornell University in 1878. In the latter year she was married to Prof. John Henry Comstock, the entomologist, with whom she collaborated in writing *How to Know the Butterflies*. She was assistant professor of nature study at Cornell from 1913 to 1920 and full professor from 1920 to 1922. She also edited the *Nature Study Review* from 1917 to 1923, and was noted as a wood engraver. At the time of her death she was associate director of the American Nature Association. In 1923 she was chosen by the National League of Women Voters as one of the 12 greatest living American women. Her works include: *Ways of the Sir-Footed* (1903); *How to Keep Bees* (1905); *Confessions to a Heathen Idol* (1906); *Handbook of Nature Study* (1911); *The Pet Book* (1914); and *Bird, Animal, Tree, and Plant Notebooks* (1914).

CONCERTS. See MUSIC.

CONCILIATION. INTERNATIONAL. See ARBITRATION. INTERNATIONAL.

CONGO, BELGIAN. A Belgian colony in Central Africa, formerly the Congo Free State, which was annexed to Belgium in 1908. Area, estimated at 918,000 square miles; the native (Bantu) population is placed at 10,000,000. On Jan. 1, 1929, the white population numbered 23,276, including 15,900 Belgians. The chief city and former capital is Boma; by a royal decree of 1923, the capital was transferred to Leopoldville (population, 1620). Other important towns are Elizabethville, Stanleyville, and Coquilhatville. Catholic and Protestant bodies carry on missionary and educational work. About 231,684 children were in elementary schools in 1929.

Primitive agriculture is developing under Government supervision. Cattle thrive in the highlands of Katanga, Ituri, and Kivu. The Katanga district is also one of the world's most important sources of copper, the production in 1929 reaching 136,000 tons. Gold, diamonds, radium, cobalt, coal, and tin also are mined and iron, platinum, palladium, vanadium, zinc, and bauxite are known to exist. Important helium supplies were reported discovered in 1930.

Imports in 1929 were valued at 1,943,000,000 Belgian francs; exports, 1,444,000,000 francs. Leading imports, in order of the 1928 value, were machinery, provisions, and cotton goods. Chief exports, by quantity, were copper and copper ore, palm nuts, palm oil, copal (resins), cotton, tin, rubber, and diamonds. The Belgian franc in 1929 and 1930 exchanged at \$0.0278.

The budget for 1930, as presented to the Belgian Senate, estimated receipts at 690,810,000 francs and expenditures at 690,383,121 francs. Despite poor business conditions in the Congo in 1929, revenues exceeded the budget estimates. The public debt as of Dec. 31, 1927, amounted to 1,893,050,983 francs. Railway lines in operation at the beginning of 1929 totaled 2256 miles and the mileage at the end of 1930 was estimated at 3800. Completion of the railway from Lobito

Bay to Katanga in 1930 was expected to increase greatly the mineral output. Highways extended over 9000 miles, some 200 steam vessels provided transportation on thousands of miles of navigable rivers, and the chief administrative centres were connected by air lines. The colony is administered by a governor-general, appointed by the crown. Governor-General in 1930, Lieutenant-General Tilkens (appointed Dec. 27, 1927).

The districts of RUANDA-URUNDI, formerly in German East Africa, were turned over to Belgium as mandatory of the League of Nations and in 1925 were united administratively with the Congo. The area is 20,550 square miles and cattle raising is the main occupation. Budget estimates placed expenditures in 1930 at 36,441,000 francs and revenues at 36,687,000 francs. The death of 40,000 natives from famine in Ruanda Province was reported Aug. 22, 1930, by Bishop Claes, chief missionary of the Belgian Congo. Thousands of other natives emigrated to Uganda, Bishop Claes said. See BELGIUM under *History*.

CONGO, FRENCH. See FRENCH EQUATORIAL AFRICA.

CONGO FREE STATE. See CONGO, BELGIAN.

CONGREGATIONALISM. A religious denomination founded in the United States by the Pilgrims in Plymouth, Mass., in 1620 under the leadership of Brewster, Bradford, and Winslow. The origin of this movement lay in the Separatist activity in England. The Puritans of Massachusetts Bay followed a similar tendency and, as a result, the essential elements of Separatism and Puritanism were combined in Congregationalism. In this denomination, each church holds the right to frame its own statement of belief, and the policy of the denomination, as a whole, represents adaptation to conditions rather than accord with a theory of church government. The national council, by which the administrative affairs of the church are carried on, has no ecclesiastical authority, but includes ministerial and lay delegates elected by the State conferences and district associations.

The national council meets biennially, the session in 1929 having been held May 22-June 3 in Detroit, Mich. The principal feature of this meeting was the approval by the council of a plan of union with the Christian Church, which in turn was concurred in by the convention of the Christian Church on Oct. 25, 1929, in Piqua, Ohio. The plan provides that the membership of the National Council of Congregational Churches and the membership of the General Convention of the Christian Church shall constitute the voting membership of the General Council of the Congregational and Christian Churches, in which body the two denominations shall merge such interests as do not require the legal attention of either of the separate bodies, each of which will maintain its existence for necessary separate action for the time being. Provision also is made for the common administration of all benevolent activities, including home and foreign missions, religious education, and the like. Both bodies throughout their histories have been democratic in organization, and the plan of union provides for full local autonomy in the local church and in groups of churches associated together. The first meeting of the general council was called to meet in Seattle, Wash., June 25-July 3, 1931.

Statistics of the denomination as of Jan. 1, 1930, showed 5419 churches, 5629 ministers, and a church membership of 940,802. There were 3068

young people's societies, with a membership of 151,903. The Sunday-school enrollment was 713,810. The total raised for all benevolences was \$4,105,987, and the home expenses of the church were \$21,521,887.

The American Board of Commissioners for Foreign Missions is the oldest foreign-missionary society in America, having been organized June 29, 1810. On Jan. 1, 1930, there were 17 missions under 12 different flags; the stations connected with these missions numbered 97 and the out-stations 1641. The missionaries holding life appointments numbered 650 and included 148 ordained men, 76 unordained men, 211 wives, and 215 single women. There were also 91 associates serving for shorter periods, bringing the total number of missionaries up to 741, while native workers numbered 6183. Religious services were conducted in 2828 places; the organized churches numbered 819, with 102,864 communicants. The total church constituency numbered 300,249; Sunday schools, 1380; theological seminaries and training schools, 23, with an attendance of 1683 students; colleges, 11, with 4166 students; secondary schools, 80, and primary and elementary schools, 1243, with a total enrollment of 83,061. There were 26 hospitals and 56 dispensaries, with a staff of 48 physicians and 29 foreign nurses. Total expenditures of the board for the year ending Aug. 31, 1929, were \$2,133,752.

The field of the American Missionary Association included Negroes, Indians, and mountaineers in the South and Southwest; Orientals and Indians in the West; Porto Ricans, Mexicans, and Hawaiians. Statistics of the association showed that in 1928-29 there were 202 churches with 10,003 members and 24 schools with an enrollment of 5988 pupils. Expenditures during the same period amounted to \$1,283,703. The Congregational Home Missionary Society with its affiliate, the Congregational Sunday School Extension Society, organizes schools and churches and assists in the commissioning and support of pastors in four-fifths of the territory of the United States. In the remainder of the country similar work is done by independent State conferences. In 1929 these societies helped to maintain 602 churches and preaching stations, having a total membership of 31,010, and received 3166 persons into church membership; 519 home missionaries, including student summer workers, were enrolled. Expenditures amounted to \$495,513, and total receipts to \$499,371.

The Annuity Fund for Congregational Ministers was reported to have assets totaling \$8,518,489; the membership was 2472; and annuity payments amounted to \$104,670. The Congregational Church Building Society received \$561,316 in 1929 for current use and voted 202 church grants and loans and 31 parsonage loans amounting to \$601,371. Among the theological seminaries with which the denomination was affiliated were: The Chicago Theological Seminary; Divinity School of Yale University; Hartford Seminary; Oberlin Graduate School of Theology; Atlanta Theological Seminary Foundation; Union Theological College (Chicago); and Pacific School of Religion. In addition there were 41 colleges which have had some historical relation to Congregationalism, although a number of them are now undenominational.

The fifth decennial international council of the Congregational churches of the world was held in Bournemouth, England, July 1-8, 1930. This

council was attended by delegates from 15 different countries, 150 of them representing the churches of the United States. It consisted chiefly of fellowship and inspirational addresses, the principal topics under discussion being church union, world peace, and prohibition. Steps also were taken for a moderate degree of executive activity during the ensuing ten years, special provision being made for visits of officers of the international council to various groups of Congregational churches in different parts of the world. The accompanying table, reprinted from the *Congregational Year Book* for 1929, gives statistics of international Congregationalism:

INTERNATIONAL CONGREGATIONALISM

| Countries | Churches, Chapels, and Stations | Members of Churches | Members of Sunday Schools |
|-------------------------------------|--|---------------------------|------------------------------------|
| Africa ^b | 1,356 | 49,830 | 30,797 |
| Australia and New Zealand | 516 | 21,187 | 34,016 |
| Brazil ^c | 163 | 3,589 | 7,178 |
| British Guiana | 46 | 4,319 | 4,752 |
| Bulgaria ^a | 40 | 1,443 | 2,207 |
| Canada ^b | 7,599 | 646,948 | 634,432 |
| China ^b | 1,067 | 33,089 | 10,609 |
| Czechoslovakia ^b | 150 | 3,094 | 1,565 |
| England and Wales | 3,469 | 314,082 | 465,810 |
| India and Ceylon ^b | 1,582 | 44,918 | 52,554 |
| Ireland | 52 | 2,148 | 3,886 |
| Jamaica | 46 | 3,139 | 3,472 |
| Japan ^b | 281 | 27,839 | 22,623 |
| Madagascar ^b | 874 | 42,488 | 38,304 |
| Mexico ^b | 25 | 563 | 1,040 |
| Micronesia ^b | 76 | 3,214 | 4,086 |
| Newfoundland | 16 | 390 | 352 |
| Papua ^b | 81 | 3,771 | 7,855 |
| Philippines ^b | 61 | 3,963 | 2,602 |
| Scotland | 165 | 37,882 | 25,421 |
| South Seas ^b | 292 | 19,708 | 17,368 |
| Spain ^b | 8 | 349 | 370 |
| Turkey, Greece, and Syria | 66 | 3,584 | 7,719 |
| United States | 5,419 | 940,562 | 713,676 |
| Totals | 23,453 | 2,212,699 | 2,092,685 |

^a United Church. Comprises the former Presbyterian, Methodist, and Congregational churches.

^b Includes reports of London Missionary Society and American Board.

^c Repeated from last Year-Book.

The headquarters of the national council of the Congregational churches are at 287 Fourth Avenue, New York City, while the Congregational Publishing Society maintains branches at 14 Beacon Street, Boston, and at 19 South La-Salle Street, Chicago. The officers of the national council for 1928-30 were: Moderator, Dr. Fred B. Smith, New York City; associate moderator, Franklin Warner, White Plains, N. Y.; secretary, the Rev. Charles E. Burton, New York City; and treasurer, William T. Boulton, New York City.

CONGRESS. See UNITED STATES.

CONNECTICUT. POPULATION. According to the Fifteenth Census the population of the State on Apr. 1, 1930, was 1,606,903. The population on Jan. 1, 1920, was 1,380,631. The capital is Hartford, population (1930) 164,072, (1920) 138,036. Other cities of over 100,000 were: New Haven (1930) 162,655, (1920) 162,537; Bridgeport (1930) 146,716, (1920) 143,555.

AGRICULTURE. The table in the next column gives the acreage, production, and value of the principal crops in 1929, and 1930.

Farms in the State numbered 17,481 in 1930, their total having declined greatly from 23,240 for 1925 and 22,655 at the census of 1920.

| Crop | Year | Acreage | Prod. Bu. | Value |
|-------------|------|---------|-------------------------|--------------|
| Hay | 1930 | 306,000 | 429,000 ^a | \$ 8,618,000 |
| | 1929 | 364,000 | 527,000 ^a | 10,000,000 |
| Tobacco .. | 1930 | 23,400 | 32,105,000 ^b | 12,521,000 |
| | 1929 | 20,800 | 28,496,000 ^b | 13,678,000 |
| Corn | 1930 | 54,000 | 2,268,000 | 2,381,000 |
| | 1929 | 53,000 | 2,279,000 | 2,507,000 |
| Potatoes .. | 1930 | 14,000 | 2,660,000 | 3,059,000 |
| | 1929 | 14,000 | 1,820,000 | 3,276,000 |
| Apples | 1930 | ..... | 1,936,000 | 1,742,000 |
| | 1929 | ..... | 990,000 | 1,782,000 |

^a Tons. ^b Pounds.

MINERAL PRODUCTION. Clay products and the output of stone quarries formed in 1928, as normally, the bulk of the relatively small mineral industry of the State. The production of stone rose to 2,852,980 short tons for 1928, from 2,295,360 for 1927; by value to \$3,743,572 for 1928, from \$3,202,040 for 1927. The value of the clay products was, for 1928, \$2,558,384; for 1927, \$2,652,640. The production of lime attained the value of \$529,936 for 1928, and was below that of 1927, \$608,550. The total value of the mineral products of the State was, for 1928, \$7,599,655; for 1927, \$7,299,100.

FINANCE. State expenditures in the year ended June 30, 1929, as reported by the U. S. Department of Commerce, were: for maintaining and operating governmental departments, \$19,562,872 (of which \$1,751,776 was for local education); for conducting public-service enterprises, \$14,038; for interest on debt, \$656,865; for improvements, \$14,212,099; total, \$34,445,874 (of which \$14,600,249 was for highways, \$2,685,471 being for maintenance and \$1,914,778 for construction). Revenues were \$36,950,436. Of these, property and special taxes furnished 27.2 per cent; departmental earnings and compensation to the State for officials' services, 7.6; sales of licenses, 53.9 (in which was included State revenue from the gasoline sales tax, totaling \$3,666,501). The funded debt of the State on June 30, 1929, was \$16,291,100; net of sinking-fund assets, the debt was \$1,911,478. On taxable property assessed at \$2,803,670,028 were levied in the fiscal year State taxes of \$1,852,001.

TRANSPORTATION. The number of miles of railroad line under operation on Jan. 1, 1930, was 968.33. No further construction of railroad lines in 1930 was reported.

EDUCATION. The course of required study at the State normal school, for intending teachers, was extended to 3 years, from 2 years. For the academic year 1929-1930, the number of individuals of school age in the State was reported as 384,530. There were enrolled in the public schools in that year 312,782 pupils. Of these, 249,354 were in common schools or elementary grades and 63,428 were in junior high schools or in high schools. The expenditures of the year for public-school education were: current, \$28,164,164; total, including capital outlay, \$35,336,400. The year's salaries of teachers averaged \$1577 for the elementary and \$2218 for the high-school group.

CHARITIES AND CORRECTIONS. A Department of Public Welfare, established in 1919, inspects institutions of child care, jails, and county activities for dealing with delinquents and dependents. It promotes the organization of Juvenile Courts throughout the State. The chief of the State's charitable and correctional institutions operating in 1930 were the State Training School for Boys, the State Training School for Girls, Confederate

Soldiers' Home, State Hospital (mental), the State Training School for Mental Defectives, Academy for the Blind, and School for the Deaf.

POLITICAL AND OTHER EVENTS. The State Public Utilities Commission and the railroads in the State were attacked for not having observed a statute requiring that a railroad abolish its most dangerous grade crossings at the rate of one a year for every 50 miles of line. This attack was made by Albert Levitt, a professor of law in Brooklyn, N. Y., with a home in Connecticut, who had opposed the control of J. H. Roraback in the State Republican party organization. He obtained a mandamus to require the Attorney-General to bring proceedings to oust the members of the commission for failure to require compliance with the neglected statute. The case was then appealed to the State Supreme Court of Errors. While this appeal was pending the New Haven system, the chief railroad in the State, agreed with the Public Utilities Commission to eliminate several of the worst grade crossings in Hartford at an anticipated cost of about \$1,750,000 to be borne in part by the city. The Connecticut School for Boys, a State institution for delinquents, was subjected to an investigation by the Department of Welfare because of allegations of harsh treatment and the reported violent death of a boy inmate in February.

ELECTIONS. Dr. Wilbur L. Cross, dean-emeritus of the Yale Graduate School, who at the age of 68 had made a remarkable campaign as Democratic candidate for Governor, opposing Prohibition, was elected by a vote (unofficial total) of 216,047 to 209,425 for Lieutenant-Governor Ernest E. Rogers, his Republican opponent. Two Democrats and three Republicans were elected Representatives. The Legislature remained Republican.

OFFICERS. Governor, John H. Trumbull; Secretary of State, William L. Higgins; Treasurer, Samuel R. Spencer; Comptroller, F. M. Salmon; Attorney-General, Benjamin W. Alling.

JUDICIARY. Supreme Court of Errors: Chief Justice, C. W. Wheeler; Associate Judges, W. M. Maltbie, F. D. Haines, G. E. Hinman, John W. Banks.

CONNECTICUT COLLEGE. A liberal college of arts and sciences for the higher education of women in New London, Conn.; chartered in 1911 by the State of Connecticut. The enrollment for the autumn of 1930 was 567. The faculty numbered 60 members. The productive funds amounted to \$1,200,000, and the budget for the year, not including building operations, was more than \$500,000. There were 41,000 volumes in the library. During 1930 the college received approximately \$35,000 from the bequest of Mrs. Rienzi Robinson to establish scholarships which were awarded for the first time in September, and more than \$100,000 from the bequest of Lucretia Allyn to establish an endowed professorship, the first in the college. President, Katherine Blunt, Ph.D.

CONNELLEY, WILLIAM ELSEY. An American author, died in Topeka, Kans., July 15, 1930. He was born in Johnson Co., Ky., Mar 15, 1855. Largely self-educated, he had been a wholesale lumber merchant, a banker, and an oil producer. In 1905 he was instrumental in the formation of the Kansas Oil Producers' Association which, acting against the Standard Oil Company, brought about the dissolution of that corporation by the United States Supreme Court. He was also secretary for several years of the Kansas State His-

torical Society and president during 1921-22 of the Mississippi Valley Historical Association. His published works on the early history of Kansas, Indian traditions, and folklore include: *The Provisional Government of Nebraska Territory* (1899); *Wyandot Folk-Lore* (1899); *Kansas Territorial Governors* (1900); *John Brown—the Story of the Last of the Puritans* (1900); *Doniphan's Expedition* (1907); *Quantrill and the Border Wars* (1909); *Eastern Kentucky Papers* (1910); *History of Kansas* (5 vols., 1917); and *History of Kentucky* (5 vols., 1922). He was greatly assisted in his researches by his knowledge of the Indian languages, as exemplified in his publication of a Wyandot vocabulary.

CONSERVATION. See FORESTRY.

CONSTRUCTION. See BUILDING; ARCHITECTURE.

CONSUMERS' SOCIETIES. See COÖPERATION.

COOK, WILLIAM WILSON. An American lawyer, died in Port Chester, N. Y., June 4, 1930. He was born in Hillsdale, Mich., Apr. 16, 1858, and was graduated from the University of Michigan in 1880, receiving a law degree there in 1882. Admitted to the New York bar in 1883, he practiced as a corporation lawyer until 1921. His books on law include *A Treatise on the Law of Corporations Having a Capital Stock* (8th ed., 1923); *Power and Responsibility of the American Bar* (1923); *Principles of Corporation Law* (1924); *American Institutions and Their Preservation* (1927). He made numerous gifts to the University of Michigan and, in his will, provided for a trust fund for the University law school estimated at \$12,000,000.

COÖPERATION. **CONSUMERS' COÖPERATIVES IN THE UNITED STATES.** For the year 1929 the federal Bureau of Labor Statistics made a study of 656 American coöperative societies, of which 604 were consumers, distributive or service groups, and 52 were the store departments of coöperative marketing associations. These 656 societies operated 845 establishments and employed 4046 full-time workers. The combined membership at the end of 1929 was 204,368. About 70 per cent of the total number of societies and 60 per cent of the membership were to be found in the North Central States. These consumers' societies had an aggregate capital stock of \$7,987,090, and reserves of \$4,324,375. Their business for 1929 amounted to \$64,665,369, of which the net earnings were \$2,980,481. Patronage dividends for 1929 totaled \$1,746,466. Table I (page 191) indicates types of business engaged in consumers' coöperative societies and the number of workers they employed. Table II indicates the amount of business done by the various types of consumers societies for the years 1926-29.

WHOLESALE COÖPERATIVES. In 1929, in the United States, there made their appearance two new wholesale coöperative organizations, viz.: the Eastern Coöperative Wholesale and the Union Oil Company. This second is a coöperative wholesale organization designed to serve the farmers' coöperative oil societies of the Middle West. The *Monthly Labor Review* reported that there were four similar organizations already in existence: the Farmers' Union State Exchange in Omaha, Nebraska, organized in 1914; the Coöperative Central Exchange, organized in 1917; the Minnesota Co-op Oil Company, organized in 1927; and the Grange Coöperative Wholesale organized in 1919. The new Eastern Coöperative Whole-

sale, in 1929, was doing a jobbing business only, not yet having extended its activity into warehousing. It was taking care of orders for flour, feed, groceries, oil, and the like. There were affiliated with it ten coöperative societies and, in addition, thirty-five unaffiliated societies were making their purchases through it. The *Monthly Labor Review* in presenting the activities of eight such wholesale coöperatives for the year 1929, indicated that the total sales among them was \$22,501,900, of which \$416,591 was net profits and \$297,036 was divided as patronage dividends.

13.0 per cent, respectively, of the total production in those lines.

Subsequently, plans were developed in the United States for establishing nation-wide coöperative sales agencies, with Federal Farm Board assistance. Associations were formed for the marketing of grain, livestock, wool, cotton, pecans, beans, and sugar beets, of which the first four were in operation during the first year.

COÖPERATIVE LEAGUE OF THE UNITED STATES. This society, which was organized in 1915 and which in 1920 reported a total of forty societies coöperating, in 1928 indicated that its member-

TABLE I—LINES OF BUSINESS OF AMERICAN CONSUMERS' COÖPERATIVE SOCIETIES, AND NUMBER OF WORKERS EMPLOYED

| Type of society | Number of societies reporting | Establishments operated in main line of business | Other establishments | Employees | |
|--|-------------------------------|--|----------------------|-------------------------------|--------|
| | | | | Number of societies reporting | Number |
| Distributive departments of marketing associations | 52 | 53 | .. | 51 | 309 |
| Retail store societies dealing in— | | | | | |
| General merchandise | 299 | 345 | 13 | 290 | 1,351 |
| Groceries | 60 | 59 | 5 | 55 | 198 |
| Groceries and meat | 48 | 81 | 18 | 47 | 479 |
| Dry goods | 1 | 1 | .. | 1 | 1 |
| Coal | 2 | 2 | .. | 2 | 5 |
| Students' supplies | 12 | 18 | 2 | 12 | 188 |
| Total | 422 | 506 | 38 | 407 | 2,222 |
| Gasoline filling stations | 146 | 198 | .. | 111 | 565 |
| Bakeries | 8 | 8 | 2 | 8 | 133 |
| Creameries | 2 | 3 | .. | 2 | 435 |
| Restaurants | 6 | 11 | 6 | 6 | 266 |
| Boarding houses | 16 | 16 | .. | 16 | 84 |
| Laundries | 2 | 2 | .. | 2 | 26 |
| Funeral associations | 2 | 2 | .. | 2 | 6 |
| Grand total | 656 | 799 | 46 | 605 | 4,046. |

TABLE II—AMOUNT OF BUSINESS DONE BY VARIOUS TYPES OF AMERICAN CONSUMERS' SOCIETIES, 1926 TO 1929

| Type of society | 1926 | | 1927 | | 1928 | | 1929 | |
|---|-------------------------------|--------------------|-------------------------------|--------------------|-------------------------------|--------------------|-------------------------------|--------------------|
| | Number of societies reporting | Amount of business | Number of societies reporting | Amount of business | Number of societies reporting | Amount of business | Number of societies reporting | Amount of business |
| Distributive departments of marketing associations .. | 28 | \$ 4,468,886 | 29 | \$ 5,552,868 | 36 | \$ 7,304,882 | 51 | \$10,058,195 |
| Retail store societies | 295 | 27,073,211 | 316 | 28,475,404 | 361 | 32,917,283 | 416 | 37,697,560 |
| Gasoline filling stations .. | 21 | 1,725,193 | 52 | 3,208,772 | 77 | 6,049,481 | 140 | 10,782,049 |
| Bakeries | 6 | 704,187 | 6 | 772,411 | 7 | 737,127 | 8 | 965,915 |
| Creameries | 1 | 3,398,659 | 1 | 3,341,740 | 2 | 3,511,542 | 2 | 3,434,527 |
| Restaurants | 3 | 855,983 | 3 | 893,390 | 5 | 1,082,550 | 6 | 1,211,236 |
| Boarding houses | 9 | 266,450 | 7 | 155,939 | 12 | 350,504 | 15 | 427,293 |
| Laundries | 2 | 34,744 | 2 | 37,509 | 2 | 37,470 | 2 | 35,422 |
| Funeral associations | 1 | 29,526 | 1 | 32,413 | 2 | 52,908 | 2 | 53,172 |
| Total | 366 | \$38,556,839 | 417 | \$42,420,446 | 504 | \$52,043,747 | 642 | \$64,665,369 |

FARM COÖPERATIVES. During the year the U. S. Department of Agriculture published "*Coöperative Marketing and Purchasing, 1920-1930*," a study in which for the first time the number of units of products handled by farm coöperative marketing associations was presented as a measure for coöperative activity. It was believed that quantities of products handled afford a more accurate measure than volume of business for determining gains and losses in coöperative processing, marketing, and purchasing.

According to this study, grain associations, including rice and dry beans, represented the largest group of the 12,000 farmers' business associations functioning in 1930, numbering 3448; followed by 2458 dairy-product, 2153 livestock, and 1384 fruit-and-vegetable associations. These groups were estimated to have handled, in the 1927-28 marketing season, 29.6; 27.0; 13.9; and

ship consisted of 116 societies which were paying full dues to the League. The League maintains an accounting bureau for the purpose of auditing books for the member societies in many of the eastern States. Only consumers' distributing, credit or service societies may become constituent members of the League. It will be observed, therefore, that marketing associations, which make up the most significant aspects of coöperation in this country, are excluded from membership on the grounds that they would detract too much attention from the problems of the consumers' societies. In the 116 societies affiliated there was to be found a total of 39,295 members with a share capital of \$2,887,986, and surpluses and reserves of \$1,444,973. Sales for 1928 totaled \$17,505,836, which was a net gain for the year of a little more than \$500,000 over the previous year.

CREDIT UNION MOVEMENT. Largely supported

by the Credit Union National Extension Bureau, the credit union movement in the United States had grown enormously in recent years. The purposes of this Bureau, which was located at Boston and which was financed by Edwin A. Filene, were as follows: to promote credit union legislation in the States; to assist in organizing credit union societies; to aid the credit union societies in the formation of State leagues; and to band these State leagues together into a national society. In view of the general unfamiliarity of the public and legislators with the requirements for a satisfactory credit union law, it was the first concern of the Bureau to prepare a standard law. Up to the end of 1930, this standard code has been passed in 32 States. Since Jan. 1, 1929, eight laws had been enacted. It would appear that most credit unions are usually formed among groups in which there is to be found some common bond, such as employment in the same plant, membership in the same organization, common nativity, etc. Thus, there were more than 200 such societies in the Federal Postal Service and 60 or more were among lodges of the Brotherhood of Railway Clerks.

COÖPERATIVE GASOLINE AND MOTOR OIL SOCIETIES. Since 1921 considerable progress has been made in the United States in the formation of co-operatively owned oil stations. It was estimated in 1930 that there were 400 such societies located for the most part in the States west of the Mississippi. The following reasons were advanced for the appearance of these coöperative groups: the almost universal use to-day of petroleum products; the small amount of capital necessary; the ease with which gasoline stations can be operated; the considerable margin between wholesale and retail prices which permits, therefore, a sizable return to consumers. It was reported that stations in operation had met with general success. For example, one such society, organized in Colorado, started in business in 1922 with 800 members and in 1930 boasted of 1400 members with a surplus of \$100,800, and dividends already paid of \$285,900. For the single year 1928 alone, dividends amounted to 26 per cent. There has also appeared a group of central purchasing co-operatives to supply the local stations. Among these may be numbered the Illinois Farm Supply Company, the Minnesota Coöperative Oil Company and the Union Oil Company. This last has an authorized capital of \$100,000 with shares of \$25 each. The programme of this particular society is of interest. It includes: a uniform name owned by the coöperatives; the handling of high-quality merchandise; coöperative advertising; co-operative buying of merchandise and equipment; the organization of new companies; development of a national chain of coöperative oil companies.

COÖPERATIVE HOUSING. In New York City, in 1920, there was organized among a group of middle-class workers a society known as Consumers' Coöperative Services, Inc. The initial project fostered by this group was a cafeteria and, in 1923, a coöperative laundry was taken over. In 1929 it was reported that the society had 3397 members and was conducting in all four cafeterias, four food shops, a bakery, and a lending library with a branch in each of the cafeterias. In 1925 this society shut up its coöperative laundry. In 1928-29 the organization reported a total business of \$612,226 with a net operating gain of \$32,530. In 1926 a part of the membership of the group organized a credit union which, in

1928, had on its books 272 members. It was reported that in 1930 the society had launched on a housing project. Plans called for the erection of a 12-story fireproof building designed to contain 66 apartments from one to four rooms each at a monthly rental of from \$25 to \$35 per room. The land and building were expected to cost \$666,000 of which \$321,000 was to be raised by first mortgage and \$140,000 by second mortgage bonds to be sold to the members. The tenants' investments, it was estimated, would total \$185,000.

LABOR BANKS. On June 30, 1930, there were operating in the United States 14 banks under labor union auspices, as compared with two such banks in 1920 and 36 such banks in 1925, when the movement was at its height. In 1930, these banks had total resources of \$69,000,000, as compared with resources of \$115,000,000 in 1925. The decline began in 1926 and had continued from year to year until then. The Brotherhood of Locomotive Engineers, which at one time owned an interest in 15 banks, was in 1930 no longer in the labor banking field. The most important bank in the group was the Federation Bank and Trust Company of New York with total resources of \$20,500,000, of which \$18,000,000 represented deposits. Second on the list stood the Amalgamated Bank of New York with total resources of \$12,800,000, of which \$11,400,000 represented deposits.

BUILDING AND LOAN ASSOCIATIONS. At the 38th annual meeting of the United States Building and Loan League, held in July, 1929, there were reported to be in existence 12,343 building and loan associations with a total membership of 12,111,209 persons and with total assets of \$8,695,154,220. The mortgage loans outstanding represented a total of \$7,787,405,383. The State of Pennsylvania headed the list and here the associations had assets of \$1,400,000,000. Ohio came second with \$1,283,000,000. New Jersey ranked third with total assets of \$1,151,000,000.

PHILIPPINES. In 1928 there were 550 agricultural coöperative associations in the Philippine Islands with a total of 90,000 members and with a total paid up capital stock of \$980,000 pesos. (The peso is worth 50 cents.) There was outstanding in loans to members in 1928 a total of 2,800,000 pesos.

COÖPERATION IN EUROPE. Data collected by the International Labor Office for 1930 indicated the continued growth of the coöperative idea in the countries of Europe. It is significant to note that in a number of the European nations, particularly Bulgaria and Great Britain, the central consumers' coöperative organization was the most important single business in the country. In Sweden, too, the Swedish Coöperative Union owned the largest flour mills of Europe while the Glasgow Coöperative Society owned the largest European bakery. In Germany the canning factory of the Coöperative Wholesale Society was the largest in the country and the same was true of the printing works operated by the German Consumers' Coöperative Organizations. It is interesting to note, too, that in Bulgaria 25 per cent of the country's sugar was handled by co-operatives. In Denmark 13 per cent of the total retail trade was coöperatively handled; 40 per cent of the cocoa trade; 25 per cent of the chocolate trade; 23 per cent of the retail food trade; 13 per cent of the wholesale food trade; 12.5 per cent of the coffee trade; 12.5 per cent of the margarine trade. In Germany 9 per cent of the lard trade was coöperatively handled and 5 per cent

of the sugar trade. In Great Britain 20 per cent of the meat trade was handled in this fashion; 15.5 per cent of the corn meal trade; 14 per cent of the sugar trade; 14 per cent of the tea trade; 14 per cent of the butter trade; 12 per cent of the bacon trade; 10 per cent of the milk trade; 8.6 per cent of the cheese imports; 8 per cent of the coal trade. In Hungary 25 per cent of the salt trade was handled in this manner; 20 per cent of the vinegar trade; 20 per cent of the gasoline trade. In Poland 11 per cent of bread production was coöperatively handled; 8 per cent of the salt trade; 6 per cent of the sugar trade; 5 per cent of the tobacco trade. In Sweden bread grains handled by coöperatives made up 25 per cent of the total. In Switzerland 10 per cent of the country's flour production was in the hands of coöperatives. Of course in agriculture the rôle of the coöperative society is of particular significance. In many nations of Europe the greater part, and in most a considerable proportion, was in the hands of coöperative supply societies. Thus, in Austria 80 per cent of seed potatoes was controlled by coöperatives. In Czechoslovakia 50 per cent of the saltpetre was thus controlled. In Sweden 25 per cent of super-phosphates was thus handled. The accompanying table indicates the scope of agricultural coöperative marketing associations in the indicated countries:

PROPORTION OF TRADE IN EACH SPECIFIED COMMODITY HANDLED THROUGH COÖPERATIVE MARKETING ASSOCIATIONS

| <i>Country and commodity</i> | <i>Per cent coöperatively handled</i> |
|-----------------------------------|---------------------------------------|
| Australia: | |
| Butter (exports) | 91.0 |
| Canada: | |
| Apples, British Columbia | 83.0 |
| Apples, Nova Scotia | 40.0 |
| Grain (exports) | 25.0 |
| Wool (exports) | 25.0 |
| Denmark: | |
| Butter (exports) | 35.0-40.0 |
| Eggs (exports) | 25.0 |
| Estonia: | |
| Butter | 84.0 |
| Eggs (exports) | 33.0 |
| Finland: | |
| Butter | 92.0 |
| Butter (exports) | 92.0 |
| Cheese | 70.0 |
| Cheese (exports) | 70.0 |
| Hungary: | |
| Honey (exports) | 63.0 |
| Iceland: | |
| All farm products (exports) | 66.7 |
| Japan: | |
| Raw silk | 6.0 |
| Latvia: | |
| Butter (exports) | 90.0 |
| Bacon (exports) | 84.0 |
| Netherlands: | |
| Butter | 65.0 |
| Cheese | 45.0 |
| Eggs | 25.0 |
| New Zealand: | |
| Butter (exports) | 92.0 |
| Butter | 80.0 |
| Palestine: | |
| Almonds | 100.0 |
| Grapes | 80.0 |
| Milk, Haifa | 70.0 |
| Milk, Tel-Aviv | 50.0 |
| Milk, Jerusalem | 25.0 |
| Oranges (exports) | 35.0 |

GREAT BRITAIN. In Great Britain there was an increase in membership in coöperative societies, over the year 1928, of 289,000 persons, with an increase in the paid in capital of \$67,834,000 and an annual business increase of \$37,583,000. During the three years 1926 to 1928, nearly 1,000,000

new persons joined the British coöperative movement. The British coöperatives are large employers of labor and in 1928 had 233,300 persons on their payrolls. In 1928 in this country there were in all 1454 societies of which 1293 were retail consumers' coöperatives, 2 were wholesale coöperatives, and 88 were workers' productive societies. The total membership in that year was 5,858,000 of which all but 50,000 were to be found in the consumers' societies. The paid in capital was \$869,000,000 divided as follows: \$608,385,000 in the retail consumers; \$237,154,000 in the wholesale societies; and \$10,229,000 in the workers' productive groups. The annual business of these three types was as follows: total, \$1,553,498,000; retail consumers, \$1,010,538,000; wholesale societies, \$501,291,000; workers' productive societies, \$18,336,000.

AGRICULTURAL COÖPERATIVES IN SCOTLAND. A government committee investigating the situation of the agricultural coöperatives in Scotland reported that there existed in 1930, 93 supply societies, 44 egg marketing societies, 19 dairy associations, 1 wool marketing society, 1 livestock society, 1 bacon factory, 1 slaughter house, and 1 association each for the purpose of marketing grain, fruit, and flour. It was the opinion of the committee that coöperative societies in this country had justified their existence and proved that coöperation for purposes of purchasing and marketing was a sound and practical method.

However, a measure of government support was important and for this reason recommendations were made for the purpose of enlisting governmental assistance. The recommendations of the committee among others were: 1. That the State should guarantee to recognize banks, loans and other drafts to approved agricultural societies up to the amount of £1,000,000 in view of the fact that the chief difficulty confronting agricultural coöperation is the inability to raise funds. 2. That a Scottish Agricultural Coöperative Federation be set up and that local societies be required to join this Federation and subscribe for shares in it. 3. That marketing contracts be adopted binding the members to deliver their crops to the association. 4. That a system of compulsory grading of products be introduced. 5. That steps be taken to protect marketing agencies against minorities which refuse to become members, that is to say, that if an association can prove that it handles not less than 75 per cent of the total production of a specified commodity, the minority group in this industry should be compelled to market through this association.

FRANCE. Since 1913 the history of French coöperation has seen great advances. In 1913 there was a total of 2980 cooperative societies with 864,922 members and sales totaling 317,000,000 francs. By the year 1928 the number of societies had increased to 3513 with a membership of 2,285,221 persons and a sales total of 3,552,883,000 francs. It is significant to note, too, that in the year 1928 there existed 52 regional unions controlling 3181 shops with a membership of 677,374. These unions reported sales amounting to 1,107,000,000 francs and a paid in capital of 66,067,000 francs. In France, membership in a coöperative society usually resides in the head of the family. It might be estimated conservatively, therefore, that the coöperative population of this country is in the neighborhood of 9,000,000 persons or almost one-fourth of the total inhabitants. Besides, many persons patron-

ize the coöperative stores without formally obtaining membership. It is generally recognized that on the continent of Europe, where coöperation looms large in the economic life, the movement serves as an effective check in the stabilizing of retail prices.

RUSSIA. In 1929 it was reported that membership in Russian coöperative societies, in the towns, included 13,800,000 members representing 70 per cent of the urban population. However, in rural communities only 31 per cent of the population had membership in coöperative societies. Russia has seen in recent years the greatest advances made in the development of the coöperative idea. Encouraged by the State—indeed coöperation is one phase of the Soviet communist programme—the coöperative movement has been steadily pressing into those activities not heretofore reached, particularly building trades, timber cutting, farm labor, and the workers in factories and infant industries. It was reported that the consumers' coöperative movement of Russia suspended the payment of patronage rebates in 1928. This was due to the fact that the coöperative societies charged below the current prices, unlike the practice in most countries. Thus, at the end of 1929 coöperative prices were 71.5 per cent lower than those of the private traders. It was reported that despite the cutting of prices by the Russian coöperatives there were still sizable margins of gain and that these profits were being employed for propaganda in cultural work. In 1926-27 the coöperative movement spent for such purposes almost \$3,000,000; but by 1938-39 this expenditure had mounted to \$15,700,000. See *AGRICULTURAL EXTENSION WORK; HORTICULTURE; GREAT BRITAIN under Industry*.

COPPER. The copper industry in 1930 was severely affected by the general worldwide industrial depression. Production and consumption, which made new high records in 1929, dropped sharply, according to the U. S. Bureau of Mines.

Although production and consumption in 1930 both were at a rate far below 1929, the decline in production lagged behind that in consumption, causing a substantial increase in stocks. Estimated stocks of refined copper at domestic refineries at the end of the year were the largest on record. Blister stocks, which first reflect any change in rate of production, were materially lower at the end of 1930 than at the end of 1929. Falling consumption and increasing stocks were accompanied by a severe drop in the price of refined copper. The price held at 17.77½ cents a pound at refinery from the middle of April, 1929, to the middle of April, 1930, when it dropped 4 cents. This drop was followed by numerous others which brought the price to a low for the year of 9.27½ cents a pound on October 23. The price jumped from 9.27½ cents a pound on November 11 to 11.40 cents a pound on November 15 and immediately started to drop again. On December 15 it was 9.77½ cents and on December 23 it was 10.07½ cents. Imports of unmanufactured copper established a new high record in 1929 while exports of metallic copper decreased; in 1930, for the first time in fifty years, imports exceeded exports.

The smelter production of copper in the United States from domestic ores in 1930, as estimated by the Bureau of Mines from reports of the smelters, was 1,375,000,000 pounds, compared with 2,003,000,000 pounds in 1929. The 1930 produc-

tion was thus 81 per cent lower than that of 1929, and was the smallest production recorded since 1922. The estimated smelter production from domestic ores for December as reported by the smelters, was approximately 100,000,000 pounds which was about 16,000,000 pounds lower than the average for the 11 months preceding. The production of new refined copper from domestic sources, determined in the same manner as smelter production, was about 1,485,000,000 pounds, compared with 1,983,000,000 pounds in 1929. In 1930 the production of new refined copper from domestic and foreign sources amounted to about 2,230,000,000 pounds, compared with 2,740,000,000 pounds in 1929—a decrease of 510,000,000 pounds or 19 per cent. The production of secondary copper by primary refineries dropped from 334,000,000 pounds in 1929 to about 250,000,000 pounds in 1930, or a decrease of 84,000,000 pounds. Thus the total primary and secondary output of copper by the refineries was 19 per cent lower in 1930 than in 1929, being about 2,480,000,000 pounds in the past year compared with 3,074,000,000 pounds in 1929.

The imports of unmanufactured copper during the calendar year 1930, according to the Bureau of Foreign and Domestic Commerce, amounted to 817,072,304 pounds, a monthly rate of 68,000,000 pounds, compared with 974,312,201 pounds for the entire year 1929, a monthly rate of 81,000,000 pounds. Imports in December totaled 55,000,000 pounds. The total imports for 1930 were estimated to show a decrease in quantity of approximately 157,000,000 pounds for the year, or a drop of about 15 per cent.

The exports of metallic copper during 1930 amounted to 744,472,936 pounds, compared with 983,126,326 pounds exported during 1929. Exports of refined copper in ingots, bars, or other forms in 1930 totaled 599,163,768 pounds, valued at \$79,691,216. Of this quantity the United Kingdom received 142,789,077 pounds, the highest amount; France was next with 141,237,293 pounds; Germany was third with 93,860,008 pounds; and Italy fourth with 83,756,062 pounds. Comparative figures for exports in 1929 were: To the United Kingdom, 175,449,512 pounds; to France, 175,264,821 pounds; to Germany, 178,879,194 pounds; to Italy, 84,491,310 pounds. Total exports in the same category in 1929 amounted to 822,453,924 pounds, valued at \$148,435,789. The 1930 exports of copper rods declined to 75,137,814 pounds, valued at \$10,958,235, as compared to shipments of 81,087,829 pounds, valued at \$14,584,737, in 1929. Exports of insulated copper wire and cable totaled 20,545,289 pounds, valued at \$4,639,577 (25,080,448 pounds, valued at \$6,176,455, in 1929); old and scrap copper, 33,875,740 pounds, valued at \$3,744,311 (37,635,489 pounds, valued at \$5,675,750, in 1929); copper wire, 15,750,425 pounds, valued at \$2,714,352 (16,868,636 pounds, valued at \$3,332,229, in 1929); and copper plates and sheets, 10,983,369 pounds, valued at \$1,876,248 (6,322,719 pounds, valued at \$1,576,383, in 1929).

Refineries in the United States reported that at the end of 1930 approximately 667,000,000 pounds of refined copper were in stock, more than double the reserve of 306,000,000 pounds at the end of 1929. The latter quantity, in turn, was well over two and one-half times the amount on hand at the end of 1928. It was estimated that stocks of blister copper at the smelters, in transit to refineries, and at refineries, and materials in process

of refining were about 371,000,000 pounds on December 31, compared with 500,000,000 pounds at the end of 1929, a decrease of 129,000,000 pounds. Total smelter and refinery stocks at the end of 1930 were 1,038,000 pounds, representing an increase of 232,000,000 pounds over stocks at the end of 1929, but 86,000,000 pounds less than the record stocks of 1920. The quantity of new refined copper withdrawn on domestic account during the year was about 1,277,000,000 pounds, compared with 1,779,000,000 pounds in 1929, a decrease of 502,000,000 pounds or 28 per cent. The method of calculating domestic withdrawals is shown in the accompanying table.

NEW REFINED COPPER WITHDRAWN FROM
TOTAL YEAR'S SUPPLY ON DOMESTIC AC-
COUNT, 1929-1930, IN POUNDS

| | 1929 | 1930 |
|---|----------------------|----------------------|
| Refinery production of new copper from domestic sources | 1,983,000,000 | 1,485,000,000 |
| Refinery production of new copper from foreign sources | 757,000,000 | 745,000,000 |
| Imports of refined copper (December, 1930, estimated) | 134,000,000 | 89,000,000 |
| Stocks of new refined copper on January 1 | 114,000,000 | 306,000,000 |
| | <u>2,988,000,000</u> | <u>2,625,000,000</u> |
| Exports of refined copper (ingots, bars, rods, or other forms) (December, 1930, estimated) .. | 903,000,000 | 681,000,000 |
| Stocks December 31 ... | 306,000,000 | 667,000,000 |
| | <u>1,209,000,000</u> | <u>1,348,000,000</u> |
| Total withdrawn on domestic account | 1,779,000,000 | 1,277,000,000 |

The same decline in production as was manifested in the United States held also throughout the world, and there were corresponding declines in prices and demand for the metal. The American Bureau of Metal Statistics reported the world production of copper, on the basis of refined copper content of blister copper, 1,769,635 short tons, as compared to 2,104,100 tons in 1929. Of the total for 1930, United States contributed 820,000 tons; Mexico, 58,535 tons; Canada, 113,004 tons; Chile and Peru, 280,554 tons; Japan, 87,924 tons; Australia, 14,658 tons; Germany, 65,060 tons; other European countries, 152,900 tons, and other countries, 177,000 tons.

Of the important developments outside of the United States mention may be made of two new refineries at Sudbury, Ontario, and the construction of a refinery at Montreal, Quebec. The Canadian production, as stated, amounted for the year to 113,004 tons, as compared with 121,151 tons in 1929 and 96,634 tons in 1928.

In the Belgian Congo the Union Minière du Haut-Katanga put its new Sogefor hydroelectric station at Lufira Falls into operation, but did not undertake any new or large expansion operations. Its output for the year was stated at 151,000 tons. In Northern Rhodesia development and expansion was well under way and it was estimated that the Roan-Antelope property would begin production at the rate of 50,000 tons of metal per year in September, 1931, while construction work was active at the N'kana mine at Bwana M'Kubwa, and at Mufulira. See GEOLOGY for discussion of Northern Rhodesia field.

In the new copper refining plants constructed improved processes continued to be introduced, and the economies which had characterized the

industry continued, especially at the large smelters and refineries. See METALLURGY. The general economic situation in connection with the copper industry as in previous years was of considerable importance in view of the artificial maintenance of a price which general opinion during 1930 seemed to consider not altogether justifiable, and serving to restrict the use of the metal. Then, too, the increased output which was bound to come from Canada and Africa naturally was a source of concern not only to American producers, but to the industry as a whole and particularly to consumers who believed they could buy cheaper in a not distant future. With Belgian Congo and Northern Rhodesia increasing their outputs, it was realized that further adjustments might be required.

COPYRIGHT. Registrations for the fiscal year 1929-30, according to the report of the United States Register of Copyrights, numbered 172,792, as compared with 161,959 for the preceding year. Of these, 61,835 were classed as books, but included pamphlets, leaflets, and contributions to periodicals, those printed in the United States numbering 55,943, those printed abroad in a foreign language, 4604, while the remainder, 1228, were English books registered for *ad interim* copyright. The chief classes of the remaining registrations, in the order of numerical importance, were: Periodicals, 43,039 numbers; musical compositions, 32,129; prints and pictorial illustrations, 9170; photographs, 4311; dramatic or dramatico-musical compositions, 5754; works of art, including models or designs, 2734; maps, 2554; drawings or plastic works of a scientific or technical character, 1087; motion-picture photoplays, 890; and motion pictures not photoplays, 1305. The renewals numbered 5937, as compared with 4948 in the preceding year. The fees applied during the year amounted to \$327,629. The total number of articles deposited during the fiscal year ended June 30, 1930, was 275,214.

The gross receipts of the Register's office for the fiscal year were \$336,980; the total expenditure for salaries, \$228,632, and for supplies, \$1357. The year's business showed a substantial increase over that of 1929, which was the largest in the history of the office up to that time. One copyright proclamation was issued during the year, namely, in behalf of citizens of the Irish Free State, Sept. 28, 1929, including protection with respect to the mechanical reproduction of music, under Sec. 1 (e) of the Copyright Act of 1909.

CORINTH. See ARCHAEOLOGY.

CORN. The estimated yields of corn in 1930 of 14 countries reporting to the International Institute of Agriculture, Rome, totaled 2,628,855,000 bushels as compared with 3,288,116,000 bushels in 1929. In these estimates the production of the southern hemisphere and of the Soviet Republics was not included. The yield of these 15 countries was 21.1 per cent below the production of the preceding year and 18.5 per cent under the annual average for the five years 1924-28. The area was reported as 128,458,000 acres in 1930 and 126,485,000 acres in 1929, placing the 1930 area 1.6 per cent above that of the year before and 1.8 per cent over the average for the five-year period mentioned. The production of the leading corn growing countries in 1930 exclusive of the United States was reported as follows: Rumania, 155,435,000 bushels; Jugoslavia,

137,888,000; Italy, approximately 116,000,000 bushels; Hungary, 52,328,000; Bulgaria, 34,062,000 bushels; and Spain, 27,327,000 bushels. The production of the Soviet Republics in 1929 was estimated at 165,741,000 bushels and the area planted in 1930 was reported as 9,625,000 acres. The 1929-30 corn crop of Argentina was estimated at 249,159,000 bushels, which was 7.5 per cent above the preceding yield. Canada in 1930 produced 4,801,000 bushels on 162,000 acres, the crop being nearly 7.4 per cent below that of 1929 and the area 6.5 per cent greater than the year before, but both yield and area were considerably below the average for the five years 1924-1928.

In the United States the corn crop of 1930 was the smallest since 1901 and in both years the low yields were largely due to drought. The growing season of 1930 was exceptionally dry in the southern part of the corn belt and sufficiently dry over the remainder to reduce the yield to a marked extent. A late growing season in many important States was very beneficial to the crop. The production as estimated by the Department of Agriculture was 2,081,048,000 bushels, the yield of the entire acreage whatever the method of harvesting or use of the crop. As compared with 2,614,132,000 bushels produced in 1929 this year's production was less by more than 20 per cent and it also stood over 26 per cent below the crop of 1928, and nearly 23 per cent below the average for the five years 1924-1928. The estimated production of husked and snapped corn was 1,743,795,000 bushels or 20.6 per cent less than in 1929 and 22.6 per cent under the five-year average. The 1930 acreage was reported as 100,829,000 acres, or 3 per cent above the 1929 acreage of 97,856,000 acres. During the previous 20 years the annual acreage has been about 100,000,000 acres, while in the 40 years preceding 1910 the area increased from about 37,000,000 acres in 1869 to 98,383,000 acres in 1909. The average yield per acre was 20.6 bushels in 1930, 26.7 bushels in 1929 and 28.2 bushels for the 10-year average. The area cut for silage was reported as 4,766,000 acres in 1930 yielding 28,956,000 tons, and 4,306,000 acres in 1929 yielding 29,987,000 tons. The acreage hogged down, grazed, and cut for forage was estimated at 11,362,000 acres as against 10,882,000 acres in 1929. Owing to feed shortage due to the drought a large acreage of corn stover after picking the ear corn was used as a substitute for hay. The December 1 farm price for shelled corn was 66.3 cents per bushel compared with 78.1 cents on the corresponding date in 1929 and on this basis the total farm value of the 1930 crop was \$1,378,874,000 and of the 1929 crop \$2,042,893,000.

The leading corn growing States reported the following yields: Iowa, 360,750,000 bushels; Illinois, 238,298,000 bushels; Nebraska, 235,695,000 bushels; Minnesota, 135,780,000 bushels; and Indiana, 110,197,000 bushels. All other States reported yields under 100,000,000. In average yield per acre the States mentioned ranged from 32.5 bushels for Iowa to 25.5 bushels for Illinois. The range for all the States was from 46 bushels per acre in Massachusetts to 4.7 bushels in Arkansas. The States leading in area were as follows: Iowa, 11,100,000 acres; Illinois, 9,345,000 acres; Nebraska, 9,171,000 acres; Kansas, 6,347,000 acres; and Missouri, 5,922,000 acres.

As determined by the U. S. Department of

Agriculture the cost of producing a bushel of ear corn in 1929 was 73 cents, the same as in 1928. The cost data included charges for labor and for the use of land so that a selling price of 73 cents per bushel for the 1929 crop would have paid for time and investment. As of November 1, 1930, the stock of corn held on farms was reported as 72,349,000 bushels or 2.8 per cent of the crop of 1929. The corn exports of the United States for the fiscal year ended June 30, 1930, amounted to 9,354,000 bushels valued at \$9,016,000 while during the preceding fiscal period they reached 40,744,000 bushels valued at \$90,917,000. In addition to the grain 231,000 barrels of corn meal, 6,174,000 pounds of corn breakfast food and 363,000 pounds of corn oil were exported during the past fiscal year. The imports for the same period were 496,000 bushels of corn as grain, or 6000 bushels more than for the preceding year. The exports of corn which reached the high record of 213,000,000 bushels in 1900 had declined since that time. The importance of glucose, corn starch, and other corn products in American foreign trade had increased in recent years.

Checked by the heat and drought the European corn borer did not spread in 1930 as much as anticipated (see ENTOMOLOGY, ECONOMIC). The National Corn Husking Contest of 1930 was held at Norton, Kansas, November 14, and Fred Stanek of Fort Dodge, Iowa, who won the championship also in 1924, 1926 and 1927, was the winner with 2160 pounds of corn husked in the prescribed 80 minutes. A class of U. S. army officers under the direction of the Department of Agriculture studied the methods and details of corn grading in accordance with the Federal standards for the purpose of qualifying as inspectors for the army.

CORN BORER. See ENTOMOLOGY, ECONOMIC.
CORNELL UNIVERSITY. A nonsectarian institution for the higher education of men and women in Ithaca, N. Y.; founded in 1865. There were 5725 students enrolled in the autumn session of 1930, distributed as follows: Graduate school, 782; law school, 179; medical school, the main division of which is in New York City, 237; arts and sciences, 1945; architecture, landscape architecture, and fine arts, 173; engineering, 990; veterinary medicine, 161; agriculture, 737; and home economics, 574, including 172 enrolled in a four-year course in hotel administration. Of these students 1342 were women. The registration for the 1930 summer session was 2385. The faculty, composed of 1153 members, had 305 professors, 202 assistant professors, 13 lecturers, 371 instructors, and 262 assistants. Additions to the staff of professors included: Carl Stephenson and Arthur P. Whitaker in history; Thomas V. Smith in philosophy; Whiton Powell in agricultural economics; and Day Monroe in home economics. The faculty lost by death Anna Botsford Comstock, professor of nature study, emeritus; Martin W. Sampson, professor of English literature; and E. Gorton Davis, professor of landscape architecture, and by retirement, William A. Hammond, professor of ancient philosophy and aesthetics and dean of the university faculty; M. C. Ernsberger, professor of heat-power engineering; and Willard Austen, librarian of the university library. Visiting lecturers in chemistry on the George Fisher Baker foundation were: Prof. Kasimir Fajans of the University of Munich and Prof. George Hevesy of the University of Freiburg.

The productive funds on June 30, 1930, were \$24,020,872. The income applicable to current expenses of the fiscal year 1929-30 was approximately \$8,000,000, including \$2,225,169 of State and \$411,242 of Federal appropriations. Gifts amounting to \$2,744,453 were received during the fiscal year. The lands and buildings were valued at \$13,500,000 and the equipment at \$4,448,000. The library contained 810,000 volumes. President, Livingston Farrand, M.D., L.H.D., LL.D.

See AGRICULTURAL EXPERIMENT STATIONS.

CORNSTALK PRODUCTS. See CHEMISTRY, INDUSTRIAL under *Artificial Wood*.

COSMOLOGY. See ASTRONOMY.

COSTA RICA, kôs'ta rēkă. A republic of Central America lying between Nicaragua and Panama, and bounded by the Caribbean Sea on the east and the Pacific Ocean on the West. Capital, San José.

AREA AND POPULATION. The area is estimated at 23,000 square miles. The population was 741,524 at the 1927 census, as compared with 243,205 at the census of 1892. The estimated population on Jan. 1, 1929, was 492,542. Births in 1928 totaled 23,109; deaths, 11,332; marriages, 3517; immigration, 8858; emigration, 8420. Populations of the chief cities in 1929 were: San José, 52,555; Alajuela, 8866; Heredia, 7900; Puntarenas, 7854; Limón, 7757; and Cartago, 7313. Roman Catholicism is the state religion but religious liberty is guaranteed by the Constitution. About 75 per cent of the population is of European descent, 10 per cent mestizo, 10 per cent Negro, and 5 per cent Indian.

EDUCATION. Elementary education is free and compulsory. In 1929, there were 483 elementary schools, with 46,675 enrolled pupils; a lyceum for boys at San José, with 590 pupils; and a college for girls, with 650 pupils. There are normal schools or colleges at Heredia, Cartago, and Alajuela. The average attendance in elementary schools was 42,994.

PRODUCTION. Costa Rica is primarily an agricultural country, with coffee and bananas, the chief commercial crops, accounting for about nine-tenths of the export trade. Large areas not yet cleared for cultivation contain cedar, balsa wood, and large and virtually untouched stands of cabinet woods. The area under cultivation in 1929 totaled 1,155,000 acres, of which 127,728 acres were planted to coffee, and 92,133 acres to bananas. The other leading crops, ranking according to the area planted, were corn, cacao, sugar cane, beans, rice, potatoes, tobacco, and manioc.

Costa Rican prosperity hinges directly upon the quantity and the price of the coffee crop, the bulk of which is disposed of in Great Britain. A bumper crop in 1929-30 was more than offset by the acute depression in the coffee market, which led to a general curtailment of trade during 1929 and 1930. Banana production has steadily decreased since 1913, owing to the Panama disease, abandonment of exhausted lands, and legislation restricting the activities of foreign producers. Cacao production, on the other hand, more than doubled between 1922 and 1930. Sugar, once of importance, is playing a decreasing rôle. Livestock in the country in 1929 included 443,271 cattle, 101,755 horses, 9224 mules, 290 donkeys, 103,587 swine, and 1079 goats. Gold and silver mining are other important industries, and manganese deposits exist near the Pacific coast. A census of 1928 showed 6783 small factory establishments.

COMMERCE. Imports in 1929 totaled \$20,163,936, as compared with \$17,893,000 in 1928, while exports amounted to \$18,197,910, as against \$19,635,841 in the previous year. The unfavorable balance of trade was \$818,750. Leading exports, as enumerated in the President's message to Congress on May 1, 1930, were: Coffee, 19,676 metric tons (18,482 in 1928); bananas, 6,112,170 stems (7,323,481); cacao, 5906 tons (5769); lumber, 5016 tons (6445). Values of the respective exports in 1929 were: Coffee, 48,900,000 colones (1 paper colon equals \$0.25); cacao, 3,581,076 colones; lumber, 465,972 colones. Agricultural products, principally coffee and bananas, constitute more than 90 per cent of all exports. Leading imports are cotton and its manufactures, iron and steel, flour, petroleum, and motor cars. A total of 22,960 cattle, valued at \$683,494, were imported from Nicaragua in 1929.

During the year ended June 30, 1930, exports to the United States were valued at \$5,010,212, or 9 per cent less than in the preceding year; imports from the United States were \$6,173,681, or 26 per cent below the 1928-29 figure of \$8,360,936.

FINANCE. Ordinary revenues during 1929 reached a record level, totaling 35,395,988 colones (1 colon equaled \$0.25), as compared with 33,319,000 colones in 1928. The 1929 receipts were 7,900,000 colones over budget estimates. Expenditures, however, totaled 36,220,066 colones, also the largest on record. The disbursements included extraordinary expenditures totaling 7,490,897 colones for public works. The public debt increased by about 3,000,000 colones during the year to a total of 79,258,806 colones.

In his message to Congress on May 1, the President described the declining note circulation as sufficiently serious to demand emergency legislation to permit the *Caja de Conversión* to increase its currency issue. Note circulation of the *Banco Internacional de Costa Rica* and the *Caja de Conversión* declined from 15,325,000 and 6,700,450 colones, respectively, on Apr. 22, 1929, to 14,920,000 and 2,492,682 colones on Apr. 22, 1930.

COMMUNICATIONS. There were (1929) a total of 413 miles of railway line, of which 81 miles were Government-owned. Of the private lines, the Northern Railway and its leased line, the Costa Rica Railway, totaling 264 miles, earned net profits of \$849,413 in the fiscal year 1929 (\$488,531 in 1928). The net profits of the Government-owned lines were \$310,308 (\$210,930 in 1928). There are about 130 miles of motor roads. Air mail service was inaugurated in March, 1930, between San José and Puntarenas, where connection was made with international air lines. In 1928, 641 ships of 1,266,872 tons entered and 635 ships of 1,261,670 tons cleared the ports of the republic.

GOVERNMENT. The executive power is vested in the President who is elected for four years and legislative power in a chamber of representatives, called the Constitutional Congress, with 43 deputies, elected for four years, one-half retiring every two years. Voting for President, deputies, and municipal officers is secret, direct, and free. President in 1930, Don Cleto Gonzalez Viquez, who was elected on Feb. 12, 1928, for the term 1928-32. The Government in 1930 controlled only 18 seats in Congress, there being 14 members of the Opposition, and 11 Independents, who held the balance of power between the other parties.

HISTORY. Costa Rica's serious economic depression and the increasing difficulties of the Government's financial position provided the background for turbulent political activities during 1930. Early in February the Minister of Finance announced that the Treasury was confronted with a \$2,125,000 deficit for the calendar year 1930. Income for the year was estimated at \$2,000,000 less than in 1929, while appropriations were \$1,400,000 in excess of the 1929 outlays. The economic depression, caused principally by the lower market prices for coffee and cacao, curtailment of banana production by the United Fruit Company, and the Government's failure to secure a \$2,750,000 American loan with which to finance an extensive highway expansion programme already contracted for, were considered primarily responsible for the financial situation. Efforts to repeal the banana tax law featured the session of Congress which convened in May. On July 8, Congress voted to leave to the President's discretion the time and condition of the reëtry of Costa Rica into the League of Nations, from which it withdrew in 1924. An extra session of Congress was called when the regular session ended August 14 without action being taken on the proposed repeal of the banana law of 1929 and conclusion of a new contract with the United Fruit Company.

A quarrel between the Secretary of Public Works, Leon Cortes, and Rafael Castro Quesada, manager of the government-owned Pacific Railway, as to their respective authority, precipitated a Cabinet crisis in November and President Gonzalez Viquez was reported to have threatened to resign. To quiet the uneasiness aroused in the country by this possibility, the President issued two successive manifestoes announcing his determination to remain in office until the expiration of his term in 1932. The return by airplane to San José on November 11 of Manuel Castro Quesada, Costa Rican Minister to the United States, who made the sudden trip to lend support to his cousin, Rafael Castro Quesada, resulted in the resignations of both Minister Cortes and the manager of the Pacific Railways. On Dec. 3, 1930, President Gonzalez Viquez signed a bill authorizing a loan of \$2,750,000 for public works.

Unemployment riots in San José in May were reported to have resulted in the wounding of several participants. See PANAMA.

COST OF LIVING. See FOOD and NUTRITION.

COTTON. Estimates of the Crop Reporting Board of the U. S. Department of Agriculture on Dec. 8, 1930, were that the cotton crop of the United States for 1930 would amount to 14,243,000 bales of 500 pounds, 3.9 per cent less than the 14,828,000 in 1929 and about 5 per cent less than the average production of the 5 years 1924-1928. The average yield of lint per acre was estimated to be 150.8 pounds, as compared with 155 for 1929 and 155.1 pounds, the average for the period 1919-1928. Of 46,191,000 acres in cultivation July 1, 2.1 per cent were abandoned with 45,218,000 remaining for harvest. The farm value of the lint was estimated at \$674,044,000 and of the 6,328,000 tons of cottonseed \$136,789,000 or a total of \$810,833,000 for the crop.

Small consumption of cotton in 1929-30 as compared with recent years left a world-carryover of American cotton on Aug. 1, 1930, about 1,800,000 bales larger than on Aug. 1, 1929. This added to the current crop gave a world supply of American cotton of about 20,700,000 bales for

the 1930-31 season, about 1,400,000 more than for 1929-30, and 300,000 bales more than the average annual supply for 1925-29.

Areas planted to cotton in 1930 in important cotton-growing countries in the world, excluding China, amounted to 73,403,000 acres or about 0.84 per cent more than in 1929. The estimated production in 1930 in these countries was for United States, 14,243,000 bales; U. S. S. R. (Russia), 1,950,000; Egypt, 1,697,000; Mexico, 186,000; and Chosen (Korea), 152,000 bales.

The U. S. Bureau of the Census estimated the world's production of commercial cotton in 1929 at 26,673,000 bales, of which the United States produced 14,548,000 (running) bales; India, 5,120,000; U. S. S. R. (Russia), 1,325,000; Egypt, 1,750,000; China 1,825,000; Brazil, 535,000; Mexico, 246,000; Peru, 250,000, and all other countries 1,074,000 bales. The principal cotton producing countries and their crops according to the International Institute of Agriculture were as follows: United States, 14,828,000 bales; India, 4,402,000; Egypt, 1,726,000; U. S. S. R. (Russia), 1,225,000; Mexico, 246,000, and Chosen (Korea), 139,000. Considerable cotton also was grown in Anglo-Egyptian Sudan, 137,360 bales, and Uganda, 100,410 bales.

The cotton crop of the United States for 1929, as reported by the Bureau of the Census, the estimated crop for 1930, and the quantity reported ginned to Dec. 13, 1930, are shown in the accompanying table.

UNITED STATES COTTON CROP, 1929-30

| <i>States</i> | <i>Crop, 1929 500-lb. bales</i> | <i>Estimated crop, 1930 500-lb. bales</i> | <i>Reported ginned Dec. 13, 1930 Running bales</i> |
|----------------------|---|---|--|
| United States ... | 14,824,861 | 14,243,000 | 13,259,622 |
| Alabama | 1,541,550 | 1,495,000 | 1,421,380 |
| Arizona | 152,849 | 160,000 | 110,216 |
| Arkansas | 1,434,660 | 910,000 | 846,624 |
| California | 258,559 | 250,000 | 188,895 |
| Florida | 28,578 | 50,000 | 50,646 |
| Georgia | 1,342,643 | 1,625,000 | 1,558,221 |
| Louisiana | 808,825 | 710,000 | 694,496 |
| Mississippi | 1,915,430 | 1,500,000 | 1,429,640 |
| Missouri | 219,932 | 160,000 | 150,507 |
| New Mexico | 88,450 | 100,000 | 83,972 |
| North Carolina | 747,208 | 795,000 | 759,294 |
| Oklahoma | 1,112,666 | 900,000 | 822,525 |
| South Carolina | 830,055 | 1,040,000 | 981,260 |
| Tennessee | 515,774 | 400,000 | 360,724 |
| Texas | 3,941,626 | 4,100,000 | 3,754,798 |
| Virginia | 47,527 | 42,000 | 40,629 |
| All others | 8,539 | 6,000 | 5,795 |

The above table includes for 1930, under the ginning report, 478,421 round bales counted as half bales and also 17,411 bales of American-Egyptian cotton, practically all grown in Arizona. The estimated crop of Arizona for 1930 includes 28,000 bales of American-Egyptian cotton. The crop of Lower California, which is usually marketed through California, is estimated at 49,000 bales, not included in the totals.

Oil mills in the United States, during the cotton year ended July 31, 1930, crushed 5,015,714 tons of cottonseed. Among the products derived from the seed were 1,038,170 bales of lint, 1,383,597 tons of hulls, 2,231,992 tons of cake and oil meal, and 1,572,321,675 pounds of oil.

Exports of cotton and lint for the year ended July 31, 1930, amounted to 6,689,796 bales of cotton and 117,955 bales of lint or a total of 6,807,751. Mills in the United States consumed in this period 6,113,932 bales. The prin-

cial exports were to Germany, 1,687,366; United Kingdom, 1,256,042; France, 811,520; Italy, 652,430; other European countries, 832,688; and Japan, 1,020,016 bales. During the same period there were imported from Egypt, 215,181 bales; Peru, 19,427 bales; China, 44,033; Mexico, 39,324; British India, 58,449; and from other countries, 1,693 bales. The United States tariff act of 1930 provided a duty of 7 cents a pound on all imported cotton stapling $1\frac{1}{4}$ inches or longer.

Of the cotton used by American mills, the greater part was consumed in the cotton-growing States, 4,757,356 bales as compared with 1,142,663 in New England, and 213,913 in other States. Of 33,567,102 spindles in place December 31, 1930, 25,525,820 were active during December, of which 16,869,856 were located in cotton States, 7,784,158 in New England States and 871,806 in other States. The number of active spindle hours averaged in cotton States 223, in New England 116, and other States 104, and the percentage of idle spindles was highest in New England. According to the U. S. Bureau of Census, the world's consumption of cotton (exclusive of linters in the United States) for the year ending July 31, 1930, was approximately 24,946,000 bales. The International Federation of Master Cotton Spinners' and Manufacturers' Associations reported it to be 25,209,000 bales against 25,882,000 in the previous year.

Reduction in the total world consumption, 4 per cent, equivalent to about 700,000 American bales, came almost entirely in American cotton. World consumption of American cotton in 1929-1930 amounted to 13,023,000 running bales compared with 15,076,000 in 1928-1929, 15,407,000 in 1927-1928 and the record of 15,780,000 bales in 1926-1927. On the whole European countries used more Indian and sundries cottons and less American and Egyptian. Asiatic countries consumed about as much American cotton as in the previous season and also more Indian and sundries cotton.

The price of middling $\frac{3}{4}$ -inch cotton at the 10 spot markets averaged 15.79 cents per pound during the year ended July 31, 1930, compared with 18.67 in 1928-1929 and 19.72 in 1927-1928. For August, 1930, the price averaged 11.14 cents, September 10.15, October 9.82, November 10.09, closing on December 31 at 10.00 New York, 9.51 New Orleans, and 9.70 Galveston. The average price being paid to producers December 1, 1930, was 9.5 cents per pound for lint and \$21.62 per ton for cottonseed, compared with 16.4 cents and \$30.33, respectively, on December 1, 1929.

The movement of prices downward partly reflected the reduced world consumption of American cotton. Price differences during recent years were less favorable to American cotton and quality differences between it and foreign growths were less marked. Price, according to a survey by the Department of Agriculture, seemed to be the greatest single factor causing increased foreign consumption of exotic growths as compared with American during 1929-30. European spinners considered the deterioration of American cotton in quality and the concurrent improvement in quality of a number of foreign cottons as greatly influencing the shift from American to other growths of cotton. In his report for 1930, the Secretary of Agriculture pointed out that an adjustment between the quality of cotton produced and the consumers' preferences is very important if American cot-

ton producers are to maintain their supremacy in the world's cotton markets. Concluding his annual review, *The Future of American Cotton*, John A. Todd expressed the view that "Something must be done to alter drastically the recent tendency of American cotton production, for only by increasing the average yield, and therefore reducing the cost of production can America hope to compete with the increasing production of outside growths." The Federal Farm Board, cooperating with the Department of Agriculture in the fall of 1930, held a series of conferences in the South looking toward a reduction in the acreage of cotton and a readjustment of the farming programmes of cotton farmers. Cotton production based upon prospective market demand instead of upon prices the preceding season, was recommended as a means of stabilizing the cotton industry, in a special report by the Department of Agriculture on the world cotton situation and outlook.

Unusually hot, dry weather marked the 1930 cotton-growing season in most of the Cotton Belt from Alabama west. Reduction of the crop from drought was particularly severe in Arkansas, Oklahoma, and Texas, and estimated production in Mississippi, Louisiana, Tennessee, and Missouri, for the same reason, was considerably below 1929. The South Atlantic States had ample rainfall and from North Carolina to Alabama production and acre yields considerably exceeded those of 1929 and the average. Low temperatures in winter and hot, dry weather during June, July, and August rendered boll-weevil damage negligible. Boll weevil were present in considerable numbers only in the Carolinas although there were a few in nearly all sections.

Measures were begun by the Department of Agriculture and the State of Arizona to eradicate the pink bollworm, discovered in the Salt River Valley in October, 1929. Non-cotton zones were established and a field clean-up of about 47,000 acres of cotton was made. Funds were appropriated to compensate growers in the affected area for losses due to cessation of cotton growing. No traces of the insect were found in the Pecos Valley of New Mexico and the western extension of Texas, although infestation was unusually heavy in the Big Bend section of Texas and infested fields were reported in the Mesilla Valley in New Mexico and near Safford, Arizona. A large area in western Texas was released on November 17 from quarantine restrictions. All cotton produced in Mexico in areas adjacent to regulated zones in the United States was produced under regulations like those in regulated areas in this country. Control agencies paid the usual attention to the boll weevil, *Thurberia weevil*, cotton leaf worm, bollworm, cotton flea hopper, cotton aphid, and enlarged studies on the cotton leaf perforator. Further efforts were made in the Southwest to control the cotton root rot. See ENTOMOLOGY, ECONOMIC.

Cotton of the 1930 crop, ginned before Dec. 1, 1930, was slightly better in grade and different in staple from ginnings prior to Dec. 1, 1929, according to a report based on the 12,821,500 bales of American upland cotton reported by the Census Bureau as ginned prior to that date. Estimates were that 89.3 per cent was white in color, 72.9 white, middling or better, and 7.9 per cent cotton other than white and extra white. As to staple length, 13.7 per cent was estimated to be shorter than $\frac{7}{8}$ -inch; 76.3 per cent $\frac{7}{8}$ to $1\frac{1}{32}$

inches inclusive, and 10 per cent, $1\frac{1}{16}$ inches and longer. Of a total of 10,960,600 bales, or 85.5 per cent tenderable, 9,675,400 ranged in staple from $\frac{7}{8}$ to $1\frac{1}{32}$ inches inclusive, and 1,285,200 bales stapled over $1\frac{1}{32}$ inches.

The revised standards for American-Egyptian cotton providing for intermediate or half grades, effective August 1, 1930, were largely used in merchandising the 1929 crop.

The experimental cotton gin and laboratory authorized by an Act of Congress approved April 19, 1930, was erected by the U. S. Department of Agriculture on a site provided by the Mississippi Delta Branch Experiment Station for investigations aiming at the basis for better gin management and technique and at improvement in the quality of American-grown cotton.

Cotton production in other countries continued gradually to increase, due in part to a natural development of producing areas and in part to efforts by consumers to develop more stable sources of supply. The British Cotton Growing Association and the Empire Cotton Growing Corporation actively stimulated cotton production within the many political divisions of the British Empire. Although conditions in the industry continued to be unsatisfactory, the Association reported substantial progress from its activities in India, West Indies, Nigeria, Kenya, Uganda, Nyasaland, South Africa, Rhodesia, Sudan, Iraq, and Australia. The Corporation maintained its chain of experimental cotton stations in most of these countries and the practical results achieved in varieties, production practices and pest control appeared to justify the station work. The progress of its undertakings is published quarterly in the *Empire Cotton Growing Review* (London). The Central Cotton Committee of India, responsible for much of the financing of agricultural research and technology of manufacture of cotton in India had up to March 31, 1930, i.e., during the seven years of its existence as a corporation, spent Rs 2,022,500 for agricultural research, Rs 1,250,000 for technological research, and Rs 930,000 for administration. In 1930, it had 13 schemes for the betterment of Indian cotton and sanctioned funds for six more. The activities of the committee's Institute of Plant Industry in Indore were published in *The Application of Science to Crop-Production*, by A. and G. L. C. Howard.

The crops in 1928-1929 in the principal producing countries in the British Empire excluding India were estimated to be for Anglo-Egyptian Sudan, 141,750 bales; Uganda, 164,000; Nigeria, 28,450; Tanganyika, 22,930; Union of South Africa, 10,230; Australia, 8,240; West Indies, 5,000; Iraq, 4,290; Nyasaland, 3,740; and Cyprus, 1,800. In India, 4,402,000 bales were reported for 1929-1930 and 4,863,000 for 1928-1929, and the total area planted in 1929-1930 was estimated to be 25,692,000 acres.

Egypt, according to estimates of the International Institute of Agriculture, produced 1,697,000 bales in 1930, compared with 1,725,000 in 1929. The total included about 457,000 bales of Sakellarides. The planting of Sakellarides cotton was prohibited except in three provinces where the area was to be limited to 40 per cent of the present acreage. The government's policy of supporting the cotton market by purchase had widespread support at first but later the wisdom of continuing the policy was questioned.

Recommendations from a recent governmental inquiry were that the Egyptian government abstain from intervention in the Egyptian cotton market and, instead of limiting acreage, encourage extension in area and increase in acre yields by use of artificial fertilizers and pure strains of cotton.

Late estimates were that Asiatic Russia would produce about 1,950,000 bales in 1930 as compared with 1,351,000 bales in 1929. The area was reported at 3,760,000 acres compared with 2,560,000 acres in 1929, an increase of 47 per cent, or not much below the 50 per cent increase planned by the government. Considerable of the 1930 acreage was planted late, making fall weather conditions of great importance. Shortage of labor, transportation and picking facilities were expected to be serious problems. In 1929 considerable cotton remained in the fields due to the labor problem. The Russian cotton acreage expansion programme was perhaps the most successfully executed of the agricultural plans.

The International Cotton Congress was planned to be held in Paris, June 23-25, 1931. See AGRICULTURE; EGYPT; AGRICULTURAL EXTENSION WORK; ENTOMOLOGY. ECONOMIC.

COTTON BOLL WEEVIL. See ENTOMOLOGY, ECONOMIC; COTTON.

COUNCIL-MANAGER GOVERNMENT. See MUNICIPAL GOVERNMENT.

COUNTRY LIFE. See AGRICULTURE.

COURTLEIGH, WILLIAM LOUIS. An American actor, died in Rye, N. Y., Dec. 27, 1930. He was born in Guelph, Ont., Canada, June 28, 1869. In 1889 he made his first appearance on the stage in *Brother and Sister*, and his first marked success was with Fanny Davenport in *La Tosca*, *Fédora*, and *Cleopatra* in 1891. He later became a member of Augustin Daly's repertoire company. Over a period of 40 years he appeared in such outstanding plays as *Northern Lights* (1895), *The Great Northwest* (1896), *Hedda Gabler* (1898), *A Rich Man's Son* (1899), *Lost River* (1900), *The Merchant of Venice* (1901), *Sherlock Holmes* (1905), *Divorçons* (1913), *Tiger Rose* (1917), *Trevelyan of the Wells* (1925), *Henry the Fourth* (1926), and *I-Aiglon* (1927). His last appearance was in the spring of 1930 in *Julius Caesar* and *Macbeth*.

COURTS. See CRIME.

COURT TENNIS. See RACQUETS.

COVERED WAGON CENTENNIAL. See CELEBRATIONS.

COWS. See DAIRYING; LIVESTOCK.

COYOTE. See ZOOLOGY under *Mammalia*.

CRAIGIE, PATRICK GEORGE. A British agricultural statistician, died in Lympstone, Devon, Jan. 10, 1930. He was born in Perth, Scotland, May 29, 1843, and was educated at Edinburgh University and at St. Catherine's College, Cambridge. After serving in the Royal Perth Militia and the 3d Battalion of the Royal Highlanders, he was appointed in 1871 secretary of the Local Taxation Committee and in 1879 secretary of the Central Chamber of Agriculture. In 1888 he was requested by the Royal Commission on Market Rights and Tolls to report on the markets of Paris and Brussels, and by the Agricultural Department of the Privy Council to report on the agricultural schools of France. On the formation of the new Board of Agriculture and Fisheries in 1890 he was appointed director of the Statistical Intelligence and Educational Department, hold-

ing this post until 1897 when he became assistant secretary. He resigned in 1906 to become Gilbey lecturer on the history and economics of agriculture at the University of Cambridge, where he remained until 1909. He was elected a Fellow of the Royal Statistical Society in 1874 and served as president during 1902-04. He was also secretary-general of the International Statistical Institute during 1905-07, and in recognition of his services to statistical science was awarded the gold medal of the Royal Statistical Society in 1908. He was created a Companion of the Bath in 1902. Among the noteworthy papers which he contributed to the *Journal of the Royal Statistical Society* are: "The Cost of English Local Government" (1877); "Ten Years' Statistics of British Agriculture" (1880); "Statistics of Agricultural Production" (1883); "The Size and Distribution of Agricultural Holdings in England and Abroad" (1887); and "The English Poor Rate, Some Recent Statistics of Its Administration and Pressure" (1888).

CREAM. See DAIRYING.

CREDIT. See BANKS AND BANKING; BUSINESS REVIEW; FINANCIAL REVIEW.

CREDIT UNION. See COÖPERATION.

CRETE. Fourth in size among the islands of the Mediterranean and the site of an ancient civilization, Crete was ceded to Greece by Turkey, May 30, 1913. It lies 150 miles southeast of Greece. Area, 3326 square miles, population (census of 1928), 386,427. The capital, Canea, had 26,604 inhabitants (1928); Candia, the largest city, 33,404. Although two-thirds of the island consists of barren, mountainous region, agriculture is the sole industry, the chief products being currants, grapes, wine, olives, citrus fruits, some cereals, and garden products. In 1928 exports were valued at \$2,922,000 and imports at \$2,498,000. In the same year 2203 steam and 1294 sailing vessels entered the ports. Extensive improvements to the port of Candia were to be completed in 1931. The island is an intermediate station on the London-India air-mail line.

CRICKET. Australia successfully invaded England in 1930 and demonstrated its proficiency in the national sport by carrying back to the Antipodes "The Ashes," symbolic of world supremacy in cricket. The Australian team defeated England 2 to 1 with one drawn in a series of test matches. In 1929, the English team won four matches out of five in Australia. The Brooklyn Cricket Club won the annual championship competition of the New York and New Jersey Cricket Association. The Crescent A. C. and Fordham tied for second. The Cameron Cricket Club won the Metropolitan (New York) District Cricket League title. A team of cricketers representing the British West Indies played 21 games in and near New York during the summer, with 14 victories, 6 draws, and 1 defeat.

CRIME. The discussion of crime and its various ramifications continued an outstanding public question. The particularly flagrant gang feuds that characterized the larger cities of the United States, and the undisguised contempt for law as well as the inability of the law officers of the large cities to cope seriously with the problems presented, indicated that despite the creation of crime commissions and the greater severity of criminal codes, crime was still an outstanding American problem. It was generally agreed that in all the great urban centres of America there existed an underworld of criminals who kept up

a continuous warfare among themselves to obtain monopoly of the trade in prohibited goods and the control of various forms of blackmail, swindling, and banditry. There was no question that the organization of crime in these underworlds had taken on all the attributes of a well integrated industry, boasting even of bankers, the support of venal politicians, and the tolerance of law officers. There was no question, too, that organized crime could not exist without connivance of constituted authority. As the *New York World* said in discussing the continued existence of notorious personages in the underworlds of New York and Chicago without official molestation: "The business which they represent could not proceed under the immunity it enjoys if the law were not frequently betrayed by its officers, if there were not treason in the ranks of those who govern us."

It was becoming apparent, also, that the underworld was levying a huge tribute annually on legitimate business enterprise. How much the toll thus taken was, it was impossible to tell, but there could be no question that scores of activities were terrorized by armed gangsters who collected regular fees to prevent molestation. This process of holding up industry for tribute, which was commonly known as "racketeering," was said to be prevalent particularly in Chicago and almost to a like degree in New York City. It was being charged by persons familiar with the situation that the following industries among others were in the hands of gangsters who demanded money bribes to stave off terrorization: the wet wash laundry business, wholesale meat marketing, dry cleaning, prize fighting, milk delivery. These racketeers had seized control of a number of trade unions in the cities of New York and Chicago and were compelling trade unionists to pay high membership charges for protection from annoyance. As an example of this situation the Chicago Coal Merchants' Association charged that the coal teamsters union was in the hands of a thug and it would, therefore, refuse to negotiate a new contract with the union. So important had organized crime become a subject for general discussion that outstanding gang leaders received as much prominence in the daily press as did public officials. The names of "Al" Capone of Chicago, Arnold Rothstein and Jack Diamond, of New York, were almost household terms.

CHICAGO. The crime situation in Chicago continued to attract national attention. As a result of a series of gang killings early in March, the police were stirred to renewed activity and in 10 days rounded up 4500 persons. The local Association of Commerce had organized a city committee, headed by Col. R. I. Randolphs, to wage unceasing war on Chicago's gangdom, and the committee applied itself diligently to ferreting out known criminals, to assisting the staff of the State's attorney, and to the collection of evidence and the protection of State's witnesses. This committee declared that it had unlimited funds with which to carry on its work. The Chicago crime commission was also active. In May it outlined a programme for coping with gangsters which included the following: vigilant watchfulness and arrests; court action; deportation of criminal aliens; investigation to determine whether personal property taxes had been paid; investigation of the status of real estate holdings and whether or not taxes had been paid; investigation to determine whether or not criminals had paid United

States income taxes. The killing of Alfred L. Lingle, reporter for the *Chicago Tribune*, by a gangster, again served to draw attention to lawlessness in the second largest city in the country. Lingle was killed on June 9, but by the end of the year, despite the organized sentiment that had been aroused and the great rewards that had been posted for the capture of his slayer, the reporter's death remained unsolved.

A more cheerful note was struck by a report presented by the Federal Children's Bureau, which concerned itself with delinquency among boys in Chicago. The Bureau's investigators made a study of all boys between the ages of 17 and 20 inclusive, over the 11-year period 1915-1925 inclusive. It is to be noted that 16 is the outside age for cases under the jurisdiction of the juvenile court and that 21 is the initial age for cases under the jurisdiction of the regular criminal courts. In other words, these boys between 17 and 20 years inclusive were over the juvenile court age. It was found by the Children's Bureau that less than 12 per cent of the total arrests of males in any year were arrests of boys 16 to 20 years of age. The figures indicated that while there had been great increases in the number of arrests in Chicago during the 11-year period studied, these increases were essentially among the males of the older ages. A study of the cases disposed of in all criminal branches of the municipal court and the number disposed of in the boys court showed that while the total number of cases in the municipal court greatly increased and the ratio of these cases to 10,000 population of the same age and sex almost trebled from 1920 to 1925, there was a numerical decrease in the cases of boys 17 to 20 years. That is to say, the total number of such cases in 1915 was 7500 while in 1925 it was 5409; also, the ratio of boys' cases to 10,000 population of the same age and sex showed a total decrease of 41 per cent in the 11 years studied. It is interesting to note the report's statement concerning the causes for arrests. The report says:

The case histories show a comparatively small proportion of hardened criminals among any of the groups dealt with by the boys court. Complicating factors in the delinquencies of many of them were broken homes; poverty; lack of intelligent and sympathetic guidance at home; difficulties in school; shifting of jobs, with more or less unemployment; bad companions; and, in a considerable number of instances, mental dullness ranging down to definite mental defect and emotional instability. The court experience of some of the boys was more or less accidental, or their delinquency was a passing phase in their transition from boyhood to manhood.

NEW YORK CITY. In May, 1930, Police Commissioner Grover A. Whalen submitted the annual report of his department's activities for the year 1929. The Commissioner's report indicated substantial reductions in various types of crime. Particularly interesting was the statement that violent crime had been reduced by 11 per cent and that robbery and burglary in 1929 was 68 per cent lower than for the 1923-25 period. The Commissioner also declared that commercial vice and gambling had been eliminated. For the 12 months ending Dec. 31, 1929, goods valued at \$10,226,963 were lost or stolen in New York City, of which amount goods recovered totaled \$3,078,668. In 1928 the estimated loss of property was \$11,317,291, of which \$1,538,991 was recovered. These figures did not include the value of stolen automobiles. In 1929, 8670 cars were reported stolen as against 13,545 in 1928. In

1929, complaints of crime totaled 38,382. There were 14,871 cases disposed of by arrests while slightly more than that number were reported as pending. In 1929, there was a gain of 5.3 per cent in murders and manslaughter. The total number of killings in New York in that year was 357, of which 55 were attributed to gang feuds.

The New York Commissioner presented the following figures to indicate how New York compared with other large cities in the country with respect to the commission of crimes of violence:

| Cities | Population | Number of crimes of violence | Per cent per 100,000 population |
|------------------|------------|------------------------------|---------------------------------|
| New York | 6,064,484 | 4,519 | 74.1 |
| Chicago | 3,102,800 | 9,509 | 306.7 |
| Philadelphia ... | 2,035,900 | 2,210 | 110.5 |
| Detroit | 1,334,500 | 3,671 | 282.4 |
| Los Angeles | 1,300,000 | 6,963 | 535.6 |
| Cleveland | 984,500 | 4,675 | 467.5 |
| St. Louis | 859,200 | 5,646 | 705.7 |

The Commissioner's report placed particular stress on the necessity of creating a preventive programme, pointing out that 50 per cent of the City's offenders were under 21 years of age. During 1929 there were 2353 boys and girls aged 16 years who had been arrested in the five boroughs. The total of 17-year-old prisoners numbered 3998. Said the Commissioner in referring to the youth of the offenders to-day:

Crime of to-day, both of an abnormal nature and of exceptional violence, is generally committed by youths without any previous criminal or police history. This makes detection and apprehension of offenders most difficult. There seems to be an ever-growing spirit of disregard for the property rights of others, and while no attempt is made to analyze the theoretical causes of these tendencies of youth to crime, the mental attitude and cynicism of these youthful offenders to proper authority provides food for thought.

The Commissioner paid particular attention to the increasing activity of gangs. He pointed out that gangs were playing a large rôle in bootlegging, gambling, the illegal sale and distribution of narcotics and other illegitimate enterprises. They were, too, constantly attempting to widen the sphere of their activities to take in legitimate industry. During 1929, 295 cases of major crimes were solved through the arrest of gangs and gangsters. The Commissioner attributed this notable showing to information furnished by a secret service bureau set up in the department.

The following figures indicate the various types of violent crimes committed in 1929 and 1928. The 1928 figures are in parentheses. Total violent crimes, 7009 (7878); murder or manslaughter, 357 (339); felonious assault, 2490 (2559); assault and robbery, 1172 (1232); burglarly, 2990 (3708). Murder and manslaughter statistics for 1929 were 5.3 per cent higher than those recorded in 1928. The following analyzes the types of killings by the motives presented: gangster revenge, 25; commission of a felony, 40; family or love affair, 140; business dispute, 13; gambling dispute, 9; gangster dispute, 30; labor dispute, 1; dance hall dispute, 3; drunken dispute, 13; degeneracy, 4; unknown, 79. The proportion of murder cases in which arrests were made was reported at 68.6 per cent in 1929 as compared with 64.6 per cent in 1928. The proportion of assault and robbery cases which were closed by arrests was 51.4 per cent in 1929 as compared with 51.1 per cent recorded during the year 1928.

At the end of 1929 the police department of New York included 17,710 policemen and policewomen, and the department expended for the calendar year of 1929, \$48,705,918. In an effort to strike at juvenile delinquency the police department created in 1929 a crime prevention bureau manned by trained social workers.

As an indication of the efficiency of the New York police department, the figures of insurance companies are interesting. In 1929, 45 insurance companies reported that they had paid \$677,875 to cover losses incurred as a result of 1912 hold-ups and burglaries. In 1928 the losses paid had been \$727,500; in 1927 they had been \$855,531; in 1926 they had been \$1,920,631; and the annual average for 1923-25 had been \$3,037,581.

STATISTICS. The YEAR BOOK before has referred to the homicide statistics that had been collected by Dr. Frederick L. Hoffman of the Prudential Insurance Company for some 30 years. Presenting his figures for 1929, Dr. Hoffman finds that deaths by violence were increasing in the United States. In 140 American cities with a total population of 38,000,000, there occurred 3993 deaths from homicides in 1929, or a rate of 10.5 per 100,000 population. This compares with a rate of 10.4 in 1928. Dr. Hoffman, by way of contrast, showed that the homicide rate for 13 Canadian cities was 1.7 per 100,000 in 1928, and that for England and Wales it was 0.57 per 100,000. In the United States registration area in the same year the homicide rate was 8.8. The following 10 cities had the highest death rates in 1928 and 1929:

| | Deaths | | Rates | |
|----------------------------|--------|------|-------|------|
| | 1928 | 1929 | 1928 | 1929 |
| Memphis, Tenn. | 115 | 127 | 60.5 | 66.8 |
| Birmingham, Ala. | 122 | 114 | 54.9 | 51.3 |
| Atlanta, Ga. | 115 | 130 | 45.1 | 51.0 |
| Jacksonville, Fla. | 74 | 66 | 52.6 | 46.9 |
| Lexington, Ky. | 15 | 19 | 30.8 | 39.0 |
| Mobile, Ala. | 18 | 21 | 25.9 | 30.2 |
| New Orleans, La. | 111 | 124 | 25.9 | 28.9 |
| Covington, Ky. | 8 | 17 | 13.6 | 28.8 |
| Houston, Texas | 72 | 76 | 26.2 | 27.6 |
| Charleston, S. C. | 18 | 20 | 23.7 | 26.4 |

New York City's death rate from homicides was 7.1, and Chicago's death rate was 12.7. Dr Hoffman's observations may be noted. He said:

By common consent the enforcement of Prohibition has brought into existence an organization of crime and criminals such as no other country on the face of the globe has ever known in the history of the past. The enforcement of the law itself has caused a large number of violent deaths, classified as homicides, even though convictions were not obtainable in the courts. Gangsters and gunmen are being killed almost day after day, forming a not inconsiderable item in the large number of homicidal deaths, which nevertheless touches the security of every citizen, high or low. The root cause of the evil is unquestionably the ease with which concealed weapons are obtainable and widely distributed.

Another investigation conducted by Dr. Hoffman concerned itself with the suicide death rate in the United States. Dr. Hoffman pointed out that for six years this rate had been growing steadily though it was still lower than the rate in 1908, which was 21.5 per 100,000 population. In 1920, the year to have the lowest rate on record, the proportion was 12.3 per 100,000. In 1929, it was 18 per 100,000. In 151 cities with an estimated population of 38,000,000, 80 showed an increase in the suicide rate for 1928 while 56 showed a decrease. The 10 cities with the highest rates per 100,000 population were the following:

| | |
|------------------------------------|------|
| Sacramento, Calif. | 52.8 |
| San Diego, Calif. | 51.8 |
| San Francisco | 39.8 |
| Atlantic City | 36.6 |
| Quincy, Ill. | 32.7 |
| Terre Haute, Ind. | 31.3 |
| Manhattan and Bronx, N. Y. | 27.7 |
| Spokane, Wash. | 27.5 |
| Seattle, Wash. | 27.1 |
| Concord, N. H. | 26.4 |

In 1928, the total number of deaths from suicides in the United States registration area was 15,556, which was a rate of 13.6 per 100,000. On the basis of a population of 125,000,000 and a rate of 14 per 100,000, Dr. Hoffman estimated that there had occurred 17,500 deaths from suicide in the United States in 1929. Dr. Hoffman indicated that the stock market collapse of 1929 had a direct bearing upon the increase in suicides. He said on this subject: "When the suicide rates for a period of years are correlated to business failures there is a fair consistency in the correlation, the highest and lowest figures usually coinciding, though sometimes the highest suicide rate follows a year after the highest rate of business failures."

JUVENILE DELINQUENCY. The Federal Children's Bureau made public the results of its examination of the work of 12 juvenile courts located in the 15 States of California, Connecticut, Indiana, Massachusetts, Michigan, Minnesota, New Jersey, New York, North Carolina, Ohio, Pennsylvania, Tennessee, Virginia, Washington, and Wisconsin. A total of 40,000 cases was examined by the Bureau. This report, which was the first national report on juvenile court statistics, covered only cases of delinquency and dependency and neglect. There was a total of 28,387 delinquency cases representing 25,456 children, and a total of 12,150 dependency and neglect cases representing 11,785 children. Of the 25,305 delinquent children for whom race was reported, 84 per cent were white and 16 per cent were colored. The proportion of children who were foreign born was small for all the courts except those of New York City. In New York 15 per cent of the delinquent white boys and 19 per cent of the delinquent white girls and 18 per cent of the dependent and neglected children of both sexes were foreign born.

Two-thirds of the delinquent boys and one-half of the delinquent girls were living with both their parents when referred to the court. It is interesting to note that in the cases of those delinquent juveniles living with only one parent, the absence of the other parent in most cases was due to death. Desertion was a much greater factor in dependent and neglected cases than it was in delinquency. More than one-third of the dependent and neglected cases were referred to court because of improper conditions in the home; more than one-fourth were referred for insufficient parental care, including lack of care because of death or illness of parents.

The offenses for which boys and girls came to the attention of juvenile courts differed in marked degree. Two-thirds of the boys were charged with stealing or with acts of carelessness or mischief. Two-thirds of the girls were charged with the following offenses: running away, ungovernable or beyond parental control, and sex offense. The largest percentage of boys and girls referred to these courts on delinquency charges were between the ages of 14 and 16 years. The

next largest group was between 12 and 14 years. Eight per cent of the delinquent boys and 4 per cent of the delinquent girls were under 10 years of age. In more than one-half of the delinquency cases the children were allowed to remain in their own homes pending hearing. Detention homes were used in more than one-third of the cases. It is to be noted that almost 1000 children were reported by 26 courts as having been detained in jails or police stations. The following were the dispositions of the 20,679 delinquency cases dealt with officially by the courts in question: 35 per cent were dismissed or continued indefinitely; 39 per cent were placed on probation; 15 per cent were committed to institutions. Almost all the official dependent and neglected cases were disposed of in one or another of the following three ways: commitment to institutions or child placing agencies (50 per cent); placement under supervision in their own homes (25 per cent); dismissal or investigation continuance of the case (25 per cent).

PRISONS. An inquiry made by the *New York Sun* in the spring of the year indicated that the prison population of the United States was in many areas the greatest in history. Of the 37 of the largest prisons of the country circularized, 19 reported record prison population as of March 20. San Rafael, Calif., had 4972 prisoners; Joliet, Ill., had 4162; Michigan City, Ind., had 2320; Fort Madison, Iowa, had 1220; Eddyville, Ky., had 1032; Frankfort, Ky., had 2314; Baton Rouge, La., had 2170; Jackson, Mich., had 4675; Jefferson City, Mo., had 4061; Raleigh, N. C., had 2345; Salem, Ore., had 882; Pittsburgh, Pa., had 1953; Howard, R. I., had 709; Columbia, S. C., had 697; Petros, Tenn., had 897; Richmond, Va., had 2670; Moundsville, W. V., had 2277; Walla Walla, Wash., had 1,197; Waupun, Wis., had 1286. The wardens attributed this increase to a number of conditions ranging from heavier sentences to industrial depression and the increased use of revolvers.

Col. George F. Chandler, who was appointed by Governor Roosevelt of New York, to investigate the reasons for the disastrous rioting in Auburn Prison late in 1929, submitted a report in which he attributed the outbreaks to the following factors: the activities of the prisoners' Mutual Welfare League which had come under the domination of desperate characters; lack of discipline; poor food; inadequate clothing; idleness; and the antiquated facilities of a prison more than 100 years old. Colonel Chandler, among his recommendations, included the following: immediate relief of overcrowding; more guards; the abolition of the selection of guards by civil service; the abolition of the Mutual Welfare League; placing the lines of communication with the outside world in the hands of civilian employees; more allowance for food and clothing; segregation of the incorrigible; and the abolition of special privileges. While the Mutual Welfare League came in for serious condemnation at the hands of public officials and the press, and it was generally recognized that its machinery at Auburn had been seized by a group of shrewd and desperate criminals, nevertheless it had its defenders. The National Society of Penal Information came to the support of the Mutual Welfare League. It is interesting to note the reasons cited by the Mutual Welfare League itself for the existence of prison discontent. These reasons were: excessive sentences with but little time off for

behavior; brooding over wrongs by prisoners who claim they are innocent; monotonous and insufficient food; stringent provisions of new legislation applied to convicts sentenced under old laws; withholding pay earned in prison by long-term prisoners until their discharge.

One of the worst prison disasters in years was the fire which broke out in the Ohio State Penitentiary in Columbus on April 21, and resulted in the death by suffocation or burning of 319 convicts. An additional 230 burned or smoke-choked men were sent to the hospitals. An official inquiry indicated that the guards had never received instructions for the routine to follow in case of fire, and that the loss of most of the lives was attributed to the delay in opening the cells. An additional reason for the terrible holocaust was the overcrowding of the penitentiary which had been originally built to house 1500 convicts and which at the time of the fire contained more than 4600 inmates.

Warden Lewis E. Lawes, of Sing Sing prison New York, pointed out that the outstanding cause of prison disorders was the prisoner's loss of hope. In amplifying on this opinion, Warden Lawes declared the following difficulties were inherent in our present system: The prisons were overcrowded because hundreds of men do not belong there at all. A large number of these persons should be at home and at work. Prison troubles in many States grow out of the strait-jacketed inflexible parole systems. Long prison sentences without reductions in releases and paroles had resulted in congestion. Said the warden:

Effectively handled, efficiently and intimately guided, thousands of prisoners could safely be released from our prisons throughout the country. There would be an end to crowding. Real classification and segregation would be possible. Work would be more general and important beyond measure, the hope of earlier release would be reflected in the prisoner's institutional conduct.

Doctor Hastings H. Hart agreed with Warden Lawes that the chief cause for prison outbreaks was the loss of hope in the minds of the prisoners. Doctor George Kirchwey, former warden of Sing Sing, tended to agree with both these authorities. Said he:

While the men are serving their sentences every effort should be made to keep up their morale, to keep alive and stimulate their self respect, and to prepare them to take their places in the world when they go forth from prison. . . . Above all the prison must not rob a man of his self respect. Men should live in prison and should leave prison with hope in their hearts.

HOOVER LAW ENFORCEMENT COMMISSION. In January the Commission on Law Observance and Enforcement made public its first detailed description of the work it had been doing since its organization seven months before. This report was only a statement of progress and did not as yet incorporate the final recommendations of the Commission. The report indicated that the work of the Commission had been divided among 11 committees as follows: police, prosecution, courts, penal institutions, probation and parole, prohibition, cost of crime, causes of crime, juvenile delinquency, criminal justice and the foreign born, abuses in enforcement, statistics. This preliminary statement went on to say:

A preliminary examination by the commission demonstrated unquestionably that the crime law enforcement machinery of the country is entirely inadequate; that prohibition, automobile theft, white slave traffic, immigration and other criminal laws of the Federal government had overtaxed the capacity and effectiveness

of the national machinery for enforcement. The relations of the State agency on law enforcement have also to be considered.

The Commission presented the following summaries of the activities of the sub-committees: *Police*.—The Commission made arrangements for the gathering of information in leading police laboratories in foreign countries relating to the most modern developments in the methods for detecting crime. A preliminary report was prepared by August Vollmer. *Prosecution*.—The work of this sub-committee was in the hands of Alfred Bettman, who had helped in the preparation of the Cleveland crime survey of 1921. *Courts*.—A special report was being made of the Federal judiciary and in an effort to cover the field more comprehensively a committee was created, made up of the deans of a number of law schools in the country, for the purpose of prosecuting the research further. *Penal Institutions*.—The commission set up a committee, headed by Dr. Hastings H. Hart of the Russell Sage Foundation, to prosecute the inquiry in this subject. *Prohibition*.—The Commission set up a machinery for the purpose of conducting research into the problems of the importation, manufacture and diversion of industrial alcohol, machinery for the administration of the law, the coöperation of Federal and State governments, the judicial machinery of enforcement, codification of the existing statutes. *Causes of Crime*.—Material was being assembled on the psychiatric aspects of crime under the direction of Dr. Herman J. Adler, State criminologist of Illinois, and Miss Mary Van Kleeck, of the Russell Sage Foundation. *Juvenile Delinquency*.—Preliminary inquiries were being conducted by Miss Grace Abbott, of the Children's Bureau, and Miss Leuroot, her assistant. The commission also had secured the services of Miss Miriam Van Waters to make an exhaustive inquiry into the causes of juvenile delinquency. *Criminal Justice and the Foreign Born*.—Under the direction of Dean Abbott, of the University of Chicago, a study of this subject was being pursued in California, Texas, New Orleans, Chicago, and New York. *Cost of Crime*.—This inquiry was being carried on under Goldthwaite H. Door assisted by Sidney P. Simpson. *Abuses in Enforcement*.—Walter H. Pollak, of the New York Bar, and Professor Zechariah, of the Harvard Law School, were collecting material relating to the use of the third degree, intimidation and other improper actions by police prosecutors and judicial officers as well as by the police. *Statistics*.—In an effort to foster the collection of statistics on crime and criminal enforcement, the commission set up a machinery to recommend administrative or legislative action. This was placed under the direction of Sam Bass Warner, of Harvard University.

Growing out of these activities of the Hoover Commission, President Hoover presented to Congress in April a programme calling for the enactment of legislation applying to the following five subjects: the transfer of prohibition enforcement from the Treasury to the Department of Justice; legislation to relieve court congestion; legislation to increase Federal prison accommodations and to improve the parole system; legislation to create a unified border control; legislation to give the District of Columbia a more adequate prohibition enforcement law.

George W. Wickersham, chairman of the Hoover Commission, in a paper read before the

American Prison Association on October 12, outlined some of the inadequacies of the present crime enforcement machinery. He doubted whether there existed in any city in the Union a properly trained police force. Mr. Wickersham also pointed out that the country, penal laws and their administration largely followed traditional lines and were made up of a mixture of revengeful and reformatory measures executed in an imperfect manner. The fundamental question before society was how could it best be protected against crime. The first consideration involved the machinery of prevention. Next in importance came detection, prosecution and conviction. Finally there followed the treatment of offenders. Said Mr. Wickersham: "Prevention is the most important . . . I cannot too strongly emphasize my conviction that the best protective measures against crime lie in the education of the young and the enlightened treatment of the young offender." As one of the most efficacious methods in the handling of criminals, the speaker recommended the reintroduction of the lash which, he pointed out, was still being employed in England and Canada but was to be found only in the State of Delaware in the United States.

In December, the National Crime Commission made public the report of the Commission's Committee on the Medical Aspects of Crime. This report recommended the following: 1. That the several States establish as rapidly as possible appropriate institutions for the various types of offenders. 2. That the larger courts be encouraged to establish their own psychiatric clinics and that the States establish for the smaller courts such facilities. 3. That the several States extend the principle of the indeterminate sentence and the greater discretion of the judges in disposing of cases. 4. That as a means of avoiding the scandal attendant upon the prevailing system of psychiatric expert testimony, the several States be urged to adopt a law similar to that in Massachusetts, known as the Briggs law, providing for the impartial and routine examination under State authority of persons held on criminal charges. In commenting on the success of the Briggs law, the report declared that this act had virtually abolished the battle of experts which in the case of Loeb and Leopold in Chicago and the case of Remus in Cincinnati had not only attracted wide attention but at the same time had brought into disrepute so-called expert testimony offered on the stand by psychiatrists.

BAUMES COMMISSION. The New York State Crime Commission, through its research office, continued to issue its enlightening reports on the handling of crime in New York State. In the autumn there was issued a report based on a four-year study of the factors contributing towards juvenile delinquency. The report pointed out that crime prevention ultimately depended upon the proper guidance of child behavior. The agencies governing the life of the delinquent child were listed as the home, the school, the recreation centres, and the gang. The report recommended the creation within municipalities of central organizations to integrate the action of all existing agencies on a neighborhood basis, and recommended that neighborhood councils, centrally housed with branches of welfare agencies in the same building, be set up. The report went on to say that "Crime is not only a livelihood, it is an

adventure. No programme that cannot provide stirring interest can hope to compete with it. The immediate problem then is to find ways and means of interesting delinquent excitement cravers in wholesome activities." In the detailed studies upon which the report was based, it was found that 85 per cent of the parents of juvenile delinquents were foreign born. A higher percentage of felons was found to come from homes where father and mother were living together than from broken homes. Another unexpected finding was that a higher percentage of delinquents was found in homes where the mother did income-bringing work at home than in homes where the mother worked outside. In October, a group of prison experts, in consultation with Governor Roosevelt, agreed that there was a necessity for revising the fourth offender laws written as a result of the recommendation of the Baumes Commission. It will be recalled that this law called for mandatory life sentences for persons convicted of four crimes, regardless of the nature of the crime. Another suggestion submitted to the Governor was the recommendation that a revision be made in the law which had practically abolished time off for good behavior.

CRITICISM. See LITERATURE, ENGLISH AND AMERICAN; FRENCH LITERATURE; GERMAN LITERATURE; ITALIAN LITERATURE; SCANDINAVIAN LITERATURE; SPANISH LITERATURE; ETC.

CROATIA (krō-ā'shī-ā) **AND SLAVONIA.** A former crownland of the Austro-Hungarian Empire, extending from the Adriatic Sea to the Danube River; from Dec. 1, 1918, to Oct. 3, 1929, a province of Yugoslavia. The administrative reorganization of Yugoslavia on the latter date eliminated Croatia as a governmental unit. On Jan. 31, 1921, its area was 16,920 square miles; the population, 2,739,593. The capital, Zagreb, or Agram, had 150,000 inhabitants in 1928. See YUGOSLAVIA, and ITALY under *History*.

CROLY, HERBERT. An American editor, died in Santa Barbara, Calif., May 16, 1930. He was born in New York City, Jan. 23, 1869, and attended the College of the City of New York during 1884-85 and Harvard University during 1886-87 and 1895-99. In 1900 he became editor of the *Architectural Record*, but after 1906 devoted himself exclusively to writing. During this period he produced the series of books on which rest his fame as a political philosopher—*The Promise of American Life* (1909); *Marcus Alonzo Hanna—His Life and Work* (1912); and *Progressive Democracy* (1914). In 1914, through a subsidy received from Mr. and Mrs. Willard Straight, he founded the *New Republic*, a journal of opinion dealing with current social and political questions and representing the principles of the progressive movement. He was the editor of this weekly until his death, and also prepared a biography of Willard Straight (1924).

CROPS. See AGRICULTURE; and articles on various crops such as CORN, OATS, TOBACCO, WHEAT, ETC.

CROSS-COUNTRY RUNNING. William C. Zepp, of the Dorchester Club, won the 1930 national senior cross-country championship contest held in Jersey City, N. J. Zepp covered the 6-mile course in 29 min. 42 sec. Joe McCluskey of Fordham finished only 30 yards behind the champion, while Gus Moore, former title holder, finished in tenth place. The team championship in this class was regained by the Millrose Athletic Association team of New York City.

The Middle West for the first time carried off the Intercollegiate A. A. A. cross-country championship in the annual meet held in Van Cortlandt Park, New York City, on November 18, Clark S. Chamberlain, of Michigan State, covering the 6 miles of rain-drenched course in 30:19½. Team honors were captured by Pennsylvania State College, with Syracuse second, and Harvard third. In the freshman 3-mile race, Frank A. McKenna and Frederick B. Knepper, both of Manhattan College, tied for first place and the team championship went to Syracuse. The Metropolitan Intercollegiate team championship was won by New York University, two of whose runners, Nat Lerner and George Barker, finished in first place in a dead heat.

The national intercollegiate cross-country title was won by Schenectady High School on the 2½-mile course at Branch Brook Park, Newark, N. J., on November 27. Gus Moore, of the Brooklyn Harriers, annexed his third Metropolitan (New York) A. A. U. senior cross-country title at Clove Lakes, Staten Island, on November 23. He led a field of 95 contestants. The team title in this event went to the Millrose A. A. for the fourth year in succession. The national junior championship was won by Andrew Lewis of the Detroit Y. M. C. A. and his team captured the team title.

CRUISER, NAVAL. See NAVAL PROGRESS.

CUBA. A republic of the West Indies consisting of the large island of the same name, the Isle of Pines, and small adjacent islands. Capital, Havana.

AREA AND POPULATION. The area is 44,164 square miles of which 41,634 are for the island of Cuba, 1180 for the Isle of Pines, and 2350 for the other islands. According to figures furnished by the Department of Justice, the population of Cuba on Dec. 31, 1929, was 3,607,918 (including 82,531 immigrants), distributed as follows:

POPULATION BY PROVINCES

| Province | Inhabitants |
|---------------------|-------------|
| Pinar del Rio | 304,275 |
| Havana | 951,359 |
| Matanzas | 349,578 |
| Santa Clara | 764,072 |
| Camagüey | 261,724 |
| Oriente | 894,380 |

The chief cities, with their populations (including suburbs) in 1929, were: Havana, 581,115; Santiago, 142,921; Camagüey, 87,461; Cienfuegos, 72,919; Manzanillo, 60,544; Guantanamo, 52,598; Matanzas, 46,390; Santa Clara, 26,800; and Sancti Spiritus, 25,926. Immigrants in 1929 numbered 17,179 or 10,135 less than in 1928. All passengers arriving in Cuban ports (1929) totaled 110,665 and those leaving, 119,926, as compared with 117,716 arrivals and 109,618 departures in 1928.

EDUCATION. Elementary education is free and compulsory. For the year ended June 30, 1929, there were 6952 elementary schools, with 340,945 pupils and 7493 teachers; 525 private schools, with 31,949 pupils and 1668 teachers; 84 night schools, with 8377 pupils; and 73 traveling teachers, who instructed 3458 children. The University of Havana had 3932 students in 1928-29.

PRODUCTION. Cuba is primarily an agricultural country, with sugar, the principal crop, dominating the economic situation. With its by-products, sugar normally constitutes 80 per

cent of the island's exports, while tobacco and its products account for 12 per cent. Cacao, cereals, coffee, potatoes, and fruits are other leading products. The price of sugar and the total value of sugar exports declined steadily after 1924, except for a temporary improvement in 1927, with the result that Cuba in 1930 was suffering from the cumulative effects of five years of depression. The price of sugar which had attained the unusual price of 22 cents per pound in 1919 was slightly over 1 cent in 1930. The sugar crop for 1929-30 was estimated at 4,600,000 tons, as compared with 5,156,159 tons in 1928-29, 4,493,123 tons in 1927-28, and 4,508,270 tons in 1926-27. Limitation of production in an effort to maintain prices was abandoned in 1928-29, but negotiations for the restriction of output by producers of Cuba, the United States, and other leading sugar producing countries were inaugurated in 1930. The Cooperative Sales Agency, created by Presidential decree in September, 1929, was discontinued Apr. 15, 1930, due to dissatisfaction on the part of producers. About 70 per cent of the Cuban sugar industry was owned by Americans in 1930 and total American investments in the island were estimated at \$1,500,000,000. See SUGAR.

Coffee production in 1929 totaled 45,366,037 pounds, but an additional 17,299,618 pounds were imported to meet local consumption needs. The diversification of agriculture under Government sponsorship, was making progress in 1930.

Livestock in 1929 included 4,572,367 cattle, 642,191 horses, 82,273 sheep and goats, and 3233 mules. The forested area, which included 1,250,000 acres of state forests, contains valuable cabinet woods, dye-woods, fibres, gums, and resins. Iron ore, copper, manganese, and gold deposits are worked. The tourist trade, mostly American, is Cuba's third largest source of general revenue.

COMMERCE. General imports in 1929 were valued at \$213,741,000 (\$212,817,000 in 1928), while domestic exports declined to \$272,440,000 (\$278,070,000 in 1928), according to preliminary figures. The export decline was due primarily to the lower prices for sugar; raw sugar exports increased about 25 per cent in quantity but fell off 5 per cent in value. Tobacco exports also declined by about 4 per cent. The excess of exports over imports was \$58,699,000, the lowest favorable balance since 1914 and 10 per cent less than in 1928. In 1928, the United States took 72.8 per cent of all Cuban exports and furnished 60.8 per cent of all imports. Great Britain, France, and Spain took 16.3, 1.7, and 1.6 per cent of the exports and supplied 4.9, 4.5, and 4.4 per cent of all imports, respectively.

For the fiscal year ended June 30, 1930, exports to the United States totaled \$150,055,288, or 30 per cent less than 1928-29 exports, which amounted to \$214,134,174. Imports from the United States declined to \$115,725,437 from \$132,489,617 in 1928-29, or 12.6 per cent. Sugar exports to the United States decreased by 33 per cent, falling in value from \$166,000,000 in 1928-29 to \$101,000,000 in 1929-30, and in quantity from 8,217,000 pounds to 5,516,000 pounds. The total value of exports to the United States was \$207,421,000 in the calendar year 1929, as compared with \$720,000,000 in 1920. In actual volume, however, shipments to the United States were 35 per cent larger in 1929 than in 1920, the divergence between volume and value being due principally to the decline in sugar prices. Im-

ports from the United States (1929) were \$128,898,000, or 1 per cent more than in 1928.

FINANCE. The budget adopted for the fiscal year ending June 30, 1931, balanced at 76,790,000 pesos (1 peso equaled \$1 at par), as compared with estimated receipts at 85,450,000 pesos and estimated expenditures of 85,392,000 pesos in the 1929-30 budget.

For the fiscal year ended June 30, 1929, actual receipts totaled 82,329,000 pesos, as compared with 84,789,000 pesos in 1927-28, while actual expenditures increased to 88,093,000 pesos from 83,150,000 pesos in 1927-28. The actual receipts listed for 1928-29 did not include \$7,000,000 transferred from the public-works fund nor \$579,000 borrowed from funds received from the liquidation of the *Banco Nacional*. Budgetary expenditures again exceeded actual revenues in the first half of the 1929-30 fiscal year. The 1930-31 budget was subsequently reduced to 69,000,000 pesos and on Dec. 24, 1930, a further reduction of 12,000,000 pesos was ordered, effective Jan. 1, 1931. Secretary of the Treasury Ruiz Mesa declared that the reductions were inevitable to save the treasury from bankruptcy.

Leading items in the 1930-31 expenditure budget were: National debt service, 16,527,726 pesos; education, 14,108,756 pesos; war and navy, 12,031,390 pesos; sanitation and public welfare, 5,539,103 pesos; communications, 5,319,780 pesos; and veterans' pension fund, 5,318,934 pesos. Customs receipts were estimated at 35,006,500 pesos and land rents, at 25,568,000 pesos.

According to the President's message to Congress, the national debt as of Feb. 28, 1930, totaled \$80,518,300, of which \$71,554,100 represented the external debt and \$8,964,200 the internal debt. The total was \$3,455,100 less than on the same date in 1929. This total was exclusive of public-works serial certificates and floating debt and also of advances against public-works certificates made by American bankers between 1927 and the end of 1929 and understood to aggregate nearly \$60,000,000. An additional loan of \$80,000,000 was secured from the Chase National Bank, New York, on Mar. 6, 1930, the Cuban government receiving an immediate credit of \$20,000,000.

COMMUNICATIONS. Vessels in the overseas trade entering and leaving Cuban ports in 1929 numbered 12,845, with a gross tonnage of 48,456,809 tons. In addition, coastwise vessels numbering 9344 entered the ports and 9403 sailed. Air transportation increased noticeably, with a total of 2824 planes of 17,340 gross tons calling at Cuban airports, the number being more than double that of 1928. There were over 3100 miles of railway lines in operation in 1929. The gross revenues of 20 roads, with 3063 miles of line, aggregated \$42,895,768 in 1928-29 (\$42,393,906 in 1927-28) and the net railway operating income was \$11,818,264 (\$10,303,960 in 1927-28). A total of 11,459,968 passengers and 29,501,410 tons of freight (21,165,087 tons of sugar) were carried during the year. Highways extended 1990 miles in 1930. A 700-mile central highway, traversing the length of the island, was virtually completed at the end of 1930 and a network of feeder roads was under construction which was expected to link every farming community and town with the highway system.

GOVERNMENT. Executive power is vested in a president and cabinet; and legislative power in a congress of two houses, viz., a senate with 24

members and a house of representatives with 128 members. President in 1930, General Gerardo Machado y Morales, inaugurated May 20, 1929, for his second term, which expires May 20, 1935.

HISTORY

POLITICAL DEVELOPMENTS. Spurred by acute economic depression and wide suffering, the Nationalist-led agitation against the virtual dictatorship of President Machado brought Cuba to the verge of revolt during the last quarter of 1930. Only the loyalty of Cuba's efficient and well-disciplined army prevented an armed uprising.

The focal point of the political crisis was the Congressional elections of November 1. President Machado in the summer of 1929 had relaxed the more drastic restrictions placed on anti-Government activities and had promised that the Nationalists would be allowed to participate in the 1930 elections. The bill authorizing the organization of the Nationalist party was not sent to Congress until the summer of 1930. In the meantime peace negotiations between the President and the Nationalists had been inaugurated through the good offices of Gonzalez de Mendoza, a Cuban business man. The Nationalists demanded the restoration of the Crowder code and other guarantees of a fair election as well as the recognition that the constitutional amendments of 1928, and therefore President Machado's second term, were illegal. They further requested the postponement of the Congressional elections in order that they might have time to organize their party machinery.

President Machado was reported to have agreed at first to resign if a plebiscite to be held in 1931 failed to give him a majority. He later withdrew his offer, which had been accepted by the Nationalists, declaring that he was bound to the three legal parties to hold the elections Nov. 1, 1930, and that he would accept no compromise. Congress, with the President's consent, defeated the bill to allow Nationalist participation in the election.

Critics charged that President Machado had stifled all opposition by unconstitutional means and that his rule had been marked by the assassination of labor leaders and journalists opposed to its continuance, the censorship of Opposition newspapers, and the dissolution of Opposition parties. They asserted that the President retained his power only through the support of American financial interests and the threat of American intervention under Article III of the Platt Amendment. They demanded revision of the treaty relations between the United States and Cuba, and particularly the repeal of Article III. Writing in *Foreign Affairs* (April, 1930), Cosme de la Torriente, former President of the League of Nations Assembly and former Ambassador to Washington, said that Article III "has not prevented revolutions; nor has it served to prevent violations of the most sacred individual rights, when individuals disposed to offend against those rights have chanced to be in power in Cuba. On the contrary, the possibility of American intervention has been exploited by unscrupulous politicians for selfish purposes."

Supporters of the Machado régime, while admitting the justice of some of the criticisms directed against it, asserted that these were more than offset by its record of progressive achievement. Leaders of all three of the legal political parties supported the President and his pro-

gramme, which included a comprehensive plan of public works development, nationalization of industries, and the promotion of public instruction and agriculture.

The Government's vigilance against public unrest became increasingly evident as the year progressed. The American-owned *Havana American* was raided by the police March 5 because it had rented its presses to one of the local Opposition papers. The suppression of the Workers' Federation of Havana and the National Federation of Workers, two of the largest labor groups in Cuba, for alleged Communism, was followed by a 20-hour general strike in Havana on March 20, in which 200,000 workers participated as a protest against unemployment and the dissolution of the two unions.

A delegation of striking workers petitioned the President to guarantee liberty of speech and freedom of the press, to recognize the right to organize, and to make certain economic reforms. The answer of the Government was the dissolution of nine unions which had taken part in the strike and the indictment of 42 labor leaders on the ground of inciting to disorder. A strike of port workers at Manzanillo in May was attributed to Communist agitators and 32 of the leaders were ordered deported. On May 18 three persons, including a lieutenant of the Rural Guard, were killed when the police attempted to break up a meeting of the Nationalist party at Artemisa, 60 miles from Havana.

The political crisis of the autumn commenced September 8 with the proclamation of martial law in the city of Palma Soriano, Oriente Province, following the discovery of a revolutionary plot there. Minor disturbances in other parts of the island caused the Government on September 12 to place guards over all railroads, highways, and Government buildings and to take elaborate precautions against a possible rebellion. Censorship of the news from interior cities was placed in effect in Havana September 14. On September 21, Senator David I. Walsh of Massachusetts, after a visit to Cuba, issued a statement in Washington urging immediate action of the U. S. Government to remedy what he declared to be the deplorable economic and political conditions in the island. Postponement of the opening of the National University at Havana pending the November 1 elections was next ordered by the Government, and students demonstrating against this action before the Presidential palace on September 30 were fired upon by the police. One student was killed and 12 students and police were wounded.

An exodus of currency from the country and the temporary closing of one of Cuba's oldest banks on September 27 threatened a general run on the banks and \$50,000,000 was rushed to Havana from Federal Reserve banks in the United States to check this tendency. On October 2, Secretary of State Stimson in Washington admitted his concern over the Cuban situation in a statement interpreted as indicating that the United States would not intervene in case of a revolution, unless a state of anarchy was threatened. The statement appeared to strengthen the position of the Government. A special session of Congress, called by President Machado in the emergency, on October 3 and 4 approved his request for authority to suspend all constitutional guarantees. Disorders attended the Government's suppression of editions of the newspapers *La*

Semana and Karikato on October 7. On the same day Dr. Cosme de la Torriente appealed to the people of the United States to maintain strict neutrality. The Nationalists, he indicated, would use only peaceful means in achieving their ends but he conceded the possibility of rebellion. The following day the President defended his administration at a demonstration of his adherents held at the Presidential palace. He offered to submit to an investigation of his administration, provided the preceding ones of Presidents Menocal and Zayas were probed also, but declined to postpone the elections. Former Presidents Menocal and Zayas had joined with the Nationalists in demanding a postponement of the voting.

The continuance of minor disturbances caused the President on October 14 to sign a decree forbidding the holding of assemblages of any kind throughout the republic until the day after the elections. The long list of Nationalist newspaper editors and labor leaders, whom the Opposition charged had been assassinated with the Government's connivance, was added to October 13 with the death of José Lora, editor of a Nationalist newspaper in Santiago, who said he had been shot by a member of the local police.

The Congressional elections of November 1 resulted in a victory for the supporters of the Machado dictatorship. Largely because of the boycott organized by the Opposition, it was estimated that only 30 per cent of the voters went to the polls. The aftermath of the elections was a new wave of political agitation. Following clashes in Havana on November 13, in which seven persons were killed and 50 injured, President Machado suspended constitutional guarantees in the city and imposed a press censorship. On November 20, the President asked Congress to authorize the extension of martial law to the entire island and the closing of the National University at Havana for three years. The extension of martial law was authorized November 26. In protest against the censorship, all Cuban papers published in Havana, except the government organ, *Heraldo de Cuba*, stopped publication. A Nationalist manifesto, made public in Key West, Fla., on November 22, under the signature of Colonel Carlos Mendieta, Nationalist leader, charged that the elections of November 1 had been marked by "glaring frauds" and protested against the Machado Government's "aggressions against the life and liberties" of the Cuban people.

Toward the end of November, the agitation died down. On December 1, President Machado revoked his decree instituting martial law in Havana, ended the censorship, and authorized the reopening of the National University and other government-supported schools. A few days later (December 5) he reorganized his Cabinet by announcing the following appointments: Secretary of Communications, General Manuel J. Delgado, formerly Secretary of the Interior; Interior, Dr. José C. Vivanco, former prosecuting attorney of the supreme court; Education, Dr. Carlos Miguel de Cespedes, formerly Secretary of Public Works; Public Works, Dr. Jesus Maria Barraque, formerly Secretary of Justice; Justice, Dr. Octavio Averhoff.

The temporary lull in the anti-Machado agitation was broken December 3. A student demonstration in down-town Havana ended with the death of one policeman and the arrest of 50 demonstrators, including four girls. The students were supported by professors and graduates of the

National University. On December 11, President Machado again imposed martial law, this time throughout the island. The censorship on messages passing from point to point within the republic was reimposed (December 12) and 40 professors of the Provincial Institute were dismissed (December 13) by executive decree on a charge of encouraging sedition among the students. Rumors that Machado would resign were flatly denied by him in a manifesto issued December 13. A series of bomb explosions in Havana and other cities commenced on December 18, causing little damage but much public apprehension.

A significant development in the situation was revealed December 26, with the Government's announcement that it had scotched a revolutionary conspiracy, in which a number of army officers were implicated. The Nationalists, it was alleged, planned to attack army barracks throughout the island on Christmas Eve. Prominent leaders of the Nationalist party were arrested in connection with the plot, among them Col. Aurelio Hevia, Secretary of the Interior in President Menocal's régime. Warrants were issued for the arrest of former President Menocal and Dr. Francisco Carrera Justiz, dean of the School of Science and Law at Havana University. Raids on Nationalist party headquarters and the home of former President Menocal on December 30 were reported to have nipped another conspiracy in the bud. These developments were marked by numerous arrests, imprisonments, and deportations.

Events in Cuba meanwhile were watched with intense interest in Washington. On December 3, the Foreign Relations Committee of the Senate agreed that the discussion in Congress of possible American intervention in Cuba would be unwise. Senator Walsh of Massachusetts on December 16 asked the Foreign Relations Committee to investigate the situation in Cuba. His move for a formal inquiry was blocked by invoking the rule forbidding the Senate to consider conditions in foreign countries except on request of the Executive. The Senate Committee was understood to favor the hands-off policy of the State Department.

OTHER EVENTS. Adoption of the Hawley-Smoot tariff act by the United States Congress in June, 1930, increasing the duty on Cuban sugar, inflicted a severe blow upon the island's primary industry, already badly demoralized by the low prices of sugar. As in other countries adversely affected, the tariff aroused widespread criticism of the United States. The Government was compelled to borrow heavily from American bankers to meet its obligations, besides cutting expenditures. In May the salaries of all public employees, excepting the army and police, were reduced between 10 and 15 per cent.

A plan for the stabilization of the sugar industry, proposed by Thomas L. Chadbourne and Viriato Gutierrez, was enacted by Congress and signed by President Machado on November 15. The outstanding feature of the plan was the segregation of 1,500,000 tons of raw sugar to be marketed by the National Sugar Export Corporation during the five-year period, 1931 to 1935, inclusive. A \$42,000,000 bond issue was provided under the law to pay for the sugar segregated at the rate of \$4 per bag of 325 pounds f. o. b. Cuban ports. Subsequent efforts of Mr. Chadbourne and his Cuban associates to secure an international agreement for the stabilization of the sugar industry by reduction of production and price

control failed through the refusal of German sugar beet producers to enter the proposed cartel.

An event of possible great significance to Cuba's industrial future took place September 15, when Professor Georges Claude's invention for producing electric current from the waters of the Gulf Stream was successfully placed in operation at Matanzas. Power is produced by cold water from the bottom of Matanzas Bay condensing the warmer water from the surface of the Gulf Stream.

In accordance with the recommendations of the American Ambassador to Cuba, Harry F. Guggenheim, the American State Department on May 8 announced that it would take no action in regard to the case of Joseph E. Barlow. Mr. Barlow, an American citizen, claimed damages of \$9,000,000 against the Cuban government for the alleged seizure of his lands in Cuba (see 1929 YEAR BOOK). The State Department ruled that he had not exhausted the legal remedies open to him in Cuba.

CULTURE, ANCIENT. See ANTHROPOLOGY; PHILOLOGY, MODERN.

CUMBERLAND PRESBYTERIAN CHURCH. A branch of the Presbyterian Church, originally the Cumberland Presbytery of Kentucky. It was formed in 1810, when the so-called anti-revival party of the church objected to the admission into the ministry of men, who were not up to the usual literary and theological standards, and to the doctrine of fatality as taught in the third and tenth chapters of the Westminster Confession of Faith. Its chief strength was in the Southern States, in consequence of which it was barely saved from disunion during the slavery dispute at the time of the Civil War. This situation led to the establishment of the Colored Cumberland Presbyterian Church. A general assembly which meets annually is the supreme judiciary. In 1930 the denomination comprised 11 synods and 60 presbyteries, and there were 1154 churches, reporting 746 ministers, and a church membership of 64,099. The Sunday-school enrollment was approximately 52,250. The property of the church was valued at \$3,411,862, not including \$500,000 endowment for education.

Missionary work was carried on among the Indians in the United States, and churches were maintained in China, where there was an organized presbytery in Canton with nine churches in South China. During the year mission work was opened up in South America. The denomination carried on educational work under the direction of the board of education and maintained Bethel College and the Cumberland Presbyterian Theological Seminary, both in McKenzie, Tenn. *The Cumberland Presbyterian*, published in Nashville, Tenn., is the official organ of the church. The 1930 national meeting was held in Olney, Texas, May 15-21, and the 1931 meeting was announced for May 21-27 in Evansville, Ind. The Rev. O. A. Barbee of Owensboro, Ky., was moderator of the general assembly, and the Rev. D. W. Fooks, Paducah, Ky., was stated clerk and treasurer.

CUMBERLAND PRESBYTERIAN CHURCH, COLORED. A branch of the Cumberland Presbyterian Church which was legally set apart as a separate unit in 1869. The membership of 178 churches of the denomination for which figures were given in the United States census or religious bodies of 1926 was 10,868. In 152 churches reporting Sunday schools, there were over 5000 pupils and 840 officers and teach-

ers. The value of church edifices, including furniture and equipment, as reported by 162 churches, was \$353,825. Of the 178 churches reporting in 1926, 60 were in urban communities and 118 in rural districts.

CURAÇAO, kōō'rā-sā'ō. A Dutch colony in the West Indies consisting of two groups of islands about 500 miles apart, one of them comprising the islands of Curaçao, Bonaire, and Aruba, and the other consisting of the southern part of St. Martin (the northern part belongs to France), St. Eustatius, and Saba. Area, 403 square miles; population, Dec. 31, 1928, 65,727, of whom 43,581 were on the island of Curaçao. The capital is Willemstad, on the island of Curaçao, with a population of 20,041. Births registered in 1928 totaled 2407, deaths, 1097; marriages, 676. In the same year there were 41 schools with 8989 pupils. The chief products of the colony are maize, beans, pulse, cattle, salt, and phosphate of lime. The chief industry is the refining of crude oil imported from Venezuela and Mexico. Imports in 1928 amounted to 267,895,026 guilders and the exports to 260,066,649 guilders (1 guilder equaled \$0.4022 in 1928). Vessels entering the ports (1928) numbered 10,655 of 37,079,972 net tons. The revenue for 1930 was estimated at 7,385,325 guilders and the expenditures at 6,555,853 guilders. Authority to connect by cable the islands of Curaçao, Aruba, and Bonaire with each other, with the mainland, and also with the All America Cables system was granted by the Netherlands government in 1930. The length of cable required was 600 miles. The colony is administered by a governor assisted by a council of four and a colonial council of 13 members, all nominated by the sovereign. Governor in 1930, Major B. W. T. van Slobbe (appointed Jan. 1, 1930). See NETHERLANDS, THE.

CURLING. Canada retained the Gordon International Medal in 1930 by defeating the United States 271 to 205 at Utica, N. Y. Forty rinks from the two countries participated. The Boston Country Club Team No. 1 won the Stockton Cup, defeating St. Andrew's Golf Club of New York in the final of a three-day tournament in Boston, 24 to 11.

CURRENCY. See COINS, VALUE OF FOREIGN; FINANCIAL REVIEW; MONEY; UNITED STATES.

CURTISS, GLENN HAMMOND. An American inventor and aviation pioneer, died in Buffalo, N. Y., July 23, 1930. He was born in Hammondsport, N. Y., May 21, 1878. He early became interested in mechanics, his first experiments being with the bicycle and motor cycle. He established a factory for the manufacture of motor cycles in Hammondsport in 1902, and five years later established the world's motor-cycle record of a mile in 46 $\frac{3}{4}$ seconds at Ormond Beach, Fla. His interest in aviation was aroused in 1904 through a request from Capt. Thomas Scott Baldwin to design a special motor for the dirigible, *California Arrow*. His success resulted in an order from the U. S. government to build the motor for Dirigible No. 1 of the U. S. Army. In 1907 Curtiss became associated with Alexander Graham Bell in the organization of the Aerial Experiment Association of America. In 1908 in the *June Bug*, which had been constructed by the Association under his supervision, he won the *Scientific American* trophy for the first public flight of a mile in the United States, at a speed of almost 40 miles an hour. The next year he again won this trophy, covering a distance of 24.0 miles in

52.3 minutes at Mineola, Long Island. For this exploit he was elected by the Aero Club of America to represent the United States in the international aviation meet held in Rheims, France, in August, 1909, on which occasion he won the Gordon Bennett cup and the prix de la Vitesse over a 20-kilometer (12.42 miles) course in a biplane of his own design. He attained his greatest triumph on May 29, 1910, when he made his record-breaking flight in a Curtiss biplane from Albany to New York in 2 hours and 51 minutes and won the \$10,000 prize which had been offered by the *New York World*.

By 1912 Curtiss had perfected his hydroaëroplane or so-called flying boat, with which he had been experimenting for several years, by equipping an aëroplane with pontoons. In 1914 he designed and built for Rodman Wanamaker the *America*, the first multi-motored flying boat and heavier-than-air flying craft designed for trans-Atlantic flight. When the World War broke out he, with J. N. Willys, expanded the Curtiss factories to meet the war demands first of Great Britain and Russia, and then of the United States. These included the G. H. Curtiss Manufacturing Company, Curtiss Aëroplane Company, Curtiss Motor Company, Curtiss Engineering Company, and Curtiss Aëroplane & Motor Corp., located mostly in Buffalo, N. Y. In this period he developed the *Wasp* motor, with which world records for speed and altitude were achieved, and built for the U. S. Navy the Navy-Curtiss flying boats 1, 2, 3, and 4, the latter, in 1919, being the first aircraft of any kind to cross the Atlantic. He also designed and built several machines of distinctive plan, such as scooters, life boats, combined land and water aircraft, speed motor boats, and autoplanes. He was active between 1909 and 1919 in organizing the Curtiss Flying Service and in establishing flying schools in Hammondsport and Buffalo, San Diego, Newport News, Miami, and Atlantic City. With the exception of the Wright brothers, no other American did so much as he toward advancing and popularizing aviation. He was the author, with Augustus Post, of the *Curtiss Aviation Book*.

CUSHMAN, ALLERTON SEWARD. An American chemist, died in New York City, May 1, 1930. He was born at the United States Consulate in Rome, June 2, 1867, and was graduated from the Worcester (Mass.) Polytechnic Institute in 1888. In 1889-90 he studied at the universities of Freiburg and Heidelberg, after which he returned to the United States and received an M.A. degree from Harvard University in 1896 and a Ph.D. the following year. He was associate professor of chemistry at Bryn Mawr College in 1900-01. From 1902 to 1910 he was assistant director in the Office of Public Roads of the U. S. Department of Agriculture and chemist in charge of investigations. In 1910 he founded the Institute of Industrial Research and until 1924, was its director. During the World War he served in the Army Ordnance Department with the rank of Lieutenant-Colonel, being stationed at Frankford Arsenal. In addition to scientific bulletins and papers, Dr. Cushman wrote *The Corrosion and Preservation of Iron and Steel* (1910), and *Chemistry and Civilization* (1920). Other subjects in which he made investigations were the extraction of potash from feldspathic rocks, the use of ground rock as fertilizer, and the properties of road materials. He was the recipient of the medal of the Franklin Institute of Philadelphia in 1906.

CUSTOMS TRUCE. See LEAGUE OF NATIONS.
CYCLING. Lucien Michaud, of France, won the world's professional sprint championship for the fourth consecutive year, but new title holders appeared in other world cycling events. Eric Moeller of Germany captured the world's professional motor-paced title, while the world's professional road title went to Alfredo Binda of Italy, and the world's amateur sprint championship to Louis Gerardin of France.

In the United States, Cecil Walker of Australia captured the American all-around professional championship for the sixth successive year, as well as the professional sprint title. Franco Georgetti, of Italy, was another outstanding professional cyclist of the year, winning the American motor-paced championship for the fourth year in succession and pairing with Paul Brocardo, of Italy, to win the 49th international six-day race in Madison Square Garden, New York, December 7-13. The American amateur sprint and all-around titles were won by Dominick Tucillo, riding for the Acme Wheelmen, of New York, and the American amateur road title by Robert Thomas, of Kenosha, Wis.

CYPRUS. A British island, situated 40 miles from the coast of Asia Minor and 60 from the coast of Syria; the third largest island in the Mediterranean Sea. Area, 3584 square miles; population, according to the census of 1921, 310,715, of whom 61,339 were Moslems. In 1928 births registered numbered 9959 and deaths, 5235. Nicosia, the capital, had 18,579 inhabitants in 1921. A total of 47,577 pupils were enrolled in 971 elementary schools in 1928. With about one-third of the arable land under cultivation, agriculture forms the chief occupation of the people of the island. Forests and vineyards are being rapidly developed. Other farm products are wheat, barley, oats, potatoes, linseed, wine, olive oil, cotton, and fruit. Asbestos and iron are mined and exported in considerable quantities.

Imports during 1929 were valued at £1,983,833 and exports at £1,635,736. Shipping entered and cleared the same year totaled 2,048,764 tons. Excluding the island's share of the Turkish debt charge, expenditure in 1928 amounted to £679,980; revenue, £713,753; public debt, £174,107. The island is under a governor, aided by an executive council and a legislative council of 24 members, of whom 9 are office-holders and the remainder elected for five years, 12 of them by non-Mohammedan voters and 3 by Mohammedan voters. On May 1, 1925, the island was given the status of a colony. Governor during 1930, Sir Ronald Storrs.

HISTORY. A demand from the Greek representatives on the Legislative Council of Cyprus that the island be ceded to Greece was flatly rejected by Lord Passfield, British Secretary of State for Colonies, according to a White Paper issued by the British government in February, 1930. The Greek memorial, published in the White Paper, complained of conditions on the island under British administration and declared the only solution was "union with our mother country, Greece." Failing this, they asked the extension of responsible government to the island. Lord Passfield replied that he did not consider the island ripe for a further experiment in constitutional government. The memorialists asserted they represented five-sixths of the population, which was denied by the government. See ARCHAEOLOGY.

CYRENAICA. An Italian colony on the north coast of Africa. It formed part of Libia until 1919, when Libia was divided into Cyrenaica and Tripolitania for military and administrative purposes. (See TRIPOLITANIA.) The area is estimated at about 285,640 square miles including the hinterland zone of Cufra; population, according to the census of 1926, about 185,000 natives, and 10,000 Europeans. Benghazi is the principal town with a population of 31,298 in December, 1928, exclusive of the garrison. The chief occupation of the people is agriculture, although there are possibilities for cattle raising. Barley and wheat are the chief products. In 1928 imports totaled 260,943,000 lire (178,238,195 lire in 1927) and exports, 24,896,000 lire (14,908,000 lire in 1927). Cotton goods and sugar are the chief imports; sponges, barley, wool and goats' hair, tunny fish and cattle, the chief exports. Revenues and expenditures for 1929-30 were estimated as follows: Revenue of the colony, 55,880,000 lire; state contribution, 198,210,200 lire; total, 254,090,200 lire; civil expenditure, 52,000,000 lire; military expenditure, 206,350,000 lire. The military force in 1929 consisted of 500 officers and 16,000 men, including 13,000 native troops. Governor during 1930, General Pietro Badoglio, appointed December, 1928, with headquarters in Tripolitania; Lieutenant-Governor, General Graziani (appointed March, 1930).

In his campaign to stamp out rebellion among the nomad tribesmen of the Gebel district in southern Cyrenaica, General Graziani in 1930 moved the entire native population of the region, numbering about 80,000, hundreds of miles across the desert to pasture lands allotted them on the Mediterranean coast. About 600,000 head of cattle were moved with them. The move was planned to cut off the supplies of the nomads, who levied upon the resident population.

CZECHOSLOVAKIA, *čcheko-slovákia*. A central European republic, formed Oct. 28, 1918, out of the Slav regions of the old Austro-Hungarian Empire; comprising the former Austro-Hungarian provinces of Bohemia, Moravia, Silesia, Slovakia, and Ruthenia, together with the portion of the Teschen district assigned to Czechoslovakia at the Ambassadors' Conference July 28, 1920. Capital, Prague.

AREA AND POPULATION. The total area of Czechoslovakia is 54,207 square miles. The population at the census of Feb. 15, 1921, was 13,613,172 (estimated at 14,600,000 on Jan. 1, 1930). By race, it was distributed in 1921 as follows: Czechoslovaks, 8,760,937 (65.5 per cent); Germans, 3,123,568 (23.3 per cent); Magyars, 745,431 (5.5 per cent); Ruthenians, 461,849 (3.4 per cent); Jews, 180,855 (1.3 per cent); Poles, 75,853 (0.5 per cent); others, 25,871 (0.2 per cent). There were also 238,808 aliens. The largest cities with their populations in 1921 are: Prague, 676,657; Brno, 221,758; Ostrava, 113,709; Plzeň, 108,023; and Bratislava, 93,189. The majority of the people are Roman Catholics, who numbered 10,383,833 in 1921. Czech is the official language, but about 25 per cent of the population speak German as their native tongue.

EDUCATION. Elementary education is compulsory between the ages of 6 and 14. In October, 1928, there were 14,484 elementary public and private schools, with 1,534,454 pupils, and 1799 higher grade schools (public and private), with 235,876 pupils. Secondary Latin and technical schools (1927-28) numbered 353, with 95,541

students, and public, or state-aided, schools of commerce, 171, with 32,421 students. The four universities at Prague (Czech), Prague (German), Brno (Czech), and Bratislava (Slovak) had a total of 16,663 students in 1927-28 and the four technical high schools had 10,734 students. About 93 per cent of the population over six years of age are literate.

PRODUCTION. Czechoslovakia inherited about three-fourths of the industrial resources of the former Austro-Hungarian Empire and the north-western section is one of the most highly developed industrial districts of Europe. In addition, the nation is self-contained in most agricultural commodities, although considerable quantities of livestock, wheat, corn, and lard are imported. Of the total population, about 45 per cent are engaged in industry and commerce and 40 per cent in agriculture.

Arable land comprised 43 per cent of the total area in 1928; permanent grass and pasture, 18 per cent; and woodland and forests, 33 per cent. Official estimates of the principal crops for 1930, in metric tons, were: Wheat, 1,900,000; rye, 700,000; barley, 520,000; and oats, 230,000. For 1929, the cereal yields in quintals were: Wheat, 13,081,000; rye, 16,154,000; barley, 12,778,000; oats, 13,664,000; and maize, 2,489,000. Sugar production in 1929 was 1,030,000 metric tons. There are flourishing beer, spirits, malt, and foodstuff industries. The fruit crop (1928) included 179,281 tons of apples, 95,330 tons of pears, and 261,978 tons of stone fruit.

Production of the leading minerals in metric tons for 1929, with figures for 1928 in parentheses, was as follows: Coal, 16,750,674 (14,460,305); lignite, 22,555,210 (20,128,000); coke, 3,200,000 (2,777,000); pig iron, 1,642,482 (1,569,264); steel, 2,151,340 (1,732,000). Salt, zinc, manganese, graphite, garnets, gold, silver, copper, and lead are produced also. There were 289 coal mines in 1928, employing 97,403 workers. Textiles, glass and stone, foodstuffs, furniture, machinery, metals, paper, and chemicals are the leading manufactured products. Leather working is extensively carried on. There were in 1930 a total of 1740 textile factories, with 200,000 mechanical looms and 5,000,000 spindles, employing 304,000 workers. Textile production averages about \$420,000,000 annually, of which about one-half is domestically consumed. Textile exports in 1929 were valued at \$211,650,000 (\$218,000,000 in 1928).

COMMERCE. The favorable balance of trade characteristic of former years was retained by a narrow margin in 1929. Imports, including bullion, increased to 19,918,797,000 crowns (1 crown equaled \$0.0296 from 19,207,903,000 crowns in 1928, while exports declined to 20,415,969,000 crowns from 21,224,211,000 crowns in 1928. The export surplus was 497,172,000 crowns, as against 2,016,308,000 crowns in the previous year. Czechoslovakia in 1929 ranked first in the exportation of glass and of boots and shoes. The chief exports (1929), in millions of crowns, were: Cotton yarns and manufactures, 2881; woolen yarns and manufactures, 2104; iron and manufactures, 1802; leather and leather goods, 1416; glass and glassware, 1378; sugar, 1068; cereals, 1004. Leading imports were: Raw cotton, 1953; raw wool, 1559; cereals, 1154; cattle, 944; fruit and vegetables, 858; silks, 828. Imports came mainly from Germany, with Austria, Poland, and the United States ranking in order. Germany,

Austria, and Great Britain were the chief export markets. Exports in 1930 were valued at about \$523,000,000 and imports at \$468,000,000.

FINANCE. Budget estimates for 1930 placed the total revenues at 9,419,867,000 crowns and total expenditures at 9,366,904,000 crowns, as compared with an estimated revenue in 1929 of 9,569,907,000 crowns and an estimated expenditure of 9,534,373,000 crowns. In the 1930 budget, direct taxation was estimated to yield 1,597,000,000 crowns (1,050,000,000 crowns from the income tax). Capital expenditure in state enterprises was calculated at 1,212,000,000 crowns (640,000,000 crowns in 1929). Final figures for 1928 showed totaled revenues of 9,925,800,000 crowns and expenditures of 9,607,400,000 crowns, leaving an actual surplus of 318,400,000 crowns, as against an estimated surplus of 35,500,000 crowns in 1929 and 53,000,000 crowns in 1930.

Revised in accordance with agreements reached at the Hague Conference in January, 1930, the national debt at the beginning of 1930 stood at 38,092,000,000 crowns (\$1,129,000,000), according to preliminary figures from semi-official sources. Of the total, 29,610,000,000 crowns represented the internal debt, a reduction of 536,000,000 crowns during 1929, and 8,482,000,000 crowns the external debt. The external debt was divided, in crowns, as follows: 8 per cent sterling loan of 1922, 1,531,000,000; liberation tax (current capital value), 1,190,000,000; and funded debts to United States, 3,881,000,000; to Great Britain, 89,000,000; to Caisse Commune, 1,121,000,000; to France, 340,000,000; and to Italy, 330,000,000.

The gold standard for Czechoslovak currency was adopted late in 1929. The crown (equivalent to \$0.02964) is the monetary unit, with 100 crowns equal to an *hrivana*.

COMMUNICATIONS. The total length of railway lines in 1929 was 8477 miles, of which 6899 miles, or 81 per cent, were Government-owned and operated. The Government operated an additional 1422 miles, or 16.8 per cent, under contract with private owners, the remaining 155 miles being privately operated. Freight and passengers carried in 1928 were more than double the figures for 1919. In 1928, operating revenues of the state railways were 4,511,573,240 crowns and other revenues 448,487,714 crowns, while operating expenses were 4,017,975,014 crowns and other expenses 355,666,038 crowns. In 1929 there were approximately 45,130 miles of highways, of which 5580 were national roads, 31,050 miles were second-class roads, and 8500 miles third-class roads. Virtually all were surfaced. Expenditures by the National government for highway work during 1930 were estimated at 350,000,000 crowns. This excluded appropriations from general revenues (76,750,000 crowns in 1929) and those by provincial, district, and local governments.

The Danube is the principal waterway, with Bratislava as the chief port; the Elbe and Vltava rivers are extensively used also for freight shipments. Thirteen international air routes and four national routes were in operation within or across Czechoslovak territory in 1928.

GOVERNMENT. According to the constitution adopted by the National Assembly, Feb. 29, 1920, executive power is vested in a president, elected for seven years by the two chambers in joint session, who appoints and recalls his ministers; and legislative power in a senate of 150 members

elected for eight years and a chamber of deputies elected for six years, the former elected by all citizens over 26 years of age and the latter by all citizens over 21 years of age. The principle of proportional representation is applied. The composition of the Chamber of Deputies following the election of Oct. 31, 1929, was as follows: Czech Agrarians, 46; Czech Socialist Democrats, 39; Czech National Socialists, 32; Communists, 30; Czech Clericals, 25; German Social Democrats, 21; Slovak Clericals, 19; German Agrarians and Socialists, 14; Czech Small Traders, 12; Hungarian Christian Socialists, 9; German National Socialists, 8; German Nationals, 7; Poles and Jews, 4; League for Election Reform, 3.

President in 1930, Thomas Garrigue Masaryk, reelected May 27, 1927. The coalition Government formed Dec. 8, 1929, was constituted as follows: Prime Minister, František Udržal (Czech Agrarian); Foreign Affairs, Dr. Eduard Beneš (Czech National Socialist); National Defense, Dr. K. Viskovsky; Finance, Dr. Karl Engliš; Interior, Dr. J. Slávik; Commerce, Dr. Josef Matoušek; Health, Dr. František Spina; Railways, Rudolf Mlčoch; Social Welfare, Dr. Ludwig Czech; Justice, Dr. Alfred Meissner; Agriculture, Bohumil Bradáč; Education, Dr. Ivan Dérer; Posts and Telegraphs, Dr. Emile Franke; Public Works, Jan Dostálek; Unification of Laws, Dr. Jan Šrámek; Food, Rudolf Bechyně. The Cabinet represents a coalition of all Czech parties, bourgeois and socialists, and the German-Magyar Agrarians and Social Democrats.

HISTORY

THE POLITICAL SITUATION. Save for an effort to deprive Foreign Minister Eduard Beneš of his Cabinet portfolio, which he had held for ten years, because of his failure to obtain greater concessions at The Hague Reparations Conference in January, domestic politics in 1930, in contrast with 1929, remained quiescent for the most part.

The final settlement reached at The Hague, described under REPARATIONS, was bitterly criticized on the ground that Czechoslovakia was required to make payments on terms somewhat similar to those demanded of her defeated enemies of the World War. Dr. Beneš saved his position by a powerful defense of his policies delivered before both Chambers of Parliament on January 30. He denied charges that the Little Entente alliances and the alliance with France had alienated the friendliness of Great Britain and Italy. On the other hand, he said, the unity of purpose displayed by the Little Entente at The Hague had strengthened Czechoslovakia's political position and the final concessions obtained were such as to justify the policies he had followed during the previous decade.

The dissatisfaction aroused by The Hague settlement was thought to have injured Dr. Beneš's chances of succeeding President Masaryk as head of the republic, of which the two were cofounders. The President was known to favor his selection, and had been expected to resign on his eightieth birthday, March 7. Consequently Dr. Masaryk's announcement that he would serve the balance of his term was received as evidence that he did not consider the time propitious for the election of Dr. Beneš.

The Communist party, which lost ground in the elections of 1929, was further weakened in the autumn of 1930 by the defection of the miners' section of the International Union of Com-

munists and other considerable groups, who joined the Social Democratic party. Waning enthusiasm for the Communist programme and the refusal of Moscow to sanction compromises which would have enabled the party to adapt its policies to special conditions in Czechoslovakia contributed to the defections. The new additions strengthened Socialist hopes for the establishment of a Socialist Ministry. Efforts to unite the four Roman Catholic parties into a compact bloc were temporarily defeated in June, when the Czechoslovak People's party announced that it did not consider the time opportune for such a step. The negotiations were inspired by the weakened parliamentary position of the Catholic forces following the election of 1929.

The Slovak autonomist agitation appeared to have died down, temporarily at least. The action of the Bratislava Court of Appeals in reaffirming in the middle of April the 15-year prison sentence passed on Prof. Voiteich Tuka, Slovak autonomist leader, aroused comparatively little interest. The verdict was again confirmed by the Supreme Court of Czechoslovakia on July 31. Professor Tuka, a Slovak deputy in Parliament and unofficial head of the Slovak People's (Catholic) party, was convicted in 1929 of high treason and military espionage. Revelations during his sensational trial of his relations with Hungarian groups seeking revision of the Trianon and Versailles peace treaties had alienated much of the Slovak leader's support.

CZECH NATIONALISM. Czech nationalism vented itself in violent anti-foreign demonstrations during the year. The Prague newspapers assumed the lead in voicing the anger of European Slavs at the execution in September of Italian subjects of Slav extraction charged with terrorist activities. Despite a ban placed on anti-Italian demonstrations by the Government, the Italian legation in Prague was stoned by a mob on September 11. Nor was Italy the sole target of Czech resentment. German and Jewish motion picture theatres in Prague were invaded and badly damaged by demonstrators on September 24, while a few days previously an American and an Austrian were prosecuted for alleged verbal insults to the country's honor. An intimation from President Masaryk that he would be willing to consider revision of the Czechoslovak-Hungarian frontier aroused indignation among extreme Czech nationalists, as well as much interest in the chaucelleries of Europe.

OTHER EVENTS. The proposal for a customs union among the Danube states was sympathetically received in Prague, after the alarm aroused by the prospect of the formation of an agricultural bloc by Rumania, Yugoslavia, and Hungary had subsided.

About 121,000 acres of fertile, arable land near the German border were transferred from the Prince of Liechtenstein and the Order of Teutonic Knights to the Czechoslovak government for redistribution, under an agreement concluded by the three parties at Olmütz on August 18. The former owners surrendered the properties for nominal compensation to avoid forcible confiscation under the country's new land laws. It was planned to distribute the land principally to Czechs in order to create an additional barrier against Germany.

While purely political problems were less pressing than in the previous year, the world-wide economic depression brought in its wake the

difficult questions of farm relief and unemployment insurance, complicated by declining national revenues. To insure the expenditure of unemployment benefits for the purposes intended, and at the same time to help relieve the agricultural depression, the Ministry of Agriculture in May announced that doles would be distributed in the form of tickets exchangeable for meat, bread, vegetables, and milk, rather than in cash. It was suspected that the cash payments had been used in part for the purchase of liquor. See **LITTLE ENTENTE; JUGOSLAVIA, FRANCE, and HUNGARY under History; and REPARATIONS.**

DAHOMÉY, dà-hō'ml. A French colony on the west coast of Africa forming a subdivision of the colony of French West Africa. (See **FRENCH WEST AFRICA**). The colony has only about 70 miles of coast, but a wide hinterland. Area, 62,772 square miles; population, according to the census of 1927, 1,057,260, of whom 1000 were Europeans. The chief centre of trade and the seat of the government is Porto Novo with a population of about 27,000. Potatoes, corn, manioc, yams, and some cotton are raised. The forests contain oil palms of commercial importance. The chief exports are palm oil and palm kernels. Imports in 1928 amounted to 134,349,000 francs; exports, 97,773,000 francs. The local budget for 1927 was 31,000,000 francs. Governor in 1930, M. Reste.

DAIRYING. The year 1930 was marked by very unusual and unsettled conditions in the dairy industry which is generally recognized as one of the most stable of agricultural enterprises. A number of factors contributed toward this condition, especially the industrial depression and falling price level, the drought, heavy stocks of dairy products which were on hand at the beginning of the year, the revised tariff, failure of expected seasonal rises in prices to occur, and conditions in world markets.

In recent years there has been an organized effort to increase the consumption of dairy products in the U. S. and the chief difficulty in the marketing of these products in 1929 was attributed to the lack of an active demand. Notwithstanding the efforts to increase consumption, the Bureau of Agricultural Economics estimated the consumption of butter, cheese and canned milk in 1930 to show a decrease of a little less than 1 per cent as compared with 1929. The consumption of these products in 1929 was 1.4 per cent less than that in 1928. Had it not been for the large carry-over from 1929 the condition would likely have improved in 1930, as production of canned milk was reduced 10 per cent and production of butter 4 per cent with cheese production showing an increase of less than 1 per cent. There was thus a considerably greater reduction in production than in consumption.

There was a feeling of unsteadiness among fluid milk producers because surplus fluid milk could not be diverted to the manufactured products at an advantage, as the prices for surplus fluid milk were low. Butter prices dropped to the lowest levels since 1921, being less than 40 cents per pound on the New York market during practically all of the year, and less than 30 cents at the end of the year. Butter prices also failed to make expected seasonal advances. An important factor in the low prices was the willingness of those storing butter and cheese to take small profits rather than hold

for better prices. This situation resulted in the movement of butter and cheese out of storage during August, several weeks earlier than is normally expected. Although the amount of butter in storage on July 1, 106,522,000 pounds, was the largest on record, the early movement from storage reduced the supplies so that by November 1 there were less than 110,000,000 pounds as compared with 138,000,000 pounds in storage at the same time in 1929. The 1930 storage was about 2,000,000 pounds less than the five-year average for November 1. Cheese in storage on November 1 was practically equal to 1929 and the amount of canned milk was nearly 10 per cent less in 1930 than in 1929.

The drought extending over practically all of the United States east of the Rockies was not without its effect on the dairy enterprise. Owing to the supplementary feeding of dairy cattle as practiced in many sections even on pasture, actual production was not reduced as much as might at first be expected. The reduction in pasture obviously cut in on summer production, but it is really the short harvest resulting from the drought that may be expected to have its greatest effect in the winter 1930-31, when the shortage of late summer and fall harvested feeds becomes apparent. Much relief to the stricken areas resulted from the emergency freight rates for feed granted to areas in 21 States. The emergency rates expired November 30.

A factor not mentioned in the above discussion but having an important bearing on the net prices received by the producers for dairy products was the relatively low price of feeds. The reduced 1930 production may be expected to modify this situation. Reports indicate that there was an increase in the heifer calves being raised, which also will have to be considered as potential consumers of the reduced supply of feed. Low feed prices prevailed into the fall, a situation which acted somewhat as a stimulant to production.

The year 1930 will be remembered as one marked by unsteadiness and unexpected conditions but with the general low prices the index of the farm price of dairy products was reported by the U. S. Bureau of Agricultural Economics as well above the average of all farm products during most of the year.

The passage of the tariff act of 1930 placed the following duty on imported dairy products: milk 6½ cents per gallon, cream 56.6 cents per gallon, butter 14 cents per pound, oleomargarine 14 cents per pound, cheese 7 cents per pound and casein and lactarene 5½ cents per pound. With the exception of Swiss cheese the rates were all increases as compared with the 1922 tariff and it was hoped they would help to prevent foreign competition.

INTERNATIONAL CONDITIONS. The weakness exhibited in the domestic markets for dairy products in the United States was if anything more pronounced in the world markets. The British butter markets suffered from the receipt of large stocks of colonial butter and in Germany prices were too low to encourage imports. In most of the year the prices in these markets were, however, not low enough to make it profitable to ship large amounts of dairy products to the United States on account of the tariff.

Domestic imports and exports of the United States were both somewhat less in 1930 than in

1929. There continued, however, to be an excess of imports over exports valued at about \$8,000,000 in 1930. The major export product was canned and dried milk which in the twelve months of 1930 amounted to 96,682,467 pounds. Cheese made up the largest part of the imported dairy products. A total of 68,310,716 pounds were received during 1930, coming mostly from Italy and Switzerland.

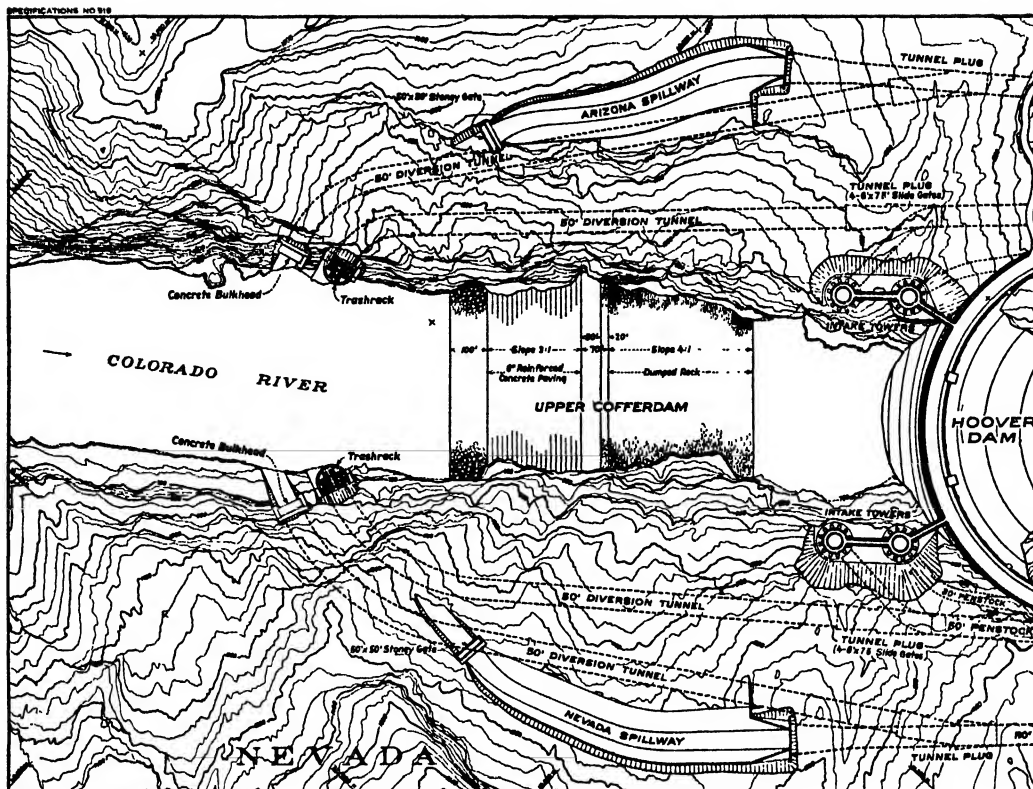
In New Zealand conditions were so favorable for dairying that a new record for butter exports was established. The New Zealand Department of Agriculture reported that 213,570,000 pounds of butter were graded in the 1929-30 season as compared with 182,909,000 pounds in the previous season. The amount of cheese graded was about one per cent greater in 1929-30 than in 1928-29. The last part of 1930 was also favorable for production of dairy products.

Similar conditions prevailed in Australia and the exports of butter in the last 4 months of 1930 were unusually heavy. Production was stimulated by spring rains which were general except for certain parts of New South Wales.

With conditions of heavy production prevailing in New Zealand and Australia and heavy production also in Argentina and Denmark, the European markets were sluggish. During the first eight months of 1930 Great Britain imported 525,728,000 pounds of butter and 231,572,000 pounds of cheese, the former slightly exceeding and the latter being a little less than imports for the corresponding period of the previous year. The imports of butter by Germany were less in 1930 than in 1929. It appeared that although prices were relatively low as compared with previous years, the retail prices retarded consumption on account of existing business conditions.

TRENDS IN RESEARCH. Research at the State Agricultural Experiment Stations and the U. S. Department of Agriculture covered many phases of dairying. In the production work there was much interest in nutrition and feeding. For example, the Minnesota Experiment Station demonstrated that cattle do not need vitamin C in their rations as calves made normal growth on vitamin C deficient rations, and showed the presence of vitamin C in the livers. Cows on the deficient rations produced milk containing vitamin C, indicating that cattle are able to synthesize this vitamin but it appeared that the synthesis did not occur in the digestive tract, as was previously found to be the case with vitamin B.

Studies of the utilization of and ability to withstand deficiencies in calcium and phosphorus by dairy cattle were conducted at a number of the institutions each dealing with specific problems related to the subject. The West Virginia Station found that a low calcium or phosphorus ration lowered the ash content of calves but the proportion of calcium and phosphorus in the bones was not altered. At the Massachusetts Experiment Station calcium and phosphorus supplements to the rations of dairy cows on non-legume roughage did not appear to influence milk production. The mineral supplements did, however, increase body weight and favored reproduction. The Michigan and Ohio Experiment Stations found little or no advantage from the use of calcium and phosphorus supplements to a good ration in which legume hay was included along with other cattle foods.



SITE OF THE HOOVER DAM AND PROPOSED WORKS

In carefully controlled studies at the New Hampshire Experiment Station conducted in cooperation with the Carnegie Institution of Washington it was found that cattle eliminate excess heat, when under high metabolic pressure, by the excretion of carbon dioxide and water vapor through the lungs and skin. The insensible perspiration thus acts as a safety regulator under such conditions.

The U. S. Department of Agriculture and the State experiment stations maintained a continued interest in the quality of cheese and butter and in the better utilization of waste dairy products. In experiments in the Bureau of Dairying a simplified method of making casein was worked out which was expected to be a great help to the industry. Improvements and modifications were also developed in some of the methods of manufacturing such products as milk proteins, milk sugars, etc.

Investigations of bacterial and chemical products affecting the quality of butter, cheese, and ice cream were plentiful and progress was made in helping to assure better quality in the products.

An outstanding development in milking methods was the so-called "Roto Lactor" which was constructed at the Walker Gordon Farm at Plainsboro, N. J., to milk 1680 cows three times a day. This new system for certified milk production was publicly demonstrated before a group of prominent dairy officials and scientists.

Announcement was made that the Ninth International Dairy Congress would be held in 1931 in Copenhagen, the capital of Denmark.

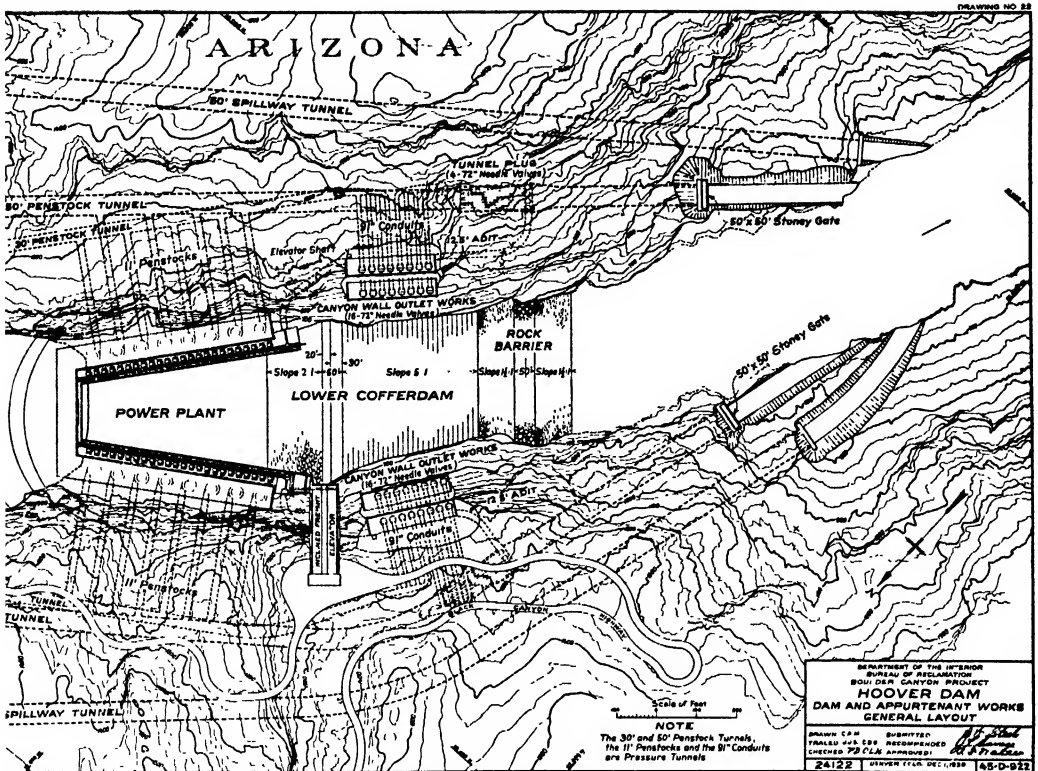
PERSONNEL. Dr. S. M. Babcock, inventor of

the Babcock butterfat test, was on Oct. 22, 1930, granted the Capper Award for distinguished service to agriculture by a living American just two weeks before Dr. Babcock's 87th birthday. The award carries with it in addition to the gold medal a \$5000 cash prize. Dr. C. L. Allen, Assistant Professor of Dairying at Cornell University, resigned. The death is noted of Peter M. Harwood, general agent of the Dairy Bureau of the Massachusetts State Department of Agriculture from 1901 to 1923.

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DALMATIA. A crownland of Austria until the downfall of the Dual Monarchy in 1918, and then a province of Yugoslavia until the administrative reorganization of Oct. 3, 1929 (see JUGOSLAVIA). It extended from Bosnia and the Herzegovina west to the Adriatic Sea. Area, 4916 square miles; population, according to the census of Jan. 31, 1921, 621,429.

DAMS. While the publication of final plans for the Hoover Dam in December turned atten-



SITE OF THE HOOVER DAM AND PROPOSED WORKS

tion to this work, several other important structures were under construction. Rapid progress had been made on the Owyhee Dam of the U. S. Reclamation Service where a huge cableway of 1300-foot span and carrying an 8-cubic-yard bucket had been installed. Two other notable arch dams were under way. The Ariel Dam on the Lewis River in Washington of the constant angle type 300 feet high was being built by the Phoenix Utility Co. for the Inland Power and Light Co. The arch is 700 feet long and there are gravity sections of 600 and 140 feet at the ends. The big Tujunga Dam near Los Angeles and built for flood control is also a first order structure, with a height of 200 feet and of the variable radius type. The Bagnell Dam on the Osage River Project, Mo., for the Union Electric Light and Power Co., 2543 feet long and 148 feet high and involving over $\frac{1}{2}$ million cubic yards of concrete, should also be mentioned.

Near Tijuana, Mexico, satisfactory progress was made on the highest slab and buttress, or Amburssen type, reinforced concrete dam yet attempted. This dam, known as the Rodriguez, was planned for a Mexican Government irrigation project and was to be 187 feet high above stream bed.

The Don Martin Dam, also in Mexico, part of an extensive irrigation project undertaken by the Mexican Government (see 1929 YEAR BOOK), was also completed during the year. This work involved an embankment 3484 feet long with a maximum height of 105 feet and connected with a concrete spillway 565 feet long. Interesting features included the reinforced-concrete revetment of the upstream slope of the earth dam.

Work was also started (on June 12) to raise the Aswan Dam on the Nile for the third time. Built in 1902 to an elevation of 357.32 feet, it was raised in 1912 to 373.92 and is now being again increased to 393.6 feet. Discouraged by the interference of what he claimed were inefficient inspectors and the failure of the Egyptian government to make payments, the principal contractor on the work later committed suicide but the construction will doubtless be continued.

HOOVER DAM. Perhaps the most important development during the year was the official opening of work on the great Hoover or Boulder Canyon Dam by Secretary Wilbur on September 17 and the publication of the final plans for the work on which bids were to be called on Mar. 4, 1931. A few quantity estimates on this work illustrate its gigantic scale. The dam will be 730 ft. high (25 ft. more than originally planned), built with a gravity section on a 500-foot radius curve and 1180 ft. long at the crest. Some 5,000,000 cubic yards of concrete are required; 30,000 tons of steel will be used; 70 miles of grout holes are planned to solidify the side walls and foundations; four 50-foot diversion tunnels (two to be used later as spillway conduits and two as penstocks) are projected; and 2000 tons of special needle valves have been designed to control the flow from the reservoir. Add to these record-breaking figures the fact that the dam is to be built in one of the remotest regions of the United States and is estimated to require seven years to build, and some conception of the size of the undertaking is apparent.

The construction calls for the placing of the concrete in columnar units approximately 50 by

50 ft. in plan with special arrangements for cooling and grouting between the masses.

Thus, in spite of the refusal of the State of Arizona to accede to the plans and her opposition at every step in the proceedings, the Boulder Canyon project may be said to have actually been started. It was understood that Arizona proposed to take the matter to the U. S. Supreme Court but there appears to be little doubt that the contract for the work will be let during the coming year and construction started.

EARTH DAMS. The year 1930 was not particularly kind to earth-dam constructions. The great Cobble Mountain Dam, west of Springfield, Mass. was practically at a standstill due to the failure of the contractor to meet the engineer's specifications and his subsequent withdrawal from the work. It was understood that the work had been relet and would again go forward. At the Saluda Dam, a record-breaking work near Columbia, S. C., disaster was narrowly escaped when a 100-foot section involving about 125,000 cubic yards of fill, washed out on February 19. This dam, a semi-hydraulic construction 208 ft. high, had been brought within 19 ft. of the top when the water in the segregation pool, about 8 ft. deep and a mile long, broke through. Fortunately the upper embankment, although it failed in part, held sufficiently to keep back the water in the reservoir back of the dam which had been allowed to rise to a point 66 ft. below the top level.

In the case of the Alexander Dam, under construction on the Island of Kauai, Hawaii, the failure was more complete. This dam was being built by the hydraulic method of chemically treated, fine volcanic ash. It was to have been 125 ft. high, but the failure in March involved some 257,000 cubic yards of fill and might result in the abandonment of the project. Still another failure on November 23 wrecked a large part of the recently completed Corpus Christi Dam on the Nueces River in Texas. The north end of the concrete spillway was apparently undermined and the abutment and approximately half of the earth embankment were washed out.

While some of these difficulties were probably due to bad design or construction methods, the Saluda failure served to call attention to one of the difficulties of the semi-hydraulic method of construction where the core material is washed from the inner slopes of the upstream and downstream embankments. This process undoubtedly leaves irregular areas of porous beach material, practically washed gravel, between the core and the slope embankments, and it was probable that this fact could not be ignored in this type of construction.

ROCK-FILL DAMS. The major problem in the evolution of the rock-fill type of dam from a more or less temporary structure to a type suitable for long life works, has been in the development of a permanent waterproof diaphragm or cover over the upstream face of the rock fill. Timber or even steel plates when used for this purpose were admittedly limited in life, but did possess sufficient flexibility to accommodate themselves to the setting of the rock fill which would inevitably occur. With the advent of reinforced-concrete facing great attention was given to preparing a carefully placed facing to the rock fill to take the concrete "deck." This deck in turn was made in sections so that to a certain extent it could accommodate itself to possible slight settlement of the fill.

In the Salt Springs project under construction

by the Pacific Gas & Electric Co. on the Mokelumne River in California, the upstream face of the dam was being built arched or curved in plan, so that normal settlement of the fill and the compacting due to water pressure would leave a horizontal convexity, and thus reduce stresses in the facing slabs due to settlement. The rock facing, made up of large stones carefully placed by derricks and with all spaces chinked with smaller stones, covers the entire upstream face and is 15 ft. thick. In this facing grooves were left vertically and horizontally for concrete bearing courses, which support the edges of the reinforced concrete facing slabs—each of which are 60 ft. square. The facing varies in thickness from 3 ft. at the bottom to 1 foot at the top. The great height of this structure, 328 ft., made it imperative to give special attention to these most recent technical refinements in rock-fill dam design.

See also FOUNDATIONS.

DANA, PAUL. An American journalist, died Apr. 7, 1930, in New York City, where he was born Aug. 20, 1852. He was graduated from Harvard University in 1874 and from the law school of Columbia University in 1878. In 1880 he became connected with the *New York Sun*, of which his father, Charles Anderson Dana, was editor, and whom he succeeded as such in 1897. He retired from the editorship in 1903. He was a member of the Board of Park Commissioners of New York, from 1891 to 1894, serving as chairman in 1894. He was on the staff of the first brigade of the National Guard of New York in 1883 with the rank of major. During the World War, he was on the Committee for Relief in Belgium and, in May and June of 1915, was stationed in Namur.

DANISH LITERATURE. See SCANDINAVIAN LITERATURE.

DANZIG, dānts'ik. A Baltic port, occupying a strategic position at the mouth of the Vistula river, which, with its surrounding territory, was established as a free city on Nov. 9, 1920, under the terms of the Treaty of Versailles. It was formerly a part of the German Empire. Area, about 754 square miles; population in 1929, 407,629, of whom 236,064 were in the city proper.

Essentially German in character, the city is the chief outlet for the commerce of Poland, which exercises joint control with the Free City of the harbor administration. Danzig also is within the Polish Customs administration. Exports, in metric tons, in 1929 included: Coal, 5,300,000; grain, 285,000; timber, 613,000. The amount of merchandise passing through the port in 1929 was much larger than in 1925, but the active participation of the Free City in its purchase and sale steadily declined with the establishment of Polish government agencies for the direct sale of sugar, timber, and grain, and the direct purchase of such Polish imports as potash salts and nitrates. The prosperity of Danzig was further threatened by the growth of the new Polish port of Gdynia (see *POLAND* under *Communications*). The net tonnage of vessels entering the port in 1929 was 3,888,000 and of vessels clearing, 3,912,000. The budget for 1929 balanced at 128,000,410 gulden (1 gulden equaled about \$0.194).

Administration of the Government rests with the President of the Senate, which is the highest State authority. There is a Diet of 120 members elected for four years. The Diet elects the members of the Senate and its President. The Diet elected Nov. 13, 1927, included 42 Social Demo-

crats, 25 German Nationalists, 18 Centrists, 8 Communists, and 27 representatives of other parties. There is a High Commissioner appointed by the League of Nations. High Commissioner in 1930, Count Manfred Graving, appointed in 1928; President of the Senate, Dr. H. Sahm. In the elections for the Diet of Nov. 16, 1930, the National Socialists (Fascists) increased their vote to 34,394, or 24 times the vote of 1483 received in the elections of 1927. The Communists doubled their vote and the Centre gained slightly, while all other parties suffered losses. See GERMANY and POLAND under *History*; and WORLD COURT.

DARLINGTON, THE RT. REV. JAMES HENRY. Protestant Episcopal Bishop of the Diocese of Harrisburg, Pa., died in Kingston, N. Y., Aug. 14, 1930. He was born in Brooklyn, N. Y., June 9, 1856, and was graduated from New York University in 1877 and from the Princeton Theological Seminary in 1880. In 1882 he was ordained a deacon and then a priest in the Protestant Episcopal Church, serving during 1882-83 as assistant and during 1883-1905 as rector of Christ Church, Brooklyn. He was also archdeacon of Brooklyn during 1896-98. In 1905 he was elected first Bishop of Harrisburg. He declined an appointment on the United States Commission to Russia following the World War, but became head of the Serbian Relief Fund in the United States. During 1910-25 he was chairman of the commission appointed by the Protestant Episcopal Church to confer with the Eastern Orthodox Churches and the Old Catholics, and in 1920 visited Constantinople, Athens, and other European centres for the purpose of making a concordat. He lectured at New York University in 1902-03. The Ph.D. degree was conferred on him by Princeton University in 1884; the D.D. degree by New York University in 1895; the LL.D. degree by St. John's College in 1905, Dickinson College in 1907, and Lafayette College in 1927; and the D.C.T. degree by Halki Greek Seminary, Constantinople, in 1923. He was also an officer of the French Legion of Honor; grand commander of the Order of the Redeemer of Greece; officer of the Order of St. Sava of Serbia; commander of the Order of Queen Isabella la Catolica of Spain; commander of the Order of the Crown of Italy; commander of the Order of Leopold II of Belgium; and Knight of the Holy Sepulchre, an honor conferred by the Patriarch of Jerusalem. In addition to editing *The Hymnal of the Church*, he was the author of *Pastor and People* (1902) and *Verses by the Way* (4th series, 1929).

DARTMOUTH COLLEGE. A nonsectarian institution for the higher education of men in Hanover, N. H.; founded in 1769. The 1930 autumn session had an enrollment of 2322 students, most of whom were working for the B.A. degree, the exceptions being 17 graduate students, 43 students in the medical school, 21 in the Thayer School of Civil Engineering, and 124 in the Tuck School of Administration and Finance. There were 275 members on the faculty. The productive funds amounted to \$15,000,000. During 1930 the construction of three dormitories and a group of four connected buildings for the Tuck School, including administration offices and class rooms, dormitories and a refectory, was completed. The Fisher Ames Baker Memorial Library contained 300,000 volumes; in 1930 a gift of \$1,000,000 was received from the donor, George F. Baker, as an

endowment for its maintenance. President, Ernest Martin Hopkins, A.M., Litt.D., LL.D.

DATE SCALE. See ENTOMOLOGY, ECONOMIC.

DAVID, EDUARD. A German socialist, died in Berlin Dec. 24, 1930. He was born in Ediger-on-the-Mosel June 11, 1863, and was educated at the University of Giessen. In 1893 he founded the socialist paper *Mitteldeutsche Sonntagszeitung* and became a leader of the Social Democrat party. During 1896-97 he also edited the *Mainzer Volkszeitung*. He was a member of the Reichstag from 1903 to 1918, and during the World War severely criticized the tactics of the military party, including the unrestricted U-boat campaign and the Brest-Litovsk Treaty with Russia. In October, 1918, he was made an Under-secretary for Foreign Affairs, and in February, 1919, became first president of the National Assembly in Weimar. He was appointed Minister of the Interior in the Bauer Cabinet in June, 1919, which office he held until the following March. He wrote: *Sozialismus und Landwirtschaft* (part i, 1903, and part ii, 1922) and *Die Sozialdemokratie im Kriege* (1915).

DAVIDSON, THE MOST REV. AND RT. HON. RANDALL THOMAS, FIRST BARON OF LAMBETH. Former Archbishop of Canterbury and Primate of All England, died in London, May 25, 1930. He was born in Edinburgh, Apr. 7, 1848, and was educated at Harrow and at Trinity College, Oxford. On taking orders in the Church of England in 1874, he was assigned to a curacy at Dartford, Kent, whence he was called three years later to be chaplain and private secretary to the Most Rev. Archibald Tait, Archbishop of Canterbury. In 1878 he married the Archbishop's second daughter, and through this close relationship, both personal and official, obtained an intimate acquaintance with religious and political trends. He continued in this post until 1883, serving for a year after Archbishop Tait's death under his successor, the Most Rev. Edward White Benson. During 1881-83 he also acted as examining chaplain to the Rt. Rev. Joseph B. Lightfoot, Bishop of Durham, and in 1882 was appointed sub-almoner to Queen Victoria. In 1883 the Queen conferred on him the Deanery of Windsor, which carried with it the post of domestic chaplain to the sovereign. In 1891 he was advanced to the post of Clerk of the Closet and also was made Bishop of Rochester. Four years later he became Bishop of Winchester, one of the oldest sees which, with London and Durham, ranked next to the archbishoprics of Canterbury and York in importance. Holding a seat in the House of Lords, he took a special interest in legislature pertaining to social and moral reforms. He was translated to the primacy on the death of Archbishop Temple in 1902, his enthronement taking place in Canterbury Cathedral, Feb. 12, 1903.

Among the outstanding events of Archbishop Davidson's primacy were the Lambeth Conferences of 1908 and 1920, which reflected the mind of the Anglican communion throughout the world on broad public questions. The Sixth (1920) Conference was marked by a discussion of the relations between the Anglican churches and other Christian bodies, and an appeal was issued to all Christian peoples to cooperate in the establishment of a really Catholic Church, based on organic unity rather than uniformity. Archbishop Davidson cultivated friendly relations with the Greek Orthodox Church, receiving in 1922 from Meletios IV, Archbishop of Constantinople and Patriarch

Ecumenical, the Greek Orthodox Synod's acceptance of the validity of the Anglican ordinations.

Again in 1926 the Archbishop was influential in the cancellation of the British general strike through the adoption of his formula by Prime Minister Baldwin and the strike leaders. During the World War Archbishop Davidson placed himself at the head of the National Mission of Repentance and Hope, which aimed at the deepening of the religious life of the nation. The outgrowth of this movement was the passage in 1919 of the Enabling Act under which the Church Assembly and its subordinate councils were set up. The Archbishop presided over the sessions of this body from 1920 to 1928, during which period a number of important measures were passed for presentation to Parliament. The chief of these was the Revised Prayer Book Measure, on which he had worked for 20 years. He believed that it would accomplish a two-fold purpose, in enriching the services of the Church and enabling them to satisfy needs unforeseen in the seventeenth century, and in reconciling the differences between the high and low branches of the Church. The Prayer Book Measure was passed by the House of Lords, but fear that it sanctioned still greater growth in the power of the Anglo-Catholic party caused its rejection in the House of Commons on Dec. 15, 1927, and again on June 14, 1928. This rebuff was said to have hastened his resignation.

Archbishop Davidson resigned on Nov. 12, 1928, giving as his reason that he felt he was too old to fill adequately so arduous a position. In recognition of his spiritual leadership he was created a baron, so that his services might still be available in the House of Lords. He was the first archbishop to resign his office and was also the first prelate of the Church of England to be made a temporal peer. He was created a knight of the Grand Cross of the Royal Victorian Order in 1904 and received the Royal Victorian Chain in 1911. He was decorated by Greece in 1918 and by Belgium and Serbia in 1919. He was also the recipient of honorary degrees from Oxford, Cambridge, Durham, Edinburgh, St. Andrews, Aberdeen, Toronto, and Columbia Universities. His works include: *Life of Archbishop Tait* (2 vols., 1891); *The Lambeth Conferences of 1867, 1878, and 1888* (1896); *The Christian Opportunity* (1904); *Captains and Comrades in the Faith* (1911); *The Testing of a Nation* (1919); and *Occasions* (1925). His successor to the primacy was the Most Rev. Cosmo Gordon Lang, Archbishop of York. See ENGLAND, CHURCH OF.

DAVIS, WILLIAM STEARNS. An American educator and author, died in Exeter, N. H., Feb. 15, 1930. He was born in Amherst, Mass., Apr. 30, 1877, and was graduated from Harvard University in 1900, receiving the Ph.D. degree there in 1905. In 1904-05 he lectured at Radcliffe College and in 1906-07 he was an instructor at Beloit College. In 1907-09 he was associate professor of medieval and modern European history at Oberlin College and, from 1909 to 1927, professor of history at the University of Minnesota. He wrote both history and historical fiction. His books include *A Friend of Caesar* (1900; 2d ed., 1913); *God Wills It* (1901); *Belshazzar* (1902); *The Saint of the Dragon's Dale* (1903); *Falaise of the Blessed Voice* (1904); *A Victor of Salamis* (1907); *Outline History of the Roman Empire* (1909); *The Influence of Wealth in Imperial Rome* (1910); *The Friar of Wittenberg* (1912);

Readings in Ancient History (1913); *A Day in Old Athens* (1914); *A History of Mediæval and Modern Europe* (1914); *The Roots of the War* (1918); *A History of France* (1919); *A Short History of the Near East* (1922); *Life on a Mediæval Barony* (1923); *The Beauty of the Purple* (1924); *The White Queen* (1925); *Europe Since Waterloo* (1926); and *Gilman of Redford* (1927).

DAWES PLAN. See REPARATIONS.

DAWLEY, THOMAS ROBINSON, JR. An American traveler and author, died June 2, 1930, in New York City where he was born, Apr. 18, 1862. He ran away to sea at the age of 17 and during the ten years that he was an itinerant adventurer gained a wide knowledge of political and social conditions in the countries of Europe and Latin America. On his return to the United States in 1889 he studied law in Providence, R. I. In 1896 he was sent by *Harper's Weekly* to Cuba to write a series of articles on conditions in the island during the insurrection. As a result of his visits to the insurgent camps he was arrested and imprisoned in Morro Castle and was later expelled from the island by General Weyler, the Spanish Governor-General. He returned to Cuba the following year and remained with General Gomez, the insurgent commander. During the Spanish-American War he was a volunteer aide to Gen. Nelson A. Miles and later to Gen. W. K. Shafter. After the capture of Santiago attempting to publish an American daily newspaper in Cuba, *The Times of Cuba*, he was incarcerated under an old Spanish judicial system in Havana and his newspaper plant was seized. After his release and return to the United States, he went to Spain in the interests of the *Century Magazine*.

In 1901 Mr. Dawley was special correspondent for the *Outlook* at the Pan-American Conference in Mexico City, and in 1902 was one of the American delegates to the International Coffee Congress in New York City. Two years later at President Roosevelt's request, he made a report, on political and social conditions in Santo Domingo. He served as special agent of the U. S. Labor Bureau during 1907-09, being assigned to investigate labor conditions among women and children in the textile mills of the southern Appalachian region. The results of this investigation were embodied in *The Child That Toileth Not* (1912). During 1916-17 he was on the editorial staff of the *Providence Journal*, and served for a brief period during the World War in the War Risk Bureau. In 1920 he returned to Guatemala, where he attempted to introduce welfare work and founded the "Casa del Nino" for the protection and instruction of poor children. He also took an active part in the overthrow of the Cabrera government and was appointed official publicist to the Herrera government. On the overthrow of that government a few months later he returned to New York City, where he wrote articles on Latin America, Spain, and the West Indies.

DEATH RATE. See VITAL STATISTICS.

DEBTS, PUBLIC. See PUBLIC FINANCE and GREAT BRITAIN, etc., under *Finance*.

DECEPTION ISLAND. Deception Island (Lat. 63° S., Long. 60° 15' W.) near the northern extremity of Graham Land is a volcanic island into whose breached crater the sea has entered and provided an excellent land-locked harbor for the whaling vessels congregating in the adjoining waters each year. See POLAR RESEARCH.

DEFECTIVES. See CRIME; CHILD WELFARE.

DELAWARE. POPULATION. According to the Fifteenth Census the population of the State on Apr. 1, 1930, was 238,380. The population on Jan. 1, 1920, was 223,003. The capital is Dover.

AGRICULTURE. The following table gives the acreage, production, and value of the principal crops in 1929 and 1930:

| Crop | Year | Acreage | Prod. Bu. | Value |
|----------------|------|---------|-----------|-------------|
| Corn | 1930 | 138,000 | 2,815,000 | \$2,562,000 |
| | 1929 | 134,000 | 4,288,000 | 3,773,000 |
| Wheat | 1930 | 106,000 | 2,067,000 | 1,612,000 |
| | 1929 | 107,000 | 2,033,000 | 2,358,000 |
| Hay | 1930 | 69,000 | 82,000* | 1,823,000 |
| | 1929 | 83,000 | 120,000* | 2,069,000 |
| Potatoes | 1930 | 5,000 | 250,000 | 288,000 |
| | 1929 | 6,000 | 492,000 | 787,000 |
| Sweet potatoes | 1930 | 9,000 | 675,000 | 608,000 |
| | 1929 | 8,000 | 1,160,000 | 1,044,000 |

* Tons.

Farms in the State numbered 9758 in 1930, as against 10,257 in 1925 and 10,141 in 1920.

MINERAL PRODUCTION. The exploitation of the State's native minerals, forming but a slight part of its industry, continued in 1928 to consist chiefly of the manufacture of clay products. The total value of such products for 1928 was \$274,894; for 1927, \$293,089. Some stone was quarried and sand and gravel were produced in minor quantities for local needs. The entire yearly mineral production attained, for 1928, \$481,584; for 1927, \$493,377.

FINANCE. State expenditures in the year ended June 30, 1929, as reported by the U. S. Department of Commerce, were: for maintenance and operation of governmental departments, \$5,378,742 (of which \$1,501,343 was for local education); for interest on debt, \$506,593; for permanent improvements, \$3,758,102; total, \$9,643,437 (of which \$2,541,364 was for highways, \$325,967 being for maintenance and \$2,215,397 for construction). Revenues were \$14,790,646. Of these, property and special taxes formed 72.4 per cent; departmental earnings and remuneration to the State for officers' services, 5.0; sales of licenses 16.0 (including taxes of \$841,081 on sales of gasoline). The State's funded debt outstanding on June 30, 1929, was \$12,391,285. Net of sinking fund assets, it was \$6,483,873. On property there were levied in the year no general State taxes.

TRANSPORTATION. The total number of miles of railroad line under operation on Jan. 1, 1930, was 325.11. No further construction in 1930 was reported.

EDUCATION. Systematic instruction in art was introduced in the public school system in 1930, and a plan for the similar treatment of musical instruction was authorized. The junior high school, which had been legally adopted as part of the school system, was reported to have made marked development. The number of individuals of school age in the State was estimated, for 1930, at 51,933. The pupils enrolled in the public schools in the academic year 1929-30 numbered 43,147 (gross), or 42,098 (net). Of the net total, 35,089 were in elementary and 7009 in high-school grades. The year's expenditure for the public schools totaled \$5,240,271. The yearly salaries of all public-school teachers averaged \$1402; of high school teachers alone, \$1780; and of elementary teachers, \$1340.

CHARITIES AND CORRECTIONS. There was under consideration in 1930, a measure to bring the control of the welfare work of the State under a sin-

gle central organization. The State Board of Charities, a body of five members, two necessarily women, all holding office by appointment of the Governor, had supervisory duties over the State institutions of care and custody, without direct authority over them. The following institutions, each under the direction of its own trustees or managers, were supported in whole or in part by State appropriation: Delaware State Hospital, at Farnhurst; State sanatoria for sufferers from tuberculosis (under the State Board of Health); Detention Home; Ferris Industrial School; Delaware Industrial School for Girls (white); Industrial School for Girls (colored); New Castle County Workhouse; New Castle County Farm for Women; Kent County Jail; Sussex County Jail.

POLITICAL AND OTHER EVENTS. Unemployment in the Wilmington district was severely felt among the manufacturing workers during the summer. Threats were made to bomb the Pennsylvania Railroad shops and the Harlan plant by airplane unless the unemployment were relieved.

ELECTIONS. With the support of one of the leading members of the du Pont family, Laumot du Pont, Senator Daniel O. Hastings, Republican and supporter of Prohibition, was reelected on November 4, defeating former Senator Thomas F. Bayard, Democrat, who had the support of Pierre and Irene du Pont. A Republican Legislature and Representative (R. G. Houston) were elected.

OFFICERS. Governor, C. Douglas Buck; Lieutenant-Governor, J. Henry Hazel; Treasurer, George S. Williams; Auditor, Edward Baker; Secretary of State, Charles H. Grantland; Attorney-General, Reuben Satterthwaite, Jr.

JUDICIARY. Chancellor, Josiah O. Wolcott; Chief Justice of Supreme Court, James Pennewill; Associate Justices, Richard S. Rodney, Herbert L. Rice, William Watson Harrington, Charles S. Richards.

DELAWARE, UNIVERSITY OF. An institution of higher learning in Newark, Del.; founded in 1833. The enrollment in 1929-30 was 715, of whom 400 were men and 315 were women. These were distributed as follows: Seniors, 135; juniors, 129; sophomores, 193; freshmen, 256; graduate students, 2; specials, 2. The enrollment in the 1930 summer session was 335. The faculty numbered 114 members, 86 of whom were on the regular teaching staff, the others being members of the experiment station and extension staffs. Appropriations from the State and Federal governments amounted to approximately \$375,000; invested endowment funds amounted to \$540,000. The library contained approximately 55,000 volumes. President, Walter Hullahen, Ph.D., D.C.L., LL.D.

DELTAITE. See MINERALOGY.

DE MOLAY, ORDER OF. A nonsectarian secret organization for young men between the ages of 16, and 21; founded in 1919 by Frank S. Land in Kansas City, Mo., and named in honor of Jacques De Molay, the last military grand master of the Knights Templars. The members are pledged to the precepts of love of parents, reverence, patriotism, cleanness, courtesy, fidelity, and comradeship, and to the promotion of the public school system and good citizenship. The order is governed by a grand council of Freemasons, while the chapters are sponsored by Masonic bodies or groups of Masons. However, it is not a junior Masonic fraternity, and more than 60 per cent of its members are from non-Masonic families. In November, 1930, there were about 200,000

members and more than 300,000 former members in 1300 cities of the United States, Alaska, Hawaii, Porto Rico, the Philippines, Canada, Mexico, and France. The International Greater DeMolay Movement was started in 1930 so as to make the organization world-wide. Frank S. Land, the founder, was grand scribe. Headquarters are at 201 East Armour Boulevard, Kansas City, Mo.

DENISON UNIVERSITY. A coeducational Baptist institution of higher education in Granville, Ohio; founded in 1831. The enrollment for the autumn of 1930 was 911 and for the summer session 109. The faculty numbered 66. The amount of endowment was \$3,362,756; the net income for the year was \$136,600. There were 66,495 volumes in the library. The trustees authorized the erection of a new library building, work on which was to be started in the spring of 1931. Plans were being made for the celebration of the university's centennial anniversary in 1931. President, Avery Albert Shaw, D.C.L., D.D.

DENMARK. The smallest of the three Scandinavian states; comprising the peninsula of Jutland with its adjacent islands in the Baltic, the Faroe Islands, a part of Schleswig as a result of the plebiscite of 1920 under the terms of the Treaty of Versailles, and Greenland, the only colony or possession. Iceland is a free sovereign state, but united to Denmark under the King of Denmark, who is also head of the Government of Iceland. Capital, Copenhagen. King in 1930, Christian X.

AREA AND POPULATION. The area is 16,568 square miles, including the Faroe Islands, which have an area of 540 square miles; population, according to the census of Nov. 5, 1925, 3,434,555 (estimated in July, 1929, at 3,518,000). Births in 1928 totaled 68,516; deaths, 38,484; marriages, 27,300. Emigration, chiefly to the United States and Canada, totaled 6277 in 1929. The population of Copenhagen in 1925 was 587,150; with suburbs, 731,496. Other large cities with their 1925 populations are Aarhus, 70,226; Odense, 52,376; Aalborg, 42,819; Horsens, 28,135; and Randers, 26,856.

EDUCATION. Elementary education is free and compulsory between the ages of 7 and 14. Denmark had 4485 lower schools in 1928, with 492,301 pupils; of these, 3867 schools were maintained by local communities and the remainder were Government or private schools. Higher instruction was provided by 278 technical schools, with 27,000 students; 20 normal schools, with about 2000 students; 94 commercial schools, with about 12,000 students; and 22 agricultural and 61 high schools, with about 9600 students. The University of Copenhagen had about 4500 students and there were a number of other technical and professional schools.

PRODUCTION. Agriculture is of primary importance in Danish economy, due to the lack of coal, iron, and other natural resources, and agricultural products constitute three-fourths of the value of the annual exports. A census in 1928 showed 6,892,000 acres, or about 70 per cent of the total area, under cultivation, divided as follows: Grain, 3,238,000 acres; root crops, 1,271,000; other crops, 78,000; green fodder and grass, 2,125,000; fallow land, 180,000. The Government for many years has fostered the division of the land into small parcels and about 92 per cent of all farmers own the land they cultivate. The coöperative dairies and slaughterhouses in-

cluded 80 per cent and 70 per cent, respectively, of all Danish farmers. The chief crops grown, with the production in bushels in 1929, are: Wheat, 11,721,000; rye, 10,433,000; barley, 51,075,000; oats, 73,855,000; potatoes, 39,389,000. Beet sugar production totaled 134,000 metric tons; forage roots, 22,288,000 metric tons; sown hay, 920,000 metric tons.

Crops in 1928, 1929, and 1930 were excellent, but prices received declined noticeably in the latter year. The return on capital invested in agriculture in 1929 was 6.2 per cent. Livestock in July, 1929, included 521,000 horses, 3,031,000 cattle, and 3,616,000 swine. There were 22,000,000 hens. Only about 8 per cent of Denmark is wooded and two-thirds of the forested area was artificially planted. The catch of 15,565 boats engaged in the fisheries in 1928 was valued at about \$10,000,000.

Industrial establishments in 1925 totaled 89,175, with 392,000 employees, including 270,000 laborers. Only 26,300 factories used mechanical power. Most of the world's motor ships are built in Danish yards. In 1929, the shipyards turned out 32 ships of 170,000 tons dead weight, with an aggregate horse power of 168,000, as compared with 215,000 tons of 125,000 horse power in 1928. Factory production in 1928 included 1,295,000 liters of strong beer, 718,000 liters of small beer, 162,050 tons of beet sugar (nine factories), and 76,520 tons of margarine (140 factories).

Industry remained fairly active in 1930, with the exception of shipping, which was badly depressed; unemployment increased toward the close of the year.

COMMERCE. Danish foreign trade was unusually active in 1929, reaching the highest figures in actual gold value since 1920. Imports rose to 1,792,000,000 crowns from 1,736,000,000 crowns in 1928, while exports, including reexports, increased to 1,707,000,000 crowns, from 1,657,000,000 crowns in the preceding year (preliminary figures). Two-thirds of the gain in exports was accounted for by increased shipments of agricultural products. Grain imports decreased markedly, due to record domestic crops, but imports of mineral oils, automobiles, iron and steel, textiles, and fuel oils showed marked gains. Germany, Great Britain, and the United States, in the order named, were the leading sources of imports; exports went mainly to Great Britain, Germany, and Sweden. Exports to the United States and its possessions rose to \$4,457,000 in 1929 from \$4,099,000 in 1928. In the same year Great Britain took Danish exports to the value of £56,178,663 and supplied imports to the value of £10,671,482.

FINANCE. For the fiscal year ended Mar. 31, 1930, Treasury operations yielded a surplus of 12,000,000 crowns (1 crown equaled \$0.2668 at par). Budget estimates for the year placed revenues at 323,100,000 crowns and expenditures at 316,800,000 crowns, the estimated surplus being 6,300,000 crowns. Revenues from state capital in the same year were estimated in the budget at 43,598,000 crowns and expenditures at 57,620,000 crowns. In the 1930-31 budget, ordinary revenues of 321,700,000 crowns were anticipated to exceed ordinary expenditures of 311,100,000 crowns by 10,600,000 crowns.

Actual returns for 1928-29 showed a deficit of 10,900,000 crowns in the ordinary account and of 20,335,000 crowns in the capital account. Ordinary revenues and expenditures were 312,000,-

000 and 322,900,000 crowns, respectively, and capital revenues and expenditures, 61,486,000 and 81,821,000 crowns, respectively. Current state expenditures showed a steady decline from 1925-26 to 1930-31. The public debt on Mar. 31, 1929, stood at \$367,493,760, of which \$193,325,940 represented the foreign debt.

COMMUNICATIONS. Railways open for traffic in 1929 totaled 3297 miles, of which 1598 miles belonged to the state. The total value of state railways and equipment on Mar. 31, 1929, was placed at 440,774,000 crowns. In the same year there were 4720 miles of main highways. There were 98,300 motor vehicles in the country in September, 1929. Danish commercial airplanes covered 103,540 miles in 1928, carrying 1600 passengers, 34 tons of freight, and six tons of mail. There were 922,113 miles of telephone wire (1929), of which 869,918 were privately owned and operated.

On July 1, 1930, the Danish merchant fleet comprised 512 steamers of 743,704 tons; 151 motorships of 356,451 tons; and 62 sailing vessels of 15,769 tons. Earnings, exclusive of coastwise shipping, totaled 205,000,000 crowns gross in 1929, as against 186,300,000 crowns in 1928, an increase of about 10 per cent. The per capita tonnage of 325 per 1000 inhabitants is surpassed only by Norway, the Netherlands, and the United Kingdom.

GOVERNMENT. The system of Government is that of a limited monarchy, executive power being vested in the King, who acts through a responsible ministry, but who has no power to declare war or make peace without the consent of the Rigsdag, or Parliament. Legislative power is vested in the Rigsdag, which is composed of the Folketing (lower house) and the Landsting (upper house). The Folketing has 149 members, of whom 117 are elected on the basis of proportional representation and the remainder divided among the parties not having obtained sufficient returns at the district elections; the Landsting has 75 members, elected indirectly by voters over 35 years of age. The composition of the Lansting after the election of September, 1928, was as follows: 28 Liberals, 27 Socialists, 12 Conservatives, and 8 Radicals. The Folketing, elected Apr. 24, 1929, consisted of 44 Liberals, 16 Radicals, 61 Socialists, 24 Conservatives, 1 Slesvig (German party), and 3 Georgistic party members. King Christian X (born Sept. 26, 1870), succeeded his father, Frederik VIII, on May 14, 1912. The Ministry as formed in April, 1929, was headed by Th. Stauning, Socialist, who was Prime Minister during 1924-26. Other members were: Agriculture, K. M. Bording; Foreign Affairs, P. Munch; Interior, B. Dahlgaard; Social Affairs, K. K. Steincke; Justice, C. Th. Zahle; Defense, L. Rasmussen; Public Instruction, F. Borgbjerg; Ecclesiastical Affairs, N. P. L. Dahl; Public Works, J. F. N. Friis-Skotte; Finance, C. V. Bramsnaes; Commerce and Industry, C. N. Hauge.

HISTORY. The issue of national disarmament, upon which the Socialist-Radical coalition had been returned to power in the election of Apr. 24, 1929, continued as the outstanding political question in 1930. The Stauning Ministry had sought to carry out its campaign promises by introducing a drastic disarmament bill into the Folketing on Oct. 3, 1929 (see 1929 YEAR BOOK). The expected opposition to the measure developed in the Landsting, or upper house, however, and the Ministry was unable to force the bill through Parliament before the Spring session adjourned.

Conservative opposition to the disarmament measure was bolstered by reports that the Swedish government, through its Foreign Minister and Minister to Denmark, had expressed concern over the proposed scrapping of Danish military and naval forces. In February, the Government indicated its willingness to compromise on certain details of the disarmament bill to which objection had been raised by the moderate Left groups. It insisted, however, upon the reorganization of the military and naval forces on a purely defensive basis and on the abolition of conscription.

A Conservative maneuver to obstruct the Government's programme by proposing the appointment of a committee to investigate the country's military obligations as a member of the League of Nations was defeated by Parliament on April 5, the Government taking the stand that disarmament was a purely domestic question. The conservative opposition in the Landsting, however, mustered sufficient votes to block the consideration of any disarmament measure framed without reference to Danish obligations under the League Covenant. In doing so it openly defied the threat of the Government to push through a constitutional amendment abolishing the Landsting. Since constitutional obstacles prevented the dissolution of the Landsting before 1934, the Ministry's disarmament measure appeared unlikely of passage before that time. Nevertheless, the Government in July decided to sell Denmark's most powerful warship, the *Niels Juel*, to the Chinese Government. It was reported that another cruiser would be scrapped, leaving the country practically defenseless from a naval standpoint. On October 9, a new defense bill was introduced into Parliament, proposing the reduction of the annual military budget from \$15,000,000 to \$5,000,000.

In line with its domestic policy, Denmark on April 28 served notice on the League of Nations that it would make the reduction of world armaments a condition of its adherence to any agreement in excess of those already embodied in the League Covenant. The announcement had specific reference to the draft convention for financial assistance to a victim of aggression, then before the League Committee on Arbitration and Security for revision.

The Social Democrats were strengthened during the year by the accession to their ranks of leading Danish Communists, who withdrew from their own party because of objectionable policies and leadership imposed upon them by the chiefs of the Third International in Moscow. The failure of Communism's appeal to the Danish people was reflected in the fact that in 1930 the party had not a single representative in either house of the Rigsdag. A comprehensive measure for the extension of social reforms was introduced into the Folketing by the Government on October 28.

Rumors that Great Britain was negotiating to purchase Greenland and that the United States still claimed certain interests there, despite the withdrawal in the Virgin Islands treaty of its claims in north Greenland based on Commodore Perry's expedition, were flatly denied by Premier Stauning in an interview July 21, 1930. He said no application had been received from a foreign power and that Denmark had no thought of selling Greenland.

A bill for revision of the liquor laws, which was expected to produce 10,500,000 kroner (about

2,814,000) through higher import duties on wines and spirits, was introduced into Parliament March 21. It was intended to replace the 10 per cent tax on all foods and drinks served in hotels and restaurants, an unpopular measure which produced about 15,000,000 kroner annually. See FAROE ISLANDS for nationalist agitation; ICELAND for celebration of 1000th anniversary of the first Althing; and GREENLAND.

DENNIS, ALFRED LEWIS PINNEO. An American educator and historian, died in Worcester, Mass., Nov. 14, 1930. He was born in Beirut, Syria, May 21, 1874, and was graduated with the A.B. degree from Princeton University in 1896 and with the Ph.D. degree from Columbia University in 1901. From 1901 to 1904 he was professor of history and political science at Bowdoin College; from 1904 to 1905, associate professor of history at the University of Chicago; from 1905 to 1906, lecturer in history at Harvard University; and from 1906 to 1920, professor of history at the University of Wisconsin. After engaging in research work for several years he became in 1923 professor of history and international relations at Clark University, which chair he held at the time of his death. During the World War he was a captain in the Military Intelligence Division of the General Staff of the United States Army, and in 1919 was stationed at the American Embassy in London as an assistant military attaché, reporting to the Paris Peace Conference. His works include: *Eastern Problems at the Close of the Eighteenth Century* (1901); *The Anglo-Japanese Alliance* (1923); *Foreign Policies of Soviet Russia* (1924); *John Hay* (in Secretaries of State series, 1928); and *Adventures in American Diplomacy* (1928).

DENNISONITE. See MINERALOGY.

DENTAL CARRIES. See MEDICINE, PROGRESS OF.

DENVER, UNIVERSITY OF. A coeducational institution of higher learning in Denver, Colo.; founded in 1864. The registration for the autumn of 1930 totaled 2734, distributed as follows: Graduate school, 42; college of liberal arts, 999; school of engineering, 185; school of law, 83; school of dentistry, 24; school of commerce, 830; art school, 88; and city college, 483. The faculty had 203 members. The endowment amounted to \$1,975,277, while the income for the year was \$70,543. The library contained 61,581 volumes. During 1930 a new library building costing \$350,000 was under construction, and the Memorial Chapel was to be remodeled to conform with the architectural style of the quadrangle on which the library was located. Chancellor, Frederick M. Hunter, Ed.D.

DEPAUW UNIVERSITY. A coeducational institution for higher learning in Greencastle, Ind., under the auspices of the Methodist Episcopal Church; founded in 1837. The enrollment for the autumn session of 1930 was 1605, including 935 men and 670 women. Of this number, 1430 were registered in the college of liberal arts and 175 in the school of music. In the summer session of 1930 there were 129 students. The college of liberal arts had a faculty of 91 members and the school of music a faculty of 16. The productive funds of the university amounted to \$5,478,847, including assets of \$2,207,307 of the Rector Scholarship Foundation. The income from productive funds was \$290,585, while the total current income for the year was \$708,870; \$123,292 of the income from productive funds

was for scholarships. The total amount of gifts for permanent funds received during the year was \$148,875. The university also was made the residuary legatee in the will of the late John H. Harrison and was to receive a bequest of approximately \$1,500,000. Asbury Hall, a recitation and lecture hall erected at a cost of \$250,000, was completed in 1930, as was also a \$20,000 plant to house the offices and shops of the superintendent of buildings and grounds. The library contained about 70,000 volumes. President, G. Bromley Oxnam, D.D., LL.D.

DERBY. See RACING.

DERNITE. See MINERALOGY.

DESIGN, NATIONAL ACADEMY OF. See NATIONAL ACADEMY OF DESIGN.

DESTINN, EMMY. A Bohemian dramatic soprano, died in Budweis, Czechoslovakia, Jan. 29, 1930. Born in Prague, Feb. 26, 1878, and received her first musical instruction on the violin. She later studied voice under Madame Marie Loewe-Destinn, making her debut as Santuzza in "Cavalleria Rusticana" at the Berlin Royal Opera in 1898. She was so successful on that occasion that she was permanently engaged for the Berlin Opera, and in gratitude to her teacher changed her name from Kittl to Destinn. Her European fame dated from her appearance as Senta in *Der Fliegende Holländer* at Bayreuth in 1901. In 1905 she created the leading rôle in Puccini's *Madame Butterfly* in London, and in 1907 was selected by Richard Strauss to sing the title rôle in his *Salome* for the Paris and Berlin productions. She became a member of the Metropolitan Opera Company in New York in 1908 and was one of the popular favorites, her repertoire including more than 80 operas. She returned to Bohemia in 1916, and in 1923 was married to Captain Naishbach, a Czech aviator.

DESTROYER, AND DESTROYER LEADER, NAVAL. See NAVAL PROGRESS.

DETROIT, UNIVERSITY OF. An institution of higher education in Detroit, Mich., under the auspices of the Roman Catholic Church and conducted by the Jesuit Fathers; founded in 1877. In the autumn of 1930 there were 3844 students registered, distributed as follows: Arts and sciences, 567; engineering, 1085; commerce and finance, 921; law, 202; foreign trade, 60; Saturday and Thursday extension school, 563. The summer school registration was 446. The faculty numbered 198. The productive funds in 1930 totaled \$1,218,446. There were 52,000 volumes in the library. President, the Very Rev. John P. McNichols, S.J., Ph.D., LL.D.

DETROIT ELECTIONS. See MICHIGAN; MUNICIPAL GOVERNMENT.

DETROIT MUSEUM OF ART. See ART EXHIBITIONS; ART MUSEUMS.

DIAMONDS. The United States is the largest consumer of diamonds in the world and in 1930 its imports amounted to 209,591 carats of rough, uncut diamonds valued at \$5,640,789, as against 354,367 carats valued at \$9,877,975 in 1929. Corresponding imports of cut and unset diamonds were 295,351 carats valued at \$23,267,696 in 1930 and 416,992 carats valued at \$42,009,583 in 1929.

The mine production in South Africa was considerably decreased during the year, both as regards mine and alluvial production, due to the restriction of production to maintain prices. It was estimated that fully one-half of the workers of the diamond cutting industry in Belgium and Germany were unemployed in September, and as

many as 70 per cent in Holland. The recently established cutting industry in South Africa continued in an unsettled condition.

The DeBeers Company, for the year ended June 30, 1930, showed sales expansion and profits about the same as in the previous year, but an increased balance was recorded. There was organized in 1930, by the Conference producers and the Diamond Syndicate, the Diamond Corporation, Ltd., with a capital of £2,500,000 designed to carry surplus stocks of the various producers and distribute them over a period of years, with as little interference as possible with current production. The five-year agreement with the Diamond Syndicate expired at the close of 1930 and the various producers, the Syndicate, and the Government of South Africa held conferences to provide for continuing the agreement.

DICKITE. See MINERALOGY.

DICTIONARIES. See PHILLOLOGY, MODERN.

DIEKEMA, GERRIT JOHN. An American diplomat and lawyer, died in The Hague, the Netherlands, Dec. 20, 1930. He was born in Holland, Mich., Mar. 27, 1859, and was graduated from Hope College in 1881 and from the law school of the University of Michigan in 1883. After admission to the bar he practiced in Holland, being a member of the firm of Dickema and Kollen from 1901 to 1911 and of Dickema, Kollen and Ten Cate from 1911 to 1929. He was a member of the Michigan Legislature from 1885 to 1891, acting as speaker of the House of Representatives in 1889. He was also president of the Michigan Municipal Commission during 1894-95, chairman of the Republican State Central Committee during 1900-10 and in 1927, and manager of the speakers' bureau of the Republican National Committee, Chicago, in 1912. From 1901 to 1907 he was a member of the Spanish Treaty Claims Commission. In April, 1907, he was elected to the United States Senate to fill the unexpired term of William Alden Smith, and two years later was elected a member of the House of Representatives of the Sixty-first Congress (1909-11) from the fifth Michigan district. He was appointed Minister to the Netherlands by President Hoover in August, 1929. The LL.D. degree was conferred on him by Hope College in 1913.

DIESEL ENGINES. See INTERNAL COMBUSTION ENGINES.

DIET. See FOOD AND NUTRITION.

DISARMAMENT. The Preparatory Disarmament Commission of the League of Nations finished its sessions and its own existence on Dec. 9, 1930, at Geneva, bequeathing for the use of the future world disarmament conference, expected in 1932, a skeleton convention. Hugh S. Gibson, chief of the American delegation, urged in his final address that the different governments frankly acknowledge the short-comings of this convention, while educating public opinion, as the only real cure, to further concessions. Following is a brief summary:

The convention agrees "to limit and so far as possible" to reduce armaments. Personnel is fixed. This limitation of trained reserves is not adopted, but left for further discussion. Land material is limited by budget expenditure; naval by both budget and quantity. Both global and category tonnage limits are fixed, but transfer privileges—from one category to another—increase in proportion to smallness of the navy. A committee of experts, sitting December 11, will work out a plan for limitation of annual expenditure of land, sea, and air forces. A permanent commission is to be set up to obtain detailed information on the observance of disarmament agreements. Poison gas and bacteria are to be banned in warfare. A clause to safeguard menaced national security is adopted.

The working out of the details of the process of limiting budgetary expenditure on land, sea, and air armaments was begun at Geneva on December 11 by a committee of experts from eleven countries. According to the principle to be followed, expenditure would be limited not considering the war budget of each country in relation to those of others, but in relation to its own preceding expenditures. This would be done to meet objections by the United States and others to budgetary limitations, on the ground of differing wage scales. However, the United States still remained opposed to this method of armament limitation.

The establishment of a permanent disarmament commission, to meet at least once a year, and provision for world-disarmament conferences to meet at regular intervals in the future, were amongst the fruits of the recent final sessions of the Permanent Disarmament Commission, which ended its labors on December 10. The Commission's plan provides that in the event of a violation of the disarmament convention, or of steps menacing the security of any nation, machinery is to be set in motion for consultation both by members and non-members of the League of Nations.

See LEAGUE OF NATIONS; MILITARY PROGRESS; NAVAL PROGRESS; PEACE; and DENMARK, NORWAY, GERMANY, FRANCE, ITALY, and GREAT BRITAIN under *History*.

DISCIPLES OF CHRIST. A communion, known also as the Churches of Christ, which sprang from a movement for Christian unity, in American Presbyterian circles at the beginning of the nineteenth century under Barton W. Stone in Kentucky and Thomas and Alexander Campbell in western Pennsylvania. This is the largest religious body having its origin in America and in 1929 ranked fifth among Protestant communions in the United States. In polity the churches are congregational. There were six major agencies of the denomination in 1929: The United Christian Missionary Society; board of education; board of temperance and social welfare; Association for the Promotion of Christian Unity; pension board; and the missionary societies of the different States and Provinces of Canada. These agencies are corporations and are related in an advisory way to the International Convention of the Disciples of Christ which meets annually in the late summer or early autumn.

The total church membership throughout the world in 1930 was 1,670,436, a gain over 1929 of 1936; and in the United States and Canada, 1,554,678, a loss of 18,567. The Bible school enrollment for the world was 1,229,285, a gain over the previous year of 27,400; and for the United States and Canada, 1,049,535, a loss of 70,555. Contributions, missionary, benevolence, and educational, reported for the fiscal year in the United States and Canada totaled \$3,751,070. The church erection fund amounted to \$2,766,943, and the ministry aided 410 ministers and missionaries.

The general missionary work of the churches is organized under the United Christian Missionary Society, with headquarters at 222 Downey Avenue, Indianapolis, Ind. Its board of managers of 120 is composed of an equal number of men and women. The foreign missionary work in 1930 embraced the Belgian Congo, Africa, China, India, Jamaica, Japan, Mexico, Philippine Islands, Porto Rico, Argentina, Paraguay, and

Tibet (Batang, on the border). Statistics showed that during the year there were 6434 baptisms in the foreign field. The 512 mission schools had a total enrollment of 16,757. The communion maintained 16 hospitals and 20 dispensaries which gave 463,717 treatments, an increase of 28,926 over the previous year. Work in America was conducted among the French, highlanders, immigrants, Negroes, Orientals, Spanish Americans, and Mexicans. The department of benevolence maintained six homes for children, an equal number of homes for the aged, and one hospital. In 1930, 29 colleges cooperated with the board of education. Bible chairs were also maintained in four State universities; and 59 young people's conferences were held, a gain of four over the precious year. Among the periodicals published by the communion are *World Call*, *Christian Evangelist*, and *Christian Unity Quarterly*.

The international convention of the Disciples of Christ was held in Washington, D. C., Oct. 14-19, 1930. This was followed by the world convention of the same body October 20-24. The registered attendance at these conventions was over 7000, and 30 different nations were represented, including the mission fields. The international convention for 1931 was to be held in Wichita, Kan., and the next world convention in Leicester, Eng., in 1935. Important resolutions on peace, prohibition, and the rural church were passed. The constitution of the United Christian Missionary Society was revised so that the president and vice-presidents were to be elected for four years instead of for one year, and the election of the remaining officers was left with the executive committee. One of the main features of the convention was the recognition of the nineteen hundredth Pentecostal anniversary. The president of the international convention for the year was R. H. Long of Kansas City, Mo. Dr. Stephen J. Corey of Indianapolis, Ind., was acting-president of the United Christian Missionary Society until October, when he was elected its president.

DISEASES OF ANIMALS. See VETERINARY MEDICINE.

DISEASES OF PLANTS. See BOTANY.

DIVORCE. See MARRIAGE AND DIVORCE.

DIXON, HAROLD BAILY. A British chemist, died in Manchester, England, Sept. 18, 1930. He was born Aug. 11, 1852, and attended Westminster School and Christ Church College, Oxford. He was Millard lecturer at Trinity College, Oxford, during 1879-86; Bedford lecturer at Balliol College during 1881-86; and succeeded Sir H. E. Roscoe at Owens College in 1886. He also served on many public commissions, including the Royal Commission on Explosions of Coal Dust in Mines (1891-94) and the Royal Commission on Coal Supplies (1902-04), and from 1911 to 1914 was a member of the executive committee of the Home Office on explosions in mines. During the World War he was deputy inspector of high explosives for the Manchester area, and in 1918 was a member of the alcohol fuel committee. In 1922 he was made honorary professor of chemistry at the University of Manchester, and in 1927 supervisor of research on the ignition of gases, under the Safety in Mines Research Board. He was president of the British Chemical Society, 1909-11 and was appointed chairman of the Royal Technical College at Salford in 1916, chairman of the Salford higher education committee in 1919, and chairman of the selective committee for the

Northwest district for the Ministry of Labor in 1922. He received the Royal Medal of the Royal Society in 1913, and in 1918 was created a commander of the Order of the British Empire. His works include: *Conditions of Chemical Change in Gases* (1884); *Rate of Explosion in Gases* (1893); *Movements of Flame in Explosions of Gases* (1902); *Atomic Weight of Chlorine* (1905); *The Ignition Temperatures of Gases* (1909); *The Firing of Gases by Compression* (1914); *The Velocity of Sound in Gases at High Temperature* (1921); *The Propagation of the Explosion-Wave* (1923); *The Velocity of Sound in Gases and Vapors* (1924); *The Ignition of Carbon Disulphide* (1925); *The Explosion-Wave in Cyanogen Mixtures* (1926); and *The Burning of Gases in Nitrous Oxide* (1927).

DOCKS, DRY DOCKS. See PORTS AND HARBORS.

DOLE. See UNEMPLOYMENT; LABOR, AMERICAN FEDERATION OF; FRANCE; GREAT BRITAIN; GERMANY.

DOMINICA. See LEEWARD ISLANDS.

DOMINICAN REPUBLIC (SANTO DOMINGO). A West Indian state occupying the eastern part of the island of Haiti, the western part of which comprises the Republic of Haiti (See HAITI). Capital, Santo Domingo.

AREA AND POPULATION. The area is estimated at 19,332 square miles; the population at the census of 1921 was 897,405 (estimated at 1,200,000 in 1929). The chief cities, with their estimated populations in 1927, were: Santo Domingo, 35,000; Santiago, 20,000; San Pedro de Macoris, 20,000; Puerto Plata, 9000; La Romana, 9000; and La Vega, 7000. Of the total population in 1927, 25 per cent were white (mainly of Spanish descent), 25.4 per cent were black, and the remainder were mestizos or yellow. In 1929, a total of 13,705 persons entered the Dominican Republic and 12,826 departed. The movement was mainly to and from Haiti and Porto Rico. In February, 1930, there were 841 schools, of which 33 were technical, and a total enrollment of 90,366 (average attendance, 55,842). Public school teachers numbered 1807.

PRODUCTION. The national economy is based almost exclusively on agriculture, with sugar cultivation as the predominant industry. Tobacco, cacao, and coffee, are the other chief crops. Of the total area, about two-thirds, or 9900 square miles, are suitable for cultivation and about 6600 square miles were under cultivation in 1929. The 21 sugar centrals in operation in 1928 were mostly American owned and operated, although little sugar is sold in the United States. American investments in the Republic at the end of 1929 totaled \$69,322,000, as compared with \$4,000,000 in 1913.

While crops were normal in 1929, the low prices received for sugar, cacao, and coffee resulted in a general depression, commencing in the autumn of that year. Trade stagnation grew steadily worse during the first half of 1930 and was rendered acute by the great hurricane of Sept. 3, 1930, which devastated crops and farm lands in the most populous section of the country (see below under *History*). The cacao crop in 1930 was estimated at 44,000,000 pounds, or 90 per cent of the 1929 crop.

Besides sugar refining, the principal industries are the manufacture of rum and alcohol from sugar cane, straw hats, cigarettes, cigars, matches, soap, and other items for local consumption. There are fairly extensive but largely

undeveloped timber resources. The chief forest products are *lignum-vitæ*, mahogany, and railroad ties. Gold and copper are the principal minerals found, others being iron, low-grade coal, silver, platinum, rock salt, and quicksilver.

COMMERCE. The industrial depression in 1929 was reflected in figures for foreign trade, which totaled \$46,465,041, as compared with \$55,542,468 in 1928, a decrease of \$9,076,527. Imports were valued at \$22,729,444 (\$26,787,940 in 1928) and exports at \$23,736,497 (\$28,754,528 in 1928). The favorable balance of trade in 1929 was \$1,007,053 (\$1,956,588 in 1928). While the value of exports declined in 1929, the quantity increased to 751,544 tons from 743,585 tons in the previous year. The values of shipments of the chief export crops, with comparative figures for 1928 in parentheses, were: Sugar (raw), \$12,258,831 (\$16,911,925); coffee, \$2,444,238 (\$2,135,682); cacao, \$3,870,084 (\$4,250,415); leaf tobacco, \$1,381,482 (\$1,274,410). Leading imports in 1929 were: Grains, fruits, and vegetables, \$3,383,447; cotton and its manufactures, \$3,263,515; mineral oils, \$1,948,298; iron and steel manufactures, \$1,400,307; machinery and apparatus, \$1,213,130; meats, \$1,058,395; and miscellaneous foodstuffs, \$1,049,022.

Of the imports in 1929, the United States furnished \$13,457,238, or 59 per cent (61 per cent in 1928). Germany, England, British India, Siam, France, and Canada, in the order named, were the other leading sources of imports, the first three supplying in each case about 5 per cent and the last named about 3 per cent. Exports were distributed as follows: Ireland, \$6,678,734 (mainly sugar intended for transshipment), or 28 per cent of the total; United States, \$5,427,102, or 23 per cent; France, 2,742,701, or 12 per cent; England, \$2,224,144, or 9 per cent; Porto Rico, \$1,914,329, or 8 per cent; Canada, \$1,048,508, or 7 per cent; and Germany, \$940,468, or 4 per cent. For the year ended June 30, 1930, exports to the United States dropped to \$7,876,809 from \$9,203,772 in the previous year, while imports from the United States declined to \$11,032,115 from \$16,073,537 in 1928-29.

FINANCE. Gross customs collections in 1929 totaled \$4,989,527, of which \$4,891,423 represented duties on importations, as compared with gross collections of \$5,290,308 and import duties of \$5,191,481 in 1928. The Dominican Government received \$3,477,845 as its share of the gross customs collections, while \$1,219,148 was allocated by the customs receivership for the service of the outstanding debt, including \$119,148 credited to the sinking fund established under the American Dominican Convention of 1924. The administration of the receivership during the year cost \$236,036.

In the 25 years of the Dominican Customs Receivership ended Apr. 1, 1930, collections totaled \$100,268,199 and receipts from all sources aggregated \$101,207,630. Receivership and customs expenses totaled \$4,398,243, or 4.39 per cent of all collections, while \$45,266,818, or 45.15 per cent of all collections, were remitted to the Dominican Government. Loans floated by the Dominican Government from 1908 to 1929 inclusive, aggregated \$45,661,300, of which \$19,684,300 were outstanding on Dec. 31, 1929. The Dawes Mission of 1929 placed the total national debt in that year at \$22,650,000. During the same period segregations and payments for the service

of loans, interest, and amortization totaled \$47,834,074.

Budget estimates of the Dominican Government for 1930 placed revenues at \$14,292,210 (including \$7,683,655 from special funds) and expenditures at \$14,042,098. For 1929, the budget estimates were: Revenue, \$13,984,860; expenditure, \$13,967,544. Chief sources of estimated revenue (1929) were: Customs \$5,453,529; internal revenue, \$6,118,417; state lottery, \$2,991,305; new loan, \$4,185,953.

COMMUNICATIONS. The total highway mileage in 1929 was 699 miles, excluding some 600 miles of inter-communal roads. In the same year there were two small public railways, with 149 miles of line, and 255 miles of private lines on the large estates. In 1929, a total of 1693 vessels of 2,311,885 registered tons cleared the ports of the republic in the foreign trade, and 1906 vessels of 2,741,204 tons entered. The telephone system is owned and operated by the Government and there are five Government wireless stations. The telegraph system, 1034 miles in length, is privately owned. Air lines connect with the United States and South America.

GOVERNMENT. The Republic is governed under a constitution adopted by the Constituent Assembly on June 13, 1924. Executive power is vested in a president and cabinet of seven ministers. The President is ineligible for a second successive term. The senators and deputies are elected for four years by direct popular vote. Each of the 12 provinces is represented by one senator and (in practice) by two deputies. President at the beginning of 1930, Horacio Vásquez, who assumed office on July 12, 1924; Vice President, Frederico Velazquez.

HISTORY

HURRICANE OF 1930. The city of Santo Domingo, the oldest European settlement in the New World, was virtually destroyed by a hurricane on September 3. The loss of life was placed at 2000 and the injured at 6000, while property damage was estimated at from \$20,000,000 to \$40,000,000. Only about 400 of the 10,000 buildings remained standing following the storm, considered the worst in the city's history. The cathedral and other structures erected in the early 16th century escaped destruction, but the Presidential palace, and buildings occupied by the Cabinet secretaries, the Chamber of Deputies, the Court of Appeals, Fire Department, and the French and American legations were wholly or partly wrecked, along with the buildings of the water, light, and telephone companies and the Pan-American Airways. A large bridge over the Ozama River was demolished. The damage was confined largely to the city and its vicinity.

The National Congress immediately invested President Trujillo with emergency powers, special control of foodstuffs was established, the dead were cremated on huge funeral pyres, looting was suppressed, and efforts were made to care for the injured and some 30,000 homeless persons in the churches and other buildings which escaped destruction. Medical supplies, doctors, food, and other essentials were immediately rushed to the city from Porto Rico, Cuba, and the United States. In accordance with the financial agreement with the United States, the Dominican Government sought permission of the State Department at Washington to float a

\$3,000,000 loan for hurricane relief and other government purposes.

POLITICAL DEVELOPMENTS. The Government headed by President Horacio Vázquez was driven from power by a virtually bloodless revolution which broke out in the northern part of the Republic on Feb. 23, 1930. Within five days the insurgents were in complete control of the entire country and President Vázquez had been succeeded by Gen. Rafael Estrella Ureña, one of the insurgent leaders, as Provisional President.

Political unrest, manifest for a year preceding the revolt, was noticeably increased during 1929 by the announcement that President Vázquez would stand for reelection in May, 1930. He was first elected President in 1924, under a Constitution providing for a single four-year term. In 1927 his party amended the Constitution so as to allow a single six-year term, which President Vázquez proceeded to fill. In 1929 his supporters again amended the Constitution, restoring the four-year term for the Presidency but removing the prohibition concerning reelection. They also amended the 1924 electoral law in a way which convinced the Opposition groups that there was no possibility of defeating the Government party at the polls. Accordingly a northern group, called the *Partido Compactación*, demanded that the local election boards be composed of an equal number of Opposition and Administration members. The President's rejection of this demand precipitated the revolution.

The Vázquez régime was overthrown without a technical change of Government, and with little bloodshed. John M. Cabot of the American legation staff traveled through skirmish areas to interview the insurgent leaders and arranged for a conference between them and representatives of the Government in the legation building, where President Vázquez had taken refuge. As a result of the conference, President Vázquez on February 28 signed a decree designating Gen. Estrella Ureña as Secretary of State for the Interior. As the Vice President, José Alfonsaca, had resigned at the outbreak of the revolution, Gen. Estrella Ureña automatically became Provisional President, under the constitution, upon the resignation of President Vázquez.

General Estrella Ureña, who took office as Provisional President March 4, appointed a new Cabinet, in which the former Ministers of Finance, Justice, and Public Works were retained. He named Dr. Rafael Brache as Minister to the United States, the latter's credentials being accepted by President Hoover April 24. The Provisional President, with the consent of Congress, called an election for May 16 to name a permanent President, and became candidate for Vice President on the Government ticket, which was headed by Gen. Rafael Leonidas Trujillo, commander of the insurgent forces and a former private in the U. S. Marine Corps.

The candidates nominated by the Opposition, a coalition of the National Progressive parties, were Federico Velásquez, the Vice President under President Vázquez, and Angel Morales, the retired Dominican Minister to the United States. Two days before the election the Opposition candidates withdrew and urged their followers to refrain from voting, on the ground that the members of the Junta Central Electoral, or election board, had been illegally appointed and that the election was therefore invalid. The Government candidates were accordingly elected without op-

position. The new President, who was only 37 years old, was inducted into office August 16. He announced his Cabinet as follows: Presidential Secretary, Rafael Vidal; Interior and Police, Jacinto B. Peynado; Foreign Relations, Rafael Estrella Ureña; Treasury, Roberto Despradel; Justice, Public Instruction, and Fine Arts, Elias Brache Jr.; War and Navy, Antonio Jorge; Public Works, José Jimenes; Agriculture and Commerce, Cesar Tolentino; Health and Welfare, Aristides Fiallo Cabral; Labor and Communications, Teodulo Chevalier.

General Trujillo's election was followed by the exodus of his political opponents to San Juan, Porto Rico. Among the expatriates were the two defeated candidates, former President Vázquez, former Vice President José Dolores Alfonsaca; Gustavo Diaz, president of the Senate; and a number of former Cabinet members and Congressmen. They charged that General Trujillo had established a military dictatorship and driven them from the country. Some spoke of appealing to the United States to guarantee a free and fair election. Government spokesmen contended that the Opposition leaders had left the country voluntarily. Reports of disorganized revolts against the Trujillo régime continued. Gen. Cipriano Bencosme, who carried on a guerrilla warfare against the Trujillo Government in Moca and Puerto Plata Provinces, was killed in a battle with Government forces on November 18.

DORDRECHT. Dutch port opened in 1930. See NETHERLANDS, THE, under *Communications*.

DOURINE ERADICATION. See VETERINARY MEDICINE.

DOW, HERBERT HENRY. An American chemist, died in Rochester, Minn., Oct. 15, 1930. He was born in Belleville, Ont., Canada, Feb. 26, 1866 and was graduated from the Case School of Applied Science in 1888. The following year he became associated with the Midland (Mich.) Chemical Company, Inc., and later founded the Dow Process Company and the Dow Chemical Company, acting as president and general manager of the latter at the time of his death. He developed many new chemical processes, including the electrolytic extraction of bromine, and held more than 100 patents. During the World War he was a member of the advisory committee of the Council of National Defense. The D.Eng. degree was conferred on him by the Case School of Applied Science in 1924 and by the University of Michigan in 1929. In 1930 he received the Perkin Medal awarded by the Society of Chemical Industry.

DOWLING, THE MOST REV. AUSTIN. A Roman Catholic archbishop, died in St. Paul, Minn., Nov. 29, 1930. Born in New York City, Apr. 6, 1868, he was graduated from Manhattan College in 1887. He studied for the priesthood at St. John's Seminary in Brighton, Mass., and at the Catholic University, and was ordained June 24, 1891. After serving for two years in East Providence, R. I., he was appointed instructor in church history at St. John's Seminary. In 1897 he became editor of *The Providence Visitor*, a diocesan weekly, and in 1905 he was made rector of Saints Peter and Paul's Cathedral, Providence. He was appointed first Bishop of Des Moines, Jan. 31, 1912, and was elevated to the archbishopric of Saint Paul, Minneapolis, Mar. 10, 1919, in succession to Archbishop Ireland. Until 1929 he was chairman of the de-

partment of education of the National Catholic Welfare Conference, and as such officially sponsored the suit by which the U. S. Supreme Court June 1, 1925, declared unconstitutional the law prohibiting parochial schools in Oregon. The honorary S.T.D. degree was conferred on him by the University of Louvain, Belgium, in 1927.

DOYLE, SIR ARTHUR CONAN. A British novelist, died in Crowborough, Sussex, England, July 7, 1930. He was born in Edinburgh, Scotland, May 22, 1859, and received his education at Stonyhurst College and the University of Edinburgh. From 1882 to 1890 he was engaged in the practice of medicine in Southsea, near Portsmouth, England. He also served during the Boer War as senior physician to the Langman Field Hospital. Although successful as a physician, he abandoned that profession about 1892 to devote his entire time to writing. He was one of the most versatile authors in English literature. His first important novel, *A Study in Scarlet* (1887), was the progenitor of the series in which the famous detective, Sherlock Holmes, appeared. These included: *The Sign of Four* (1889); *Adventures of Sherlock Holmes* (1891); *The Memoirs of Sherlock Holmes* (1893); *The Hound of the Baskervilles* (1902); *Return of Sherlock Holmes* (1904); and *The Case Book of Sherlock Holmes* (1927). Holmes became one of the most popular fictional characters, and the stories woven about his adventures were considered to approach the similar productions of Edgar Allan Poe in their ingenuity of invention, humor, and atmosphere of fascinating mystery and even horror. Conan Doyle became equally famous during this period as the author of historical romances, including *Micah Clarke* (1888); *The White Company* (1890); *The Refugees* (1891); *The Great Shadow* (1892); *Rodney Stone* (1896); *The Exploits of Brigadier Gerard* (1896); *The Tragedy of the Korosko* (1898); *Adventures of Gerard* (1903); and *Sir Nigel* (1906). His other works include collections of short stories: *Round the Red Lamp* (1894); *The Stark Munro Letters* (1895); and *The Green Flag, and Other Stories* (1900); plays, *Halves* (1899); *The Story of Waterloo* (1900, in which Sir Henry Irving appeared); and *The Fires of Fate: A Modern Morality Play* (1909); and poems entitled *Songs of Action* (1898) and *Songs of the Road* (1911). Among his later novels are: *The Crime of the Congo* (1910); *The Lost World* (1912); *The Poison Belt* (1913); and *The Land of Mist* (1925).

On his return from South Africa in 1900 Conan Doyle published *The Great Boer War and Cause and Conduct of the War in South Africa*, in which he attempted to explain England's position; the latter pamphlet was widely circulated and was translated into 12 European languages. He played a similar rôle during the World War, producing *History of the British Campaign in France and Flanders* (vols. i to vi, 1915-20); *A Visit to Three Fronts* (1916); and *The British Campaign in Europe, 1914-18* (1928). After the death of his oldest son in the War he became an active apostle of spiritism. He visited Australia, the United States, and Africa in the interests of his new belief, recounting his experience in *The Wanderings of a Spiritualist* (1921); *Our American Adventure* (1923); *Our Second American Adventure* (1924); and *Our African Winter* (1929). His writings on spiritualism include: *A New Revelation* (1918); *The Vital Message* (1920); *The Coming of the Fairies* (1922); and

History of Spiritualism (2 vols., 1926). His reminiscences were published in *Memories and Adventures* (1924). He was knighted in 1902. See **PSYCHICAL RESEARCH**.

DRAINAGE. See **RECLAMATION**.

DRAKE UNIVERSITY. An institution for the higher education of men and women in Des Moines, Iowa; founded in 1881. The number enrolled in the autumn of 1930 was 1526, distributed as follows: College of liberal arts, 477; commerce, 247; education, 366; law, 97; fine arts, 290; and Bible, 69. The summer session registration was 624. The faculty numbered 99. The fixed endowment amounted to \$1,363,676. The number of volumes in the library was 53,029. President, Daniel W. Morehouse, Ph.D.

DRAMA. See **THEATRE**, and articles on **LITERATURE, ENGLISH AND AMERICAN; FRENCH LITERATURE; GERMAN LITERATURE; ETC.**

DROUGHT. See **AGRICULTURE, UNITED STATES DEPARTMENT OF; DAIRYING; FORESTRY; HORTICULTURE; LIVESTOCK; METEOROLOGY; UNITED STATES under Administration.**

DROUGHT RELIEF. See **AGRICULTURE, UNITED STATES DEPARTMENT OF.**

DRUG CONTROL. See **LEAGUE OF NATIONS.**

DRY ICE. See **CHEMISTRY, INDUSTRIAL.**

DUBOIS, FRED THOMAS. Former United States Senator from Idaho, died in Washington, D. C., Feb. 14, 1930. He was born in Crawford Co., Ill., May 29, 1851, and was graduated from Yale University in 1872. In 1880 he went to Idaho (then the Territory of Idaho), and during 1882-86 was United States marshal there. As a delegate from the Territory of Idaho to the Fiftieth and Fifty-first Congresses (1887-90), he was active in securing the admission of Idaho to the Union as a State in 1890 and became the first United States Senator from the new State. He was reelected for a second term in 1901. Although he served in the U. S. Senate as a Republican and was a delegate to the Republican National Convention in 1888, 1892, and 1896, he later became a Democrat and went as a delegate to the Democratic National Convention in 1904 and 1908. In 1918-20 he served as a civilian member of the Board of Ordnance and Fortification in the U. S. War Department and, from 1924 until his death, he was a member of the International Joint Commission to settle disputes over boundary waters between the United States and Canada.

DUKE UNIVERSITY. An institution for higher education in Durham, N. C., comprising an undergraduate college for men, an undergraduate college for women, a school of nursing, undergraduate departments of engineering and forestry, a graduate school of arts and sciences, graduate schools of religion, law, medicine, and dietetics. It had its beginning under the name of York Academy, established in 1835 in Randolph County, N. C., and expanding later into Union Institute, then into Normal School, and in 1858 into Trinity College. In 1892, Trinity College was moved to Durham where it continued under that name until 1924, when the greater Duke University was made possible through benefactions from James B. Duke, as described in the article on **Duke University** in the 1925 **YEAR BOOK**. Enrollment for the autumn of 1930 was 2305, distributed as follows: Undergraduates, 1721; school of religion, 131; school of law, 79; school of medicine, 70; other graduate schools, 202. For the summer session of 1930 there was an enrollment of 1212. In the autumn of 1930 the faculty, including officers but

not staff assistants, numbered 278. In addition there were 74 teachers in the 1930 summer school who were not included on the regular staff of Duke University. The endowment funds of the university amounted to \$22,627,960, and the income for the year was \$1,135,304. Gifts received during the year 1929-30 amounted to \$30,000, while the Angier B. Duke Memorial Student Loan Fund exceeded \$1,250,000 in value. The library contained 195,000 books and 31,000 catalogued pamphlets, together with newspaper files very complete and of great value.

In the fall of 1930, Trinity College, the undergraduate school for men of Duke University, and the several graduate schools were moved to the west university campus located on a 5100 acre tract of land approximately a mile distant from the old or east campus, on which there was operated an undergraduate coordinate woman's college of Duke University. When in 1924, Duke University began its programme of expansion, the east campus was purposely fitted for the educational uses and purposes of a woman's college. The west campus, built of native North Carolina stone of the Cambrian formation taken from a quarry owned by Duke University, housed Trinity College, the undergraduate college for men of Duke University, and the several graduate schools. President, William Preston Few, Ph.D., LL.D.

DUNKERS or DUNKARDS. See BRETHREN, CHURCH OF THE.

DU PONT, T(HOMAS) COLEMAN. An American capitalist and former United States Senator, died in Wilmington, Del., Nov. 11, 1930. He was born in Louisville, Ky., Dec. 11, 1863, and attended Urbana University and the Massachusetts Institute of Technology. In 1883 he became an engineer with the Central Coal & Iron Co. of Central City, Ky., and for several years was engaged in coal and iron mining in Kentucky, acting as president of the McHenry Coal Company, the Main Jellico Mountain Coal Company, and the Central Coal & Iron Co. In 1893 he removed to Johnstown, Pa., where he became general manager of the Johnson Steel Company and also became interested in the construction and management of street railways. He then became associated with the powder company founded by his great grandfather, Eleuthere Irénée du Pont de Nemours, in Wilmington in 1802. He served as president of the E. I. du Pont de Nemours Company from 1902 to 1915, developing it into one of the greatest industrial organizations in the United States. Later he purchased the controlling interest in the Equitable Life Assurance Society and erected the Equitable Building in New York City. He also owned a chain of hotels, including the Waldorf-Astoria, McAlpin, Savoy-Plaza, and Martinique in New York City, the New Willard in Washington, the Bellevue-Stratford in Philadelphia, and the Du Pont in Wilmington, and at his own expense built and presented to the State of Delaware a \$5,000,000 paved highway, extending the entire length of the State and known as the Coleman du Pont Highway. In 1908 he was made a member of the Republican National Committee, and in 1921 was appointed to fill the vacancy in the United States Senate caused by the resignation of Senator J. O. Wolcott. He was elected to the Senate for the term 1925-31, but on account of continued ill health resigned his seat in December, 1928.

DUTCH EAST INDIES. A possession of the Netherlands in the East Indies, comprising the

group of islands in the Pacific lying between 6° N. and 11° S. latitude, and between 95° and 141° E. longitude. Capital, Batavia.

AREA AND POPULATION. The usual method of dividing the colony is as follows: (1) Java and Madura, divided into 17 residencies, each under a resident and several assistants at the head of a large number of native officials; (2) the Outposts, consisting of Sumatra, Borneo, Celebes, a part of New Guinea, the Molucca Archipelago, Timor Archipelago, Bali, and other small islands, under functionaries variously entitled governor, resident, controller, etc. The area is estimated at 733,642 square miles; population, on Jan. 1, 1928, 52,824,569, of whom 37,433,760 were in Java and Madura. Europeans in Java and Madura totaled 169,608; natives, 36,705,673; Chinese, 479,838; Arabs, 34,297. A census in 1930 placed the population of Java and Madura at 42,264,600; total population 60,366,000. The estimated populations of the chief cities in 1928 were: Batavia, 311,456; Surabaya, 255,124; Soerakarta, 157,724; Semarang, 179,079; Bandoeng, 149,656; and Jogjakarta, 107,622 (all in Java). Bandjermasin (64,947) is the largest city of Borneo; Palembang (60,783), of Sumatra; and Makassar (53,590), of Celebes.

Public and private elementary and secondary schools, exclusive of trade and technical schools, numbered 18,483 (in 1929), with a total enrollment of 1,673,932. There were 192 public European primary schools, with 25,830 pupils, and 12,226 village schools, with 948,531 pupils.

PRODUCTION. Agriculture is the basic industry. The area under cultivation in 1928 was 6,869,980 acres, of which 64,087 were Government estates, 899,891 acres were private lands, 171,349 acres were hired from native princes in Java and Madura, 5,218,132 acres were hired on long-term leases from the Government, and 516,541 acres were hired on short-term leases from natives. Of the total, 2,815,219 acres were planted.

It is estimated that the islands furnish more than nine-tenths of the world's cinchona bark, three-fourths of all kapok, more than one-half of the pepper, over one-third of the rubber, one-fifth of the agave fibre, one-sixth of the tea, and nearly one-eighth of all the sugar, as well as important quantities of tobacco, tin, coffee, cacao, petroleum, and palm oil. The area devoted to so-called "native" cultures in Java and Madura in 1928 totaled 18,728,299 acres, devoted mainly to rice, maize, cassava, sweet potatoes, ground-nuts, soya beans, tobacco, and other secondary crops. The sugar crop for 1930 was estimated at 2,591,076 tons, while the area planted to estate rubber at the beginning of 1930 was officially placed at 1,353,000 acres.

Production of the leading minerals in 1929 was: Tin, 35,367 metric tons; petroleum, 37,924,000 barrels; coal, 1,850,000 metric tons; gold, 107,898 troy ounces; silver, 1,968,000 troy ounces. Industrial establishments in 1927 included 186 sugar mills, 321 rubber plants, 226 tea factories, 470 rice mills, and 233 establishments for the preparation of animal and vegetable oils.

As in other agricultural countries, declining prices of export commodities and the absence of foreign buyers resulted in economic depression during 1930.

COMMERCE. Compared with 1928, imports in 1929 increased about 14 per cent in value, while exports declined by 6 per cent. Including parcel post, gold, and silver, imports in 1929 totaled

1,162,179,000 florins (\$467,195,000) and exports amounted to 1,481,024,000 florins (\$595,372,000), according to preliminary figures. The favorable balance of trade was 318,845,000 florins (\$128,177,000), as compared with 616,482,000 florins (\$247,826,000) in 1928.

The principal exports are sugar, rubber, coffee, tea, tobacco, and cinchona bark, and the leading imports are automobiles, iron and steel, ammonium sulphate, machinery and tools, textiles and yarns. Trade is chiefly with the Netherlands, Singapore, the United Kingdom, and the United States. Imports from the United States in 1929 totaled \$45,651,000 (\$34,445,000 in 1928), while exports to that country amounted to \$82,306,000 (\$86,142,000 in 1928). Netherland East India is the chief bulwark of the commercial, economic and financial organization of the Netherlands.

FINANCE. Preliminary returns on budget operations in 1930 indicated a deficit for the year of 105,874,000 florins (\$42,650,000), as compared with an estimated deficit of 69,740,187 florins from anticipated revenues of 848,680,296 florins and anticipated expenditures of 911,420,483 florins. In 1929, the deficit amounted to 66,273,132 florins, revenues totaling 816,078,231 florins and expenditures 882,351,363 florins. The preliminary budget for 1931 placed ordinary expenses at 517,079,000 florins (\$207,866,000), or 317,000 florins (\$127,000) less than the estimated ordinary revenues, while extraordinary expenses were calculated at 62,224,000 florins (\$25,014,000), which was 51,977,000 florins (\$20,895,000) more than the anticipated extraordinary revenues. The public debt on Jan. 1, 1930, stood at 980,211,000 florins (1,011,677,000 florins on Jan. 1, 1929).

COMMUNICATIONS. At the beginning of 1929 there were 4558 miles of main and light railways, both state and private, of which 3421 miles were in Java and 1108 miles in Sumatra. Government telegraph and cable lines extended 14,559 miles, and there were 18,489 miles of Government telephone and cable lines and 21 Government radio telegraph stations. Wireless telephone service between the Netherlands and Batavia was inaugurated early in 1929. In 1928, 12,364 steamers of 10,634,629 registered tons and 8698 sailing vessels of 492,579 tons entered the ports. A fortnightly air-mail service linked the colonies with the mother country. A weekly air-mail service from Batavia, Java, to Medan, Sumatra, and return was reported to have been inaugurated in September, 1930.

GOVERNMENT. Executive authority is vested in a governor-general, assisted by an advisory council of five members. Both the Governor-General and members of the Council are nominated by the Queen of the Netherlands. Legislative authority is shared between the Governor-General and the Volksraad, or legislative assembly, established in 1918. The chairman of the Volksraad is appointed by the Crown. Part of the members are appointed by the Government and part are elected by the local councils. Legislation passed by the Netherlands Parliament in 1929 provided that the Volksraad must consist of 30 native, 25 Dutch, and not more than five foreign-born subjects, such as Chinese. Governor-General in 1930, Dr. A. C. D. de Graeff, appointed Mar. 26, 1926.

The island of Anak Krakatau, lying between Sumatra and Java in Sunda Strait, disappeared beneath the surface of sea Aug. 9, 1930, during intense activity of its volcano. On the previous

day the island had a height of 170 feet. See NETHERLANDS, THE.

DUTCH GUIANA, gè-à-nà, or SURINAM. A possession of the Netherlands on the north coast of South America lying between French Guiana on the east and British Guiana on the west, bounded on the south by Brazil. Area, 54,291 square miles; population, Dec. 31, 1929, about 148,960, inclusive of Negroes and Indians in the forests. Paramaribo, the capital, had 46,929 inhabitants. In 1928 there were 3825 births, 1925 deaths, and 467 registered marriages. Among the chief products are sugar, cacao, bananas, coffee, rice, maize, rum, cotton, bauxite, gold, and balata. In 1929 imports totaled \$3,414,000 (\$3,696,000 in 1928) and exports \$3,191,000 (\$4,697,000 in 1928). Local revenues are insufficient to meet expenditures and Holland provides an annual subvention. The budget for 1930 estimated expenditures at 8,316,000 guilders, revenue at 5,472,000 guilders, and the subvention at 2,844,000 guilders (1 guilder equals \$0.4020 at par). The executive authority rests with a governor and an assisting council, both nominated by the Crown. Governor in 1930, Dr. A. A. L. Rutgers, appointed Apr. 1, 1928.

DUTCH REFORMED CHURCH. See REFORMED CHURCH OF AMERICA.

DUTCH WEST INDIES. The name applied to the Dutch possessions in the West Indies, viz., Dutch Guiana and Curaçao. Consult those titles.

DYNAMO ELECTRIC MACHINERY. With the construction of turbine generators, designed for operating at 1200 pounds steam pressure, and the increase of the upper limits of steam temperature, and the development of new designs, especially in the field of triple tandem-compound units, there was to be recorded during the year a notable increase in the capacity of generators operating at 1800 revolutions per minute.

The 110,000-kilowatt turbine generator for the Ford Motor Company at River Rouge, described in the YEAR BOOK for 1929, was completed and was the largest generating unit built for 1200 pounds steam pressure, as well as the largest turbine generator ever built for industrial use. In this unit, generators are duplicate 1800 revolutions per minute machines, and the steam is reheated to 550° F. in steam reheaters adjacent to the turbine. This turbine generator was built by the General Electric Company, which also installed the first triple tandem-compound unit of 105,000-kilowatt capacity at the Powerton Station of the Superpower Company of Illinois. This was a 22,000-volt generator with a double winding, and was the largest 1800 revolutions per minute generator in operation at the end of the year.

A triple tandem-compound 150,000-kilowatt turbine generator was under construction for the Chicago District Electric Generating Corporation, and involved a single 150,000-kilowatt machine with a double-winding and external blowers with 22,000 volts and operating at 1800 revolutions per minute. Notable tandem-compound turbine generators that the General Electric Company had under construction during the year were two 160,000-kilowatt units, driving a single generator and operating at 1800 revolutions per minute, instead of 1500 revolutions per minute of an earlier machine, in the East River Station of the New York Edison Company. The 16,500-volt generators were the largest 1800 revolutions per minute machines that had been constructed up

to 1930, and were to have a full load rating of 160,000 kilowatts or 200,000 kv-a.

The Westinghouse Electric and Manufacturing Company also reported a significant trend in steam turbo-generators toward constantly larger size, both in the four-pole and two-pole units. This company had designed single unit air-cooled 1800 revolutions per minute machines up to 200,000 kv-a. capacity, and had built 3600 revolutions per minute units up to 18,750 kv-a. capacity. In two-pole generators, a uniform type of construction had been developed, simplifying frame construction and making it easier and quicker to assemble. In this design iron pipes of relatively large diameter were used as the cross members, and were welded to equally spaced steel sheet plate throughout the length of the machine, providing a rigid skeleton frame and a convenient means of ventilating the middle sections of the core. The laminations of the core are built up on through bolts held between the end plates, while the outside of the frame is covered with cheap steel plates.

Aside from the steam-turbine units, there were important developments during the year in hydroelectric plants (see WATER POWER), and a notable water-wheel generator was completed for the Spier Falls plant of the New York Power and Light Corporation. It was a 47,000 kv-a. generator, with a directed main exciter and a direct connected pilot exciter. This was built by the General Electric Company, which also had under construction a 77,500 kv-a. vertical-shaft water-wheel generator at the Dnieper River development in Russia. This was one of nine units required for this development, and the machines were to be the largest water-wheel generators ever constructed, operating 88.25 revolutions per minute under a hydraulic head of 123 feet. The total weight of each generator was to be approximately 880 tons, the weight of the rotor and shaft about 445 tons and the shaft itself, 36 feet long and 40 feet in diameter, about 68 tons. See BOILERS; POWER PLANTS; WATER POWER.

The Mercury-Arc Rectifier referred to in the 1929 YEAR BOOK continued to find increased application for railway operation. The General Electric Company had under construction during the year two 2000-kilowatt rectifiers, designed for 2900-volt direct-current supply for the Italian State Railways, while a 1500-kilowatt unit was being installed by the Paris-Orleans Railway. The mercury-arc rectifier was an important feature of the Delaware, Lackawanna & Western electrification (see ELECTRIC RAILWAYS), and also figured in the designs for the new subways in Manhattan and Brooklyn in New York City. The city of Los Angeles installed two 1500-kilowatt 600-volt rectifiers, while a 2000-kilowatt, 600-volt unit was installed by the City of Detroit, and two 1500-kilowatt, 600-volt units were under construction for the Montreal tramways, and two 3000-kilowatt, 600-volt rectifiers for the Boston Elevated Railway.

The General Electric Company reported that during 1930 there were placed in service approximately 60,000 kilowatts of mercury-arc rectifiers by that company, while there were designed or put under construction approximately 90,000 kilowatts of mercury-arc rectifier substations.

Synchronous converters also figured in railway substations, and a number of large units were being built for substations on the New York Central Railroad's West Side track improvement in

New York City, and for the Philadelphia Rapid Transit Company, the Omaha and Council Bluffs Street Railway Company, and the Pacific Gas and Electric Company at San Francisco.

Among the notable transformer units completed during the year was a 100,000 kv-a. three-phase auto-transformer designed by the General Electric Company to transform 12,000 volts to two circuits of 24,500 volts. The equivalent transformer capacity of this unit was 57,000 kv-a.

EAMES, CLAIRE. An American actress, died in Richmond, Eng., Nov. 8, 1930. She was born in Hartford, Conn., Aug. 5, 1896, and studied for the stage at the American Academy of Dramatic Art. She made her debut at the Greenwich Village Theatre, New York City, in 1918 in *The Big Scene*, and three years later appeared as Mary Stuart in John Drinkwater's play of that name. Her other important rôles included: Mrs. Tiffany in the Provincetown Playhouse's revival of *Fashion* (1924); Proserpine Garnett in Shaw's *Candida* (1924); Carlotta Ashe in Sidney Howard's *Lucky Sam McCaver* (1925); the Empress Carlotta in the Theatre Guild's production of *Juarez and Maximilian* (1926); and Carrie Callahan in Sidney Howard's *Ned McCobb's Daughter* (1927). In 1927 she went to London where during the next three years she achieved distinction in *The Silver Cord*, *The Unquiet Spirit*, and *The Sacred Flame*. She was married to Sidney Howard, the playwright, in 1922, but was divorced from him in 1930.

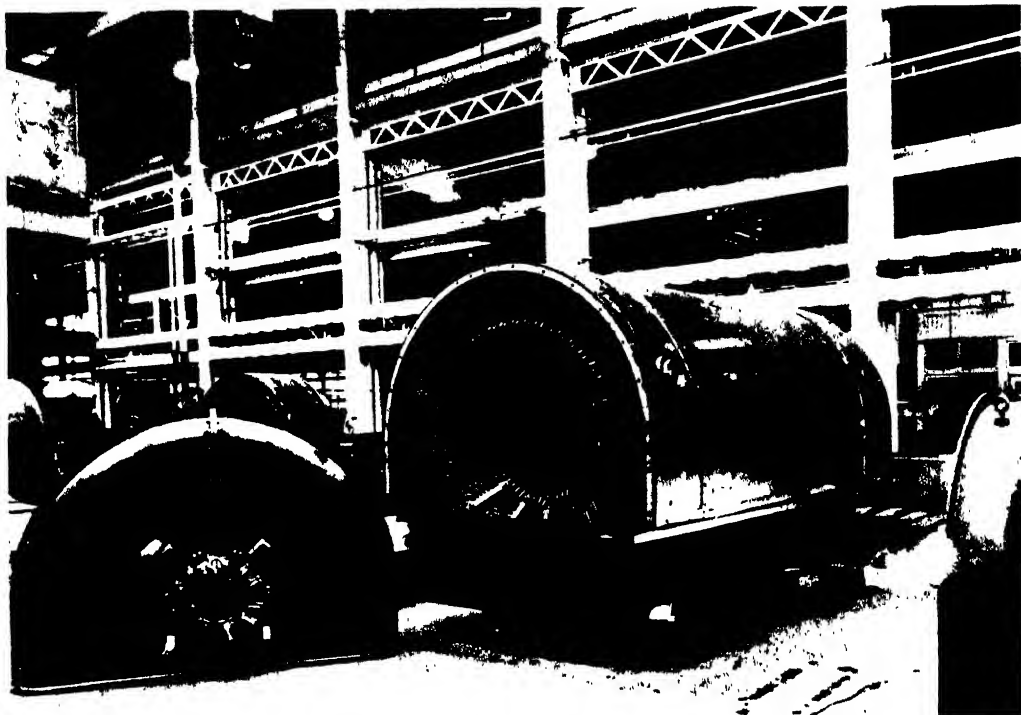
EARTH, STUDY OF. See GEOLOGY.

EARTHQUAKES. It was estimated that an earthquake was felt in some part of the world on an average of at least 4000 times annually, though fortunately the vast majority of these quakes are either feeble and harmless or else occur under the sea or in thinly populated regions; in the United States alone, 200 or more are usually reported each year. Thousands of additional disturbances, too faint to be felt, may be recorded by delicate seismographs. The year 1930 had the usual quota of earthquakes, several of which ranked as severe local disasters; but until its tranquillity was broken by the quakes of May 5 and May 6 in Burma and Persia the crust of the earth had been unusually free from seismic disturbances ever since the world-shaking Aleutian Islands shock of Dec. 17, 1929.

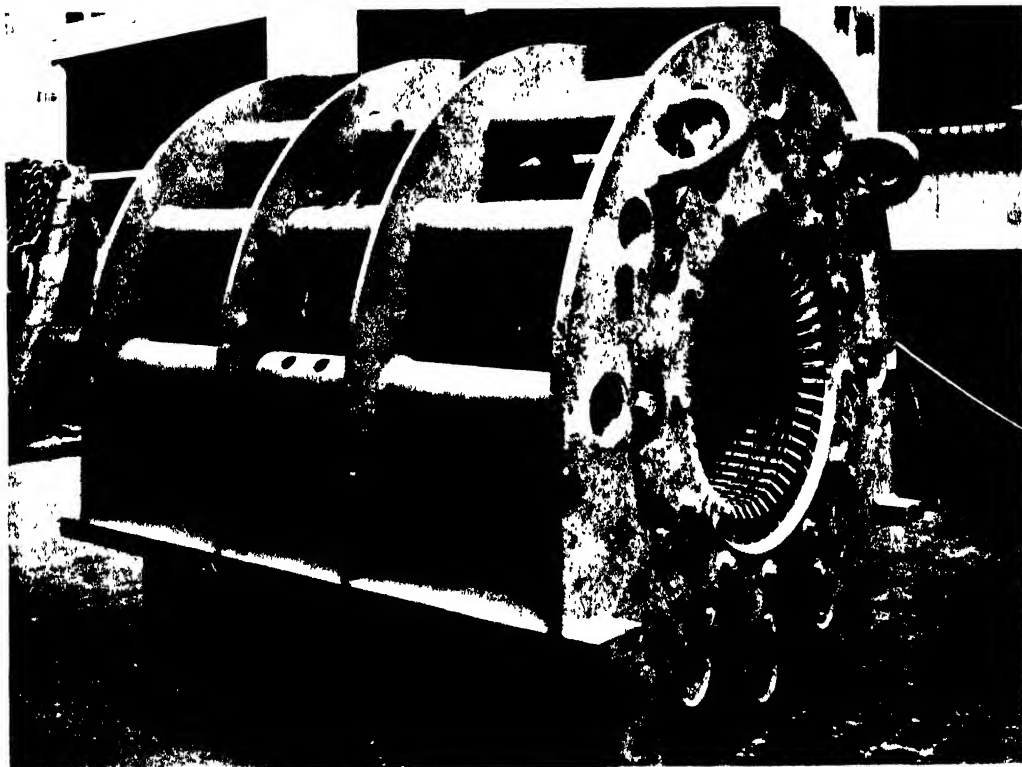
Ito, Japan, on the west coast of Sagami Bay, was shaken by a remarkable series of quakes which continued almost incessantly for two months, beginning the middle of February, though they were not of destructive intensity. From February 13 to April 11, 3684 shocks were recorded; 209 occurred on March 9 alone. The shocks came in groups that coincided with low tide; the foci appeared to be confined to an inverted conical block of the earth's crust, which had its apex at a depth of 6 kilometers (3.7 miles) and its base (2 kilometers—1.2 miles—in radius) on the sea bed, suggesting the presence of a hidden extinct volcano with this cone occupying its former crater.

The most destructive earthquake ever felt in the south of Burma occurred on May 5. The epicentre was near the seaport of Pegu; this city was practically destroyed by the quake and the resultant fire and sea-wave. Rangoon also suffered heavily. Several hundred lives were lost.

The Burmese quake was followed the next day by an equally destructive shock in northwest Persia, with the epicentre in the Azerbaijan district near Salmas. Two thousand lives were lost



STATOR OF 18,750 KV-A., 3600 REVOLUTIONS PER MINUTE TURBO-GENERATOR



WELDED PIPE CONSTRUCTION OF WESTINGHOUSE TURBO-GENERATOR FRAME

DYNAMO ELECTRIC MACHINERY

Photographs by courtesy Westinghouse Electric & Manufacturing Company

in the district, and several thousand people were injured, according to preliminary reports.

An earthquake with an epicentre 320 miles northeast of Calcutta caused considerable damage on July 3, but no loss of life. The focus was probably unusually deep, so that the quake was comparatively non-destructive in spite of the fact that it was strong enough to disturb an area of 500,000 square miles.

The most destructive earthquake that had occurred in Italy since the Avezzano disaster of 1915 took place about 1:00 A.M. on July 23 in the southern provinces of Basilicata and Campania; the epicentre was near Lacedonia. Two thousand people were killed, and 4500 injured. An area of 95,000 square miles was disturbed, and more or less damage was caused over an area of 490 square miles. Basilicata is one of the most unstable regions of Italy, and has been the scene of many great earthquakes.

A slight quake with an epicentre near New Orleans occurred on October 19. It may have been due to readjustments that took place as a result of the accumulating stresses set up by the load of the sediment deposited on the Mississippi delta.

An earthquake occurred in Chile on October 17, with an epicentre off the coast near Santiago.

The northern Izu Peninsula in eastern Japan was shaken on November 26, with extensive damage to many towns and villages; about 250 lives were lost, and several hundred people were injured.

A quake in Argentina on December 24 destroyed the village of La Poma, and resulted in the deaths of about 40 people. See SEISMOLOGY; ALBANIA, ITALY, JAPAN, and BURMA under *History*.

EAST AFRICA PROTECTORATE. See KENYA COLONY.

EASTERN REPARATIONS. See REPARATIONS.

ECLIPSES AND ECLIPSE OBSERVATION. See ASTRONOMY; PHYSICS.

ECOLOGICAL. See BOTANY.

ECONOMIC ASSOCIATION, AMERICAN. An organization founded in Saratoga, N. Y., in 1885 to encourage economic research, especially the historical and statistical study of the actual conditions of industrial life; to issue publications on economic subjects; and to encourage perfect freedom of thought and discussion upon current problems from an economic point of view. The membership, which in 1930 totaled approximately 3700, comprises persons interested in the study of political economy or the economic phases of political and social questions. During the first 25 years of its existence the association published mainly monographs on special economic topics, dealing largely with current problems, which make up 28 volumes and furnish the best existing guide to the progress of economic thought in the United States. The official periodical is the *American Economic Review*, a quarterly founded in 1911, which aims to supply material showing the progress of economic thought. Papers read at meetings are published in the *Proceedings* of the association and furnished free to members.

The association held its annual meeting, in Cleveland, Ohio, Dec. 29-31, 1930. Among the topics discussed at this meeting were: "The Russian Economic Situation"; "The Modern Merger Movement"; "Industrial Changes and Unemployment"; "International Economic Relations"; and "The Business Depression of 1930." The officers for 1930 were: President, Matthew

B. Hammond, Ohio State University; vice presidents, B. H. Meyer, Washington, D. C., and George O. May, New York City; counsel, John E. Walker, Washington, D. C.; and secretary and treasurer, Frederick S. Deibler, Northwestern University. The elected members of the executive committee were: William H. Kiekhofer, University of Wisconsin; Edmund E. Day, New York City; Ernest L. Bogart, University of Illinois; Richard T. Ely, Northwestern University; Joseph H. Willits, University of Pennsylvania; and Stuart Daggett, University of California.

ECONOMIC ENTOMOLOGY. See ENTOMOLOGY, ECONOMIC.

ECONOMIC GEOLOGY. See GEOLOGY.

ECONOMICS. See BANKS AND BANKING; BUSINESS REVIEW; FINANCIAL REVIEW; LITERATURE, ENGLISH AND AMERICAN; PUBLIC FINANCE; ETC.

ECONOMIZERS. See BOILERS, STEAM.

ECUADOR, ek'wá-dór. A South American republic on the northwest coast of the continent between Colombia on the north and Peru on the south. Capital, Quito.

AREA AND POPULATION. The area in 1930, still undetermined because of the boundary dispute with Peru, was variously estimated at from 110,000 to 284,000 square miles, including the Galapagos Islands (2868 square miles), situated 600 miles west of Ecuador in the Pacific. The population is estimated at from 1,500,000 to 2,000,000 and includes about 601,000 inhabitants of pure European blood, 291,000 of mixed blood, and 660,000 Indians, of whom 200,000 are savages virtually untouched by civilization. In 1928 there were 97,653 births, 51,584 deaths, and 14,754 marriages. The official census in 1903 placed the population at 1,328,821. The chief towns with their approximate populations are Quito, 80,702; Guayaquil, 100,000; Cuenca, 30,000; Riobamba, 20,000; and Ambato, Loja, and Latacunga, each with about 10,000 inhabitants.

EDUCATION. Elementary education is free and nominally compulsory. In 1928, there were 1761 primary schools (1371 Government, 99 municipal, and 201 private schools), with a total attendance of 128,744; 20 secondary schools, or colleges, with 2831 students; and four training colleges for teachers, with 985 students. There are universities at Quito, Guayaquil, and Cuenca, the aggregate attendance in 1928 being 776. Buildings of the Central University at Quito were destroyed by fire Nov. 9, 1929.

PRODUCTION. Ecuador is primarily an agricultural country, cacao being the principal export and the chief support of the nation's economic life. Some 6000 estates along the coastal region, with an estimated area of 250,000 acres, are devoted to the cultivation of cacao. Production, however, has been seriously curtailed by the "Witchbroom" disease. Cacao shipments from Guayaquil declined from 51,900 tons in 1922 to about 16,183 tons in 1929; in value, the shipments decreased from \$5,157,944 in 1928 to \$3,826,944 in 1929. The marked decline in the volume of cacao exports and in the prices received was the most important factor in the severe economic depression which gripped the country in 1929 and 1930.

Other leading agricultural products are ivory nuts, rubber, coffee, tobacco, cinchona bark, hat straw, and tropical fruits. Sugar, rice, cotton, aloe fibre, lentils, maize, wheat, barley, potatoes, and vegetables are grown in lesser quantities.

The total area under cultivation was estimated at 11,480,000 acres and the value of the annual gross production at 416,000,000 sucres.

Petroleum production in 1929 totaled 56,569,984 gallons, from which the Government derived a revenue of 1,010,672 sucres. Considerable gold is mined, and the country is believed to be rich in silver, copper, iron, lead, and sulphur, but mining is not an important industry. Salt is a Government monopoly. There are few known coal deposits; water-power resources are estimated at 1,000,000 h.p., of which 5500 h.p. were developed in 1926. The extensive forests are rich in dye-woods, kapok and cinchona trees, and other valuable timber.

The chief manufacturing industry is the making of Panama hats. There were 14 textile factories in 1928, and others devoted to the production of sugar, chocolate, shoes, flour, and beer. The textile and hat industries flourished in 1929. Exports of straw hats were valued at \$1,154,079, as compared with \$730,263 in 1928. Although the 1929-30 cotton crop totaled about 3,042,000 pounds, additional cotton had to be imported to meet the needs of the textile industry.

COMMERCE. Exports in 1929 declined to 86,036,822 sucres (1 sucre exchanged at \$0.20 in 1929) from a total of 98,379,028 sucres in 1928, according to the Director General of Statistics. The decrease in actual value of exports was 7,417,358 sucres, as the sum of 4,924,848 sucres, included in the 1928 total, represented gold shipped by the Central Bank of Ecuador as deposits and for coinage. The decrease in 1929 was attributed to the smaller quantity of cacao exported, the drop in cacao, coffee, and tagua (vegetable ivory) prices, and the overstocked condition of European markets, which normally take 93 per cent of the Ecuadorean exports of cattle hides. The value of the leading exports in 1929 in sucres, with figures for 1928 in parentheses, was: Cacao, 21,256,296 (29,653,059); petroleum, 15,142,502 (11,634,655); coffee, 11,071,576 (17,275,208); Panama hats, 6,788,455 (4,507,806); tagua, 6,076,270 (6,279,981); rice, 4,255,794 (2,812,025); and cattle hides, 718,385 (1,890,735). Imports in 1929 were valued at 84,835,000 sucres, as compared with 82,924,000 sucres in 1928. The favorable trade balance was the lowest since the World War.

For the year ended June 30, 1930, exports to the United States increased slightly to \$5,522,904 from \$5,483,825 in 1928-29, while imports from that country declined to \$5,309,339 from a total of \$6,759,754 in the preceding year, a falling off of 21 per cent.

FINANCE. The ordinary budget for 1930, as approved by the Council of State, Dec. 20, 1929, balanced at 64,037,200 sucres (1 sucre equals \$0.20 at par), as compared with a revised budget of 64,694,828 sucres in 1929. Chief revenue items were direct and indirect taxes, which were expected to aggregate 55,487,020 sucres. In the expense budget, 19,647,022 sucres were allotted to government, police, and justice, 9,421,677 sucres to education, 9,071,113 sucres for military purposes, 7,431,486 sucres to the Treasury, and 6,150,816 sucres for the service of the public debt.

Customs revenues, which constitute the principal source of income, declined to 26,249,203 sucres in 1929 from 26,727,701 sucres in 1928, according to preliminary returns. Actual ordinary receipts were 59,269,000 sucres and ordinary expenditures were placed at 53,694,000 sucres.

The public debt as of Jan. 2, 1930, stood at 122,772,468 sucres, of which 110,822,839 sucres represented the external debt, and 11,946,629 sucres the internal debt. The National Assembly decreed in 1929 that the balance of the external debt should be deposited in the Central Bank rather than remitted to the bondholders and that meanwhile the Executive should enter into negotiations for funding on more favorable terms. President Ayora was quoted as saying in July, 1929, that the Government hoped to refund the debt on the basis of 75 per cent of the existing capital figures, and with this possibility in mind was depositing 10,000 sucres (\$2000) daily toward the interest and principal. Americans who had been serving as Comptroller General and Superintendent of Banks were supplanted in 1929 by Ecuadorean citizens.

COMMUNICATIONS. Nine railways in operation in 1929 had a total mileage of 698 miles. There were few highways, most of the roads being little better than bridle paths. Air services connected the leading cities with the Panama Canal and with numerous points in Colombia, Peru, Chile, and Argentina. A fortnightly passenger and freight service between Ecuador and the United States was established by an American steamship company in 1930. Guayaquil is a port of call for nine European steamship lines.

GOVERNMENT. Under the Constitution promulgated Mar. 26, 1929, executive power is vested in a president, elected for four years by direct vote of the people, and legislative power in a congress of two houses. The Senate consists of 32 members elected for four years by the Provinces and the various professional and occupational groups. The Chamber of Deputies is composed of 56 members elected for two years by the direct vote of literate male and female citizens. President in 1930, Dr. Isidro Ayora, who assumed office in April, 1926, and was reelected Mar. 27, 1929, by the Constituent Assembly for the term ending Aug. 31, 1932. Premier, Julio E. Moreno.

HISTORY

Political unrest and financial stringency due to the continuance of the economic depression contributed their quota of difficulties to the Ayora Administration during 1930. The President's efforts to balance the budget by reducing appropriations for the army led to a political crisis in October, from which Dr. Ayora emerged in a stronger position than any he had occupied since his *coup d'etat* of 1925. The crisis was precipitated by the resignation of Julio Moreno, the Minister of Interior and ranking member of the Cabinet, who had been the target of Opposition and army attacks. His withdrawal left Col. Carlos Guerrero, the Minister of War, in line for succession to the Presidency and when President Ayora presented his resignation to Congress on September 29 that body was faced with the certainty of a military Cabinet if it did not support the President. At the same time the army, which had clashed with Congress, offered him unreserved support if he would continue in office. Congress refused to accept the resignation, which President Ayora withdrew the following day. The incident left him free to continue his administration without interference from the military element and with the prestige accruing from a vote of confidence from the first constitutional Congress since 1924. Having apparently circum-

vented danger of a revolutionary movement directed by the army or by Opposition politicians, the President was confronted only by the problem of radical agitation among the Indian and mestizo masses.

The economic depression had been accompanied by an alarming increase in banditry in the coastal areas, resistance to Government tax collectors, and increasing labor unrest, attributed to Communist propaganda. A number of clashes between alleged Communists and Government officials and troops were reported during the year. Congress on Dec. 8, 1930, ended a stormy four-month session after passing a budget for 1931 totaling 61,200,000 sucres, or 1,200,000 sucres more than the President proposed. As the necessary arrangements for the settlement of the foreign debt were not adopted, a special session was in prospect. Miguel Angel Albornoz, vice president of the Central Bank of the Republic, was appointed Minister of Interior on November 24. Under authority of a law granting autonomy to municipalities passed by Congress, Guayaquil inaugurated the city manager plan of government on December 17. As the first trial of the plan in a Latin American city, the experiment aroused much interest in South America.

Seeking foreign guidance in tiding over the financial stringency, the Government engaged William F. Roddy, an American member of the Kemmerer financial commission to Ecuador in 1926-27, to serve for 10 years as customs adviser. A shortage of funds for public instruction, public works, and sanitation was reported early in the year and the educational fund promised to be further depleted as a result of a law prohibiting the operation of public gambling places, formerly taxed for school purposes.

The reported proposal of a group of rich American sportsmen to purchase the Galapagos Islands, a favorite winter haunt for American yachtsmen, aroused suspicions in Ecuador that the United States government was seeking to obtain the islands for a naval base for the protection of the Panama Canal. In October, residents of Quito were reported to have petitioned Congress to lease the Galapagos to France, Germany, or Japan as a means of meeting the financial crisis.

The National Congress, which in 1929 had incorporated anti-clerical provisions in the new Constitution, ordered Señorita de Sárraga, an anti-Catholic lecturer, out of the country on January 25 after troops had been called out to protect her from a mob in Quito.

EDUCATION IN THE UNITED STATES. STATISTICS. *Enrollment.* The United States Office of Education estimated that the enrollment of pupils for 1930 was: elementary schools 21,370,000; public high schools 4,030,000; and private and parochial elementary and secondary schools 2,704,000. This makes an estimated total of 28,104,000 pupils in elementary and secondary schools.

The enrollments in 1927-28, the last year for which definite figures were available, were: public kindergartens 695,490; private kindergartens 54,456; a total of 749,946. There were in public elementary schools 20,572,927, and in private elementary schools 2,234,999, a total of 22,897,926.

The enrollment of students in public high schools was 3,940,855, and in private schools 380,508, making a total of 4,321,361. The total enrollment in all elementary and secondary schools in 1927-28 reached a total of 27,879,233.

The enrollment in public industrial schools for delinquents was 84,317; schools for the deaf 17,496; schools for the blind 6084; schools for the feeble-minded and subnormal 104,021; schools for Indians 34,718; Government and other public schools in Alaska 8571; and private commercial and business schools 188,363. Including the 274,348 enrolled in teachers colleges and normal schools, and the 868,793 enrolled in universities, colleges and professional schools there was a total of 29,410,615 enrolled in educational institutions within the United States.

Expenditures. The total expenditures for public elementary and high schools was \$2,184,847,200. For private schools of the same class, \$228,258,290. The grand total for all schools including colleges and universities was \$3,033,706,590.

Property. State departments of education reported a total value of property used for public school purposes of \$5,486,938,599. Private high schools reported a total valuation of \$635,848,000 including endowments of \$75,376,000. It was estimated that private elementary schools had property valued at \$400,000,000.

Students in Certain Courses in High School. From time to time the U. S. Office of Education has collected information regarding the subjects that high school students study. The report for 1928 shows that the increase in enrollment has given to each subject a larger number of students than was reported in 1922. The per cent of the total number of students who study some of the subjects has changed to a remarkable degree. In 1928, a total of 777,081 were enrolled in Latin classes. This was 24.71 per cent of the total number of students reporting. While this represented the largest number of Latin students ever reported, it shows a marked decrease in the proportion of the student body who study Latin. From 1900 to 1910 about one half of all high school students studied Latin. As a subject, therefore, Latin was only about one half as popular as it was twenty years earlier. Courses in English language and literature enroll over 93 per cent of the students. History comes next with an enrollment of about 53 per cent. Algebra was studied by 36 per cent, Latin by nearly 25 per cent, vocal music by 21 per cent, and geometry by 20 per cent of the students reporting.

The study of German presents an interesting contrast. In 1915 the schools reported that courses in this subject enrolled about 24 per cent of all high school students. In 1922 less than 1 per cent and in 1928 less than 2 per cent were enrolled in German classes.

Only 8165 students were reported as studying Greek. This is only .26 per cent of the total reporting, and about one-third as many as studied this subject in 1900.

Many newer subjects such as general science, sociology, economics, commercial geography, typewriting, and mechanical drawing have come to occupy important places among the school subjects.

Teachers. The public elementary schools employed 642,712 teachers. The public high schools 189,222 teachers. The grand total of teachers in all educational institutions was 1,010,232.

Textbooks. For the year 1928, sixty publishers of school and college textbooks reported net sales in the United States amounting to \$49,097,466. For elementary school purposes 39,406,677 books were sold for \$22,735,745. The high schools used 18,633,290 books for which they

paid \$16,288,422. About 65 per cent of the total cost of books used in the public schools was for free textbooks bought by boards of education.

RADIO. An Advisory Committee on Education by Radio was appointed by the Secretary of the Interior. A report presented in June, contained the following recommendations:

1. That there be established in the Office of Education, Department of the Interior, a section devoted to education by radio, and charged with such responsibilities as the following: (a) To receive from the advisory committee on education by radio its files and collected documents, to keep this material up to date and available for reference by the many students of the subject; (b) to organize some of the material into bulletins to be issued as demand warrants; (c) to outline techniques for research and carry on investigations into the best methods of broadcasting and compare the results of lessons sent to schools by radio with the results obtained by other means; (d) to keep the educational interests of the country fully posted on and alive to the importance of this new instrument as an educational tool; (e) to attempt to prevent conflicts and duplication of effort between various broadcasting interests; (f) to furnish advice on the educational soundness of programmes suggested and to supply typical programmes upon the request of any station whether educational or commercial.

2. That the funds necessary for financing such a section in the Office of Education be provided in the regular budget for the Department of the Interior.

3. That there be set up in connection with this unit an advisory committee representing educational institutions of commercial broadcasters, and the general public. This committee should consist of 9 to 15 persons whose residence is such that they can meet from time to time for actual consideration of problems arising in the Office of Education. This committee may well administer any funds remaining in our budget to promote research into the techniques of radio education.

4. That an effort be made to secure from interested persons or foundations an amount of money sufficient to bring to the microphone, for a period of two to three years, a high grade programme in certain formal school subjects and to check carefully the results obtained. The committee believes that as much as \$200,000 per year for a period of three years may be wisely expended in this manner, under direction of a nonpartisan committee of educators and laymen.

5. That the secretary bring to the attention of the Federal Radio Commission the importance of the educational interests in broadcasting, and that he keep the President of the United States informed of the desirability of having on this commission spokesmen for programmes which will tend to improve the general well-being of the American people.

It also was urged that the Federal Radio Commission reserve certain wave lengths for educational institutions. During the year there was a much wider use of radio for educational purposes. Walter Damrosch broadcasted four series of Friday morning concerts, each including twelve programmes. The first series was devoted to a study of the make-up of a symphony orchestra, the second emphasized the different rhythms and tempos of music, the third series considered the more complicated forms of symphony, the fourth was devoted to the works of the more important composers.

As in the two previous years, there was a handbook for teachers "giving full descriptive notes covering each composition played."

A study conducted by professors in the University of Wisconsin showed that the teaching of music and current events by radio was more effective than resulted from ordinary classroom instruction.

The American School of the Air was inaugurated in February. This was sponsored by a general advisory board of nationally known educators headed by Dr. Ray Lyman Wilbur, Secretary of the Interior, the Columbia Broadcasting System and the Grigby-Grunon Company. Various specialists accepted invitations to become members of the staff and Dr. William C. Bagley was

made dean of the advisory faculty. The institution presented a wide range of subjects and there was a notable degree of success. The University of Florida also made use of the radio in connection with its extension courses. Cleveland employed radio in the teaching of arithmetic.

SURVEY OF SECONDARY EDUCATION. A national survey of Secondary Education was authorized by Congress in 1929. An appropriation of \$225,000 was made and a period of three years beginning July, 1929, was allowed for the completion of the work.

The responsibility for the survey was placed with the U. S. Office of Education. Commissioner William John Cooper was to act as director. Dr. Leonard V. Koos was made associate director. Commissioner Cooper organized a three-fold advisory system. A group of nine prominent educators were to act as consultants. They were expected to consider and recommend the major policies to be followed in the survey. There is an advisory committee of thirty members "who counsel regarding undertakings and act as interpreters of the survey to those engaged in Secondary Education." A third advisory group consists of laymen. "This committee will assist in giving direction to the various investigators, will scrutinize the findings of the survey, and will be prepared to interpret the results intelligently to the public."

The investigations which were to be undertaken were in "four fields: namely, the organization of schools and districts, the secondary school population, administrative and supervisory problems, and the curriculum and related problems."

The following were the principal special studies undertaken: Provisions for individual differences; marks and marking systems; plan for promotion of pupils; school district organization; administrative and supervisory staffs; practices in the selection and appointment of teachers; school publicity; study of selected secondary schools in smaller communities and rural areas; characteristics of small high schools; legal and other regulatory provisions of secondary education; horizontal organization of secondary education; secondary school population; the curriculum; special problems in reorganization; guidance, and junior high-school reorganization.

TEACHER TRAINING. During the period of the World War it was easy for teachers to find profitable employment outside of the schools. Salaries of teachers were low and often the conditions surrounding the work were not pleasant. This exodus left the schools with a shortage of teachers. At the same time the institutions that trained for teaching had greatly decreased registrations. As time passed, however, there were marked increases in the salaries that schools paid, and improvement in the conditions under which teachers work. In many States, pension systems were established, and in the majority of places permanent tenure schemes were established. As conditions within the schools improved many of those who had left earlier came back. Normal schools and teachers colleges increased their enrollments until the number of such students was a fourth of the total number of teaching positions in the country. As early as 1925 there were evidences that there was or soon would be an over-supply of teachers, for the public schools. This condition continued until in 1930 the situation had become serious. State officials in New York asserted that there were no less than five thousand surplus

teachers in the State. In some cases the classes that were graduated from normal schools three years previously had not received appointment.

During the year the Congress appropriated \$200,000 "to make a study of the qualifications of teachers in the public schools, the supply of available teachers, the facilities available and needed for teacher training including courses of study and methods of teaching." Dr. William J. Cooper, United States Commissioner of Education, was made the director of the survey. The Secretary of the Interior appointed Dr. Edward S. Evenden to act as associate director, and a group of specialists who were to act as a board of consultants. The survey was to occupy three years. It was the first thorough-going investigation that had been made of teacher training in its relation to the requirements of the schools.

Tendencies. Some pronounced tendencies were becoming prominent in public education. The changes that were involved are of such a radical nature that parents have difficulty in understanding their significance. In previous times it had been possible for adults to make use of their own experiences in school when they considered the education of their children. There were many features of school procedure that were so different from those of even a decade earlier that parents were at a loss to understand what was done in the modern schools.

Organization. The first change that perplexes the adult is the proposed change in school organization. Until the early years in this century it was not uncommon to have an elementary school organized on a nine-year plan. This meant that children began the regular work at the age of 5 or 6 and normally were promoted to the high school after 9 years.

There were decided objections to this scheme. It was urged that the increasing length of the school year made it unnecessary to require nine years in the elementary school. Also the increased importance of professional training made it impossible for graduates from such schools to enter upon their life work until late in their twenties. The only part of the educational system in which time could easily be saved was the elementary school. Nine-year elementary schools rapidly disappeared. At the same time there was a stronger insistence upon children reaching the age of 6 before they began school.

In many cities kindergartens receiving children at the age of 4 or 5 were started. This was in effect a nine-year system, only the extra year was at the beginning rather than the end of the elementary course. By 1930 about one-quarter of the children who were eligible to kindergartens were being provided with such opportunity. Children who pass through this institution enter the regular school in company with those who have never been in kindergartens. The school is organized to provide for the majority, consequently it is often difficult to justify kindergartens on the ground that children who attend them later do better in the regular school. The desire to be more economizing in school expenditures was causing some places to abandon kindergartens.

Recently those who worked in the field of childhood had become convinced that the years from one to five are of supreme importance in the education of the child. To meet this need, nursery schools were developed. In these children from 18 months to four years were received. These were still in the experimental stage, but some of the

best minds in the profession were devoting attention to these institutions. It was not the purpose to begin the work of the kindergarten or elementary school at a still earlier age. Rather the attempt was made to provide suitable conditions for the mental, emotional, and physical growth of the child.

The junior high school had a prominent place in most city systems. This school cared for the years that represented the seventh and eighth in the regular elementary school and the first in the high school. The intention was to bridge the gulf that existed between the elementary school and the high school. It was believed that the best interests of the pupil required that he have opportunity to "explore" some of the secondary fields while he was yet in the elementary school, consequently it was desired that the methods employed should be those of the elementary school while a part of the subject matter should be that of the secondary school. There were marked differences of opinion regarding the extent to which the junior high school has achieved its purpose. There were those who insisted that the effect had been to bring high school studies two years earlier in the child's life. The survey of secondary education that was in progress would certainly consider many of the problems that were disturbing both school officials and parents.

The senior high school cares for the last three years of secondary education. These are the years in which the chief emphasis has been upon the college preparatory work. School officials commonly complained that the colleges require a type of training that is not well suited to any but those who enter college. College authorities on the other hand insisted that restrictions had been so eliminated that with the single exception of English, it was possible for a candidate to enter college with any subjects of his choosing. The difficulty that existed in public high schools was due in large measure to the fact that colleges differed in their entrance requirements, because they differed in the character of the college courses that were offered. The public school officials felt compelled to have their high school offer courses that insured admission in any college. This attitude made it difficult to change public high schools.

The junior college is a late development. In it high school graduates are able to pursue much of the work ordinarily given in the freshman and sophomore years in colleges. This postpones the students leaving home for two years, and this in turn reduces the expenses of a college education. There were at least 430 such institutes with an enrollment of over 67,000 in 1930.

Subject Matter and Methods. Changes of equal importance were taking place in the subject matter and methods in the parts of the school system with which the adult was familiar. Earlier the work in the elementary school was characterized by the term "the three R's." Pupils devoted themselves to the learning of these subjects. Under modern conditions there were schools in which the pupils did not study geography and history or even arithmetic as subjects. The school is no less concerned with having the children obtain a knowledge of these subjects, but it approaches the matter in a very different manner. The work of many schools was organized about "activities" or "units." Several States had published courses of study based upon activities and units.

There was difference of opinion as to the mean-

ing of the terms. Generally the name unit was applied to the subject matter that was involved in dealing with some topic that the pupil considered or may be led to consider as a valuable one. Such a topic is "The importance of the fur trade in America to-day," another "The history of the development of the fur trade in America." In dealing with these topics pupils need to learn among other things the geography of the country, some phases of history, the kinds of fur bearers, the uses, preparation, and marketing of furs, and the methods of obtaining furs. There are numerous needs for the use of arithmetic, reading, and composition. It was urged that all of the knowledge that was thus gained was connected with topics or problems, and as a consequence the learning of the ordinary school subjects was as effective by this plan as by the older methods.

Activities as used in the course of study refer to such opportunities as exist for self-expression on the part of the learner. These include original composition either in prose or poetry, art in various forms, and construction. In addition to mental exercise, the pupil actually enters into some form of activity that ends in a product that may be observed.

Discipline. The control in a classroom in which the newer methods operate is in some respects quite different from that which was common earlier. There is, for example, a greater degree of freedom allowed. It is assumed that the motive for the pupil's efforts will come from his own interest in the work to be done, rather than from the teacher's commands.

Those not familiar with the newer conceptions of control are almost certain to identify the freedom allowed as license. In the transition from a sternly teacher-dominated school to one in which child initiative and responsibility are emphasized, it was probable that the pendulum had swung too far in the direction of extravagant freedom. In many places this difficulty was receiving careful attention.

It was too early to reach definite conclusions regarding the efficiency of the changes in subject matter and methods. The change had been made so recently that complete testing had been impossible. More important still, those who advocate the changes insist that the most important advantages of the new schemes were found in the attitude of the learners, and that such attitudes were not subject to any existing tests.

Grouping. For a decade or more the movement had been toward grouping children so that those of equal or like ability would be together. The usual procedure was to consider the pupil's mental ability as determined by intelligence tests, his achievement as determined by standardized tests, and sometimes the teacher's judgment of him. This or similar plans were in operation in the great majority of school systems.

Recent researches have served to cast doubt upon the validity of such methods of grouping. A few of the more progressive schools have abandoned the plan and in its place they emphasize the care of the individual, through smaller classes for pupils having difficulties and such remedial measures as are required.

Taking schools as a whole there was still a strong tendency to group children so as to have at least three ability groups. The brightest pupils make up one, the dull a second, and the third group is made of those whose ability is between that of the members of the other two groups.

THE WHITE HOUSE CONFERENCE. Public school teachers and administrators manifested great interest in the reports that were submitted at the "White House Conference on Child Health and Protection." Different committees brought to the attention of the nation facts that are of supreme importance to the schools. Among these reports was one by the Committee on the Infant and Preschool Child. It stated that there are within the country 16,000,000 children under six years of age. This is about 13 per cent of the total population. Of the number who are five and six only about 27 per cent are in kindergartens. Many children do not have adequate out-of-door play facilities, and there is little or no preparation for the life that the child will lead when he enters the school.

Within the schools there were approximately 27,000,000 children. It was estimated that more than 70 per cent of the school population suffer from physical defects that interfere with mental as well as physical development. Fully 30 per cent were already retarded in school progress because of sickness and physical disability. Contrary to the usual view, city children suffer less from physical defects than do those who live in the country. It is apparent that the values of life in the country are offset by the lack of medical care which is available in the city.

Among the 19 points in the programme proposed by the conference, a certain number had direct bearing upon the schools. See *CHILD WELFARE* for a summary. See also *GREAT BRITAIN, FRANCE, etc., under Education.*

EDUCATIONAL BOARDS AND FUNDS. See *UNIVERSITIES AND COLLEGES.*

EDUCATIONAL PSYCHOLOGY. See *PSYCHOLOGY.*

EDUCATION ASSOCIATION, NATIONAL. See *NATIONAL EDUCATION ASSOCIATION OF THE UNITED STATES.*

EGGS. See *LIVESTOCK.*

EGYPT. A state in northwestern Africa, established as a nominally independent kingdom Mar. 15, 1922, following the termination on Feb. 28, 1922, of the British protectorate declared Dec. 18, 1914. It occupies the lower valley of the Nile and parts of the Libyan Desert, the region between the Nile and the Red Sea, and the Sinai Peninsula. Egypt's claim to jurisdiction over the Anglo-Egyptian Sudan is denied by the British. Capital, Cairo. Ruler in 1930, King Fuad I.

AREA AND POPULATION. While the total area of Egypt proper, excluding the Sudan, is about 383,000 square miles, the cultivated and settled area covers only about 13,600 square miles. The total population at the census of 1927 was 14,213,364, as compared with 12,750,918 at the census of 1917 and 9,734,405 in 1897. From 1917 to 1927 the annual rate of increase was 1.09 per cent. Births registered in 1928 totaled 629,433; deaths, 380,376. The cultivated areas in 1929 were probably the most densely populated in the world, with an average of three persons to an acre. Populations of the leading cities in 1927 were: Cairo, 1,064,467; Alexandria, 573,063; Port Said, 100,899; Tanta, 90,016; Mansura, 63,676; Asyût, 57,136; Faiyûm, 52,863; Zagazig, 82,839; and Damanhûr, 51,709. At the 1927 census, Moslems formed 91.19 per cent of the population; Christians, 8.34 per cent; Jews, 0.45 per cent.

EDUCATION. Primary instruction is supplied mainly by native schools called *maktabs*. The

number of *maktabs* receiving state aid and under inspection in 1928-29 was 2271, with 198,796 pupils. In addition, 2581 *maktabs*, with 320,362 pupils, were under direct control of the Ministry of Education or the Provincial Councils. There were various higher elementary and higher primary schools, special and technical schools, and the Mosque and University of El-Azhar at Cairo, which with its six branches in other cities had 2168 students in 1928-29. El-Azhar is the centre of Moslem culture and learning. About 88 per cent of the population are illiterate.

PRODUCTION. Agriculture is the main support of the population and cotton is the leading crop and chief export commodity. The area available for cultivation in 1928-29 was estimated at 8,192,187 feddans (1 feddan equals 1.038 acres), of which 723,141 feddans were appropriated for public utility purposes and 1,852,676 feddans remained unreclaimed. Of the 5,425,098 feddans under tillage, 4,931,083 feddans were distributed among 2,115,052 native landowners and 494,015 feddans were held by 5957 foreign landowners. The area devoted to cotton in 1928-29 was 1,738,472 feddans and the crop was estimated at 1,640,000 bales (averaging 478 pounds net), as compared with 1,626,000 bales from 1,516,199 feddans in 1927-28. Wheat, barley, maize, rice, lentils, beans, onions, millet, rice, and sugar cane are other crops.

Cotton normally accounts for 80 per cent of the total export values. Prices declined sharply in 1929 and while the volume of cotton exports increased by 2.6 per cent over 1928, the total value showed a decrease of 8.4 per cent. The resulting depression in general economic conditions was increased in 1930 as prices continued their decline. The Government attempted to relieve the situation by purchasing a portion of the cotton crop and by advancing loans to producers to prepare for the next crop.

More than half of the land under cultivation could not be tilled without irrigation. To insure a constant supply to meet Egypt's estimated water requirements of 40,000,000 acre-feet annually, a number of irrigation projects were under construction in 1930. Most important of these was the raising by 30 feet of the height of the Assuan Dam. Work was commenced in June, 1930, and was to be completed in 1933 at a cost of \$12,500,000, exclusive of \$10,000,000 for the expropriation of lands and other damages. The Nag Hamadi barrage in upper Egypt was approaching completion and plans had been completed for a new reservoir at Gebel Aulia on the White Nile. Livestock in the country in 1928 included 791,757 cattle, 788,491 buffaloes, 1,179,538 sheep, 180,470 camels, 35,768 horses, 768,780 donkeys, and 548,493 goats.

Phosphate is the chief mineral produced, others being petroleum, manganese, zinc, lead, gold, silver, and salt. Phosphate exports in 1929 totaled 216,571 metric tons, as compared with 168,972 metric tons in 1928; respective figures for shipments of metallic ores were 201,279 and 105,283 metric tons. Manufacturing is expanding under a high protective tariff placed in effect Feb. 17, 1930. Sugar and petroleum refining and the making of boots and shoes, rugs, leather articles, cigarettes, furniture, and matting and basket work are the chief industries.

COMMERCE. A decrease of 7.8 per cent in the total value of exports and a corresponding increase in the value of imports, resulted in an un-

favorable balance of trade amounting to £E4,337,520 (1 Egyptian pound equaled about \$5) in 1929, as compared with a favorable balance of £E4,121,290 in 1928. Exports and re-exports totaled £E53,352,190 (\$266,760,950) in 1929 and £E57,563,036 (\$287,815,180) in 1928, while imports were £E56,089,512 (\$280,447,560) in 1929 and £E52,043,969 (\$260,219,745) in 1928. Re-exports amounted to £E1,600,196 in 1929 and £E1,397,780 in the previous year. The United Kingdom took 34.7 per cent of the total exports (38.3 in 1928), followed by the United States, which took 14.2 per cent (10.9); France, 12.4 (8.5); Italy, 6.8 (6.7); and Germany, 5.9 (6.0). The leading sources of imports, in the order named, were: United Kingdom, 21.2 per cent (21.8 in 1928); France, 9.9 (10.2); Italy, 9.8 (9.5); Germany, 7.3 (6.8); and the United States, 5.0 (5.2).

FINANCE. For the fiscal year commenced May 1, 1930, the Government estimated receipts at £E38,062,000 and expenditures at £E44,950,000, indicating a withdrawal of £E6,888,000 from the reserve fund. The new tariff which went into effect Feb. 17, 1930, was expected to yield about £E3,000,000 (\$15,000,000) annually in increased revenues. For 1929-30, estimated receipts were £E38,950,000 and estimated expenditures, £E47,410,000, leaving an anticipated deficit of £E8,460,000 to be supplied from the reserve fund. As allotments for public works were only partially used, preliminary returns for 1929-30 indicated a surplus of £E3,840,000. Final returns for 1928-29 placed the surplus for the year at £E3,137,416, due to the partial expenditure of public-works funds. The Treasury's reserve fund on May 1, 1929, amounted to £E39,852,370, of which £E4,000,000 was earmarked for the newly created agricultural reserve fund, leaving a balance of £E35,852,370.

The public debt in October, 1929, amounted to £89,996,000. Charges on account of debts of all kinds, as shown in estimates for 1929-30, amounted to £E4,893,938.

COMMUNICATIONS. In 1930 the state-owned railways totaled 3222 miles of line, including 2316 miles of main line, and the three privately-owned railways had 963 miles of line, including 863 miles of main line. For the year ended Mar. 31, 1929, the state railways carried 27,224,737 passengers and the freight originating on these lines totaled 7,936,948 tons; operating revenues totaled £E7,163,000 and operating expenses, £E4,122,000, in addition to capital improvements of £E790,000. Total receipts of the three private lines in 1928-29 amounted to £E482,472. A new railway connecting Benha, Menouf, and Kafr El Zoyat was placed in operation Apr. 7, 1930.

Highways maintained by the Ministry of Communications totaled about 3726 miles. Air lines connect Cairo and Alexandria with Great Britain and with India, via Bagdad, Basra, and Karachi. Alexandria is the chief port, handling approximately 85 per cent of the imports and 93 per cent of the exports of the country. In 1929, a total of 2270 vessels of 5,252,700,000 tons arrived at Alexandria, as compared with 2173 vessels of 4,965,800 tons in 1928. Vessels passing through the Suez Canal totaled 6274 of 33,406,000 tons in 1929 (6084 vessels of 31,905,900 tons in 1928).

GOVERNMENT. A new Constitution, promulgated Oct. 23, 1930, replaced that of Apr. 19, 1923 (see below under *History*). The new Constitution duplicated the document it replaced in

declaring Egypt an independent, sovereign state, making the throne hereditary to the descendants of Muhammed Ali, Islam the state religion, and Arabic the official language, and empowering the King to dissolve the Chamber of Deputies and suspend sessions. It reduced the membership of the Chamber of Deputies from 230 to 150 and that of the Senate from 121 to 100, of whom 60 are appointed by the King. The term of Senators is 10 years and that of Deputies is 5 years. Direct elections for the Chamber of Deputies, provided for in the 1923 Constitution, were replaced by a two-degree system, in the first degree of which suffrage was restricted to all those capable of understanding the significance of the right of suffrage and its proper use. Deputies must be 30 years old and Senators 40, and the King is authorized to control demagoguery in Parliament. In legislative matters, Parliament was made supreme. King Fuad I, ruler in 1930, ascended the throne Mar. 15, 1923. In the election of Dec. 22, 1929, the Wafd, or Nationalist party, captured 205 of the 232 seats in the Chamber of Deputies, and the Independents, allied with the Wafd, secured 20 of the remaining 27 seats.

HISTORY

Failure of negotiations for an Anglo-Egyptian settlement and the outbreak of a bitter struggle between King Fuad and the Wafd, or Nationalist party, in connection with which Parliament was again dissolved and a new Constitution promulgated, were the outstanding developments of a politically turbulent year in 1930. Political unrest was stimulated by the sufferings imposed on the Egyptian masses as a result of the severe economic depression.

ANGLO-EGYPTIAN NEGOTIATIONS. The far-reaching proposals advanced by the British Foreign Secretary, Arthur Henderson, in August, 1929 (see 1929 YEAR BOOK), had aroused hopes for the conclusion of a treaty which would grant Egypt her independence, while safeguarding the interests of foreigners in the country and of Britain in the Sudan and at the Suez Canal. The British offer was favorably received in Egypt and on February 6 the overwhelmingly Nationalist Parliament voted to permit the newly formed Government of Premier Nahas Pasha to enter into negotiations with Mr. Henderson. An Egyptian delegation, headed by Nahas Pasha, carried on negotiations with a British delegation in London throughout the month of April, 1930, without reaching an agreement. On May 8, it was announced in the House of Commons, amid Conservative cheers, that the parley had broken down. The rock upon which the conference foundered was the Egyptian demand that, as a condition of their signature of the treaty, the Anglo-Egyptian Agreement of 1899 should be reviewed in all its aspects within one year and that the immigration of Egyptians into the Sudan should be unrestricted. These and related proposals were interpreted as aiming at the restoration of the absolute Egyptian sovereignty in the Sudan which collapsed as a result of the Mahdist revolt in 1881.

According to a British White Paper on the negotiations, agreement was reached on all other points at issue, including the thorny question of the defense of the Suez Canal. Despite its failure, the conference broke up in an apparently friendly spirit. Mr. Henderson announced that he was willing to resume negotiations whenever Egypt

was ready, while Nahas Pasha made complimentary remarks about the friendly spirit shown his delegation in England. These diplomatic amenities were discounted by the announcement shortly before the conference adjourned that since the appointment of Nahas Pasha as Premier early in January, 29 British officials in the Egyptian civil service had received notices terminating their appointments, while 14 others had retired voluntarily.

FUAD AND THE WAFD. Conflict between the King and the Wafdist government for the control of Egypt became evident soon after the elevation of Nahas Pasha to the Premiership. It came to a head in June when the King refused to sign a bill, drafted by the Cabinet, providing heavy penalties for any Minister who attempted to suspend constitutional liberties, as had been done on four occasions in the preceding 5 years. The Wafd demanded Fuad's approval on the ground that the bill was intended to safeguard the Constitution. The King refused, seeing that its effect would be to deprive him of prerogatives vested in him by the Constitution. Premier Nahas Pasha, on June 17, presented his resignation as a protest against the King's refusal to sign. His resignation was accepted, but on the same evening he asked for and obtained a unanimous vote of confidence from the Chamber of Deputies.

Fuad called upon Ismail Sidky Pasha, a prominent business man and economist but with little popular support, to form a new Government. In the Sidky Ministry, approved by the King June 20, the 10 portfolios were divided equally between the Ittihadists (Unionists) and the Liberal Constitutionals. The Premier served also as Minister of Interior and of Finance, while the portfolios of Foreign Affairs and Justice went to Hafez Afi Bey and Yehra Ibrahim Pasha, respectively, who had resigned from the Liberal party, which refused to cooperate. Other members of the Cabinet were: Public Works and Agriculture, Hafez Hassan Pasha; War, Tewfik Rifaat Pasha; Communications, Tewfik Doss Pasha, representing the native Christians; Education, Ali Maher Pasha; and Wakfs, or Pious Foundations, Hilmy Issa Pasha.

The new Ministry had no hope of securing a Parliamentary majority. Fuad, however, on June 21 exercised the royal prerogative under the Constitution and adjourned Parliament for one month; on July 12, again in accordance with the Constitution, he decreed the closure of the session. As the Constitution provided that Parliament need not be summoned again until the middle of November, the Sidky Ministry was thus enabled to govern without Parliament for nearly six months. The Nationalist Parliament disbanded quietly on June 22, after the members had taken a solemn oath to defend the Constitution with their lives, but Wafdist resentment was manifested in a series of sanguinary riots and demonstrations in Alexandria, Cairo, Port Said, and other cities. Rioting in Alexandria on July 15, in which 17 were killed and over 400 injured, including 11 Europeans, caused Great Britain to dispatch two warships to that city, while Premier MacDonald warned both the Sidky government and its Nationalist opponents that they would be held equally responsible for damage to foreign interests. Sidky Pasha, in a vigorous response, expressed resentment at the British Premier's interference in what he termed the internal affairs of Egypt.

By vigorous action and the support of troops, the police, which were largely under British direction, succeeded gradually in checking the epidemic of rioting, but not until extensive damage had been done to European and other foreign shops and to municipal properties. The Wafd next presented the King with a petition, signed by a two-thirds majority of both Houses, urging an extraordinary session of Parliament. Upon Fuad's refusal, the Nationalist deputies convened unofficially on June 26 and adopted resolutions of non-confidence in the Sidky Ministry and favoring the non-payment of taxes. Intense antagonism aroused against the King by these events was seized upon by Abbas Hilmi II, who was ousted as Khedive of Egypt by the British Dec. 19, 1914, to promote his campaign for restoration to the throne. While Hilmi's candidacy aroused no enthusiasm in Egypt or Great Britain, the possibility of the deposition of Fuad was widely discussed.

The approach of the date provided in the Constitution for the summoning of Parliament confronted the Government and King Fuad with a dilemma, which they sought to solve by the promulgation on October 23 of a new Constitution, the general effect of which was to give the King unlimited power in practically all branches of the Government (for details of the Constitution see above under *Government*). As was to be expected, the new Constitution encountered the violent opposition of the Wafd and also of the Liberal Constitutional party, headed by former Premier Mohammed Mahmud Pasha, which withdrew its support from the Sidky Ministry. Mahmud Pasha declared the Constitution "demolishes the sovereignty of the people and makes democratic government impossible in Egypt." There were few protest demonstrations, however, possibly due to elaborate military precautions taken to prevent them and to the increasing gravity of the economic situation. On November 24, it was reported that Parliamentary elections would be held in February or March, 1931. Sidky Pasha undertook the organization of a People's party, mainly among his political adherents, on a platform of complete independence, sovereignty over the Sudan, an agreement with Great Britain, abolition of the capitulations, and the admission of Egypt into the League of Nations.

OTHER EVENTS. In its efforts to alleviate the critical situation caused by the decline in cotton prices, the Government on June 11 advanced an additional \$40,000,000 credit for the purchase of cotton and loans to cotton producers, bringing the total appropriated for this purpose to \$80,000,000. On August 28, the Government ordered the reduction of all land rents for the year beginning September 1 by one-fifth, with the proviso that the reductions be made good if conditions improved. It was also decided to postpone collection of some \$15,000,000 due on Government advances to farmers in cash and fertilizer.

A treaty of conciliation and friendship, signed with the United States Aug. 27, 1929, was ratified by Parliament on May 26, 1930. William M. Jardine, who was Secretary of Agriculture under President Coolidge, was appointed Minister to Egypt during the Summer. Negotiations for settlement of matters in dispute with Ibn Saud, King of Nejd and the Hejaz, were started late in 1930. See **COTTON; DAMS; RECLAMATION.**

EGYPTIAN ARCHAEOLOGY. For discoveries by archaeologists in 1930, see **ARCHAEOLOGY**,

EGYPTIAN EXPLORATION FUND. See **ARCHAEOLOGY.**

EIELSON, CARL BEN. An American aviator of Norwegian descent, whose body, with that of his companion, Earl Borland, was found near his wrecked airplane about 90 miles southeast of Cape North, Siberia, by a searching party in February, 1930. In 1923 Lieutenant Eielson, the first pilot to use an airplane in Alaska, was employed by the U. S. Post Office Department to carry mails between Fairbanks and McGrath during the winter. He joined Capt. George Hubert Wilkins in making trial flight tests over the Arctic Ocean in 1926 and flew with him more than 500 miles to the northwest of Point Barrow, Alaska, in 1927. In April, 1928, he piloted Captain Wilkins's plane from Point Barrow to Spitzbergen by way of northern Greenland, a skillful 24-hour flight; and, in December of the same year, he piloted him in the Antarctic in a 1200-mile flight, during which they discovered that Graham Land was a series of islands. On Nov. 9, 1929, Lieutenant Eielson and his mechanic set off in an airplane from Teller, Alaska, to aid the vessel *Nanuk*, ice-bound off Cape North, Siberia. Their machine crashed when they flew into a blizzard.

EINSTEIN THEORY. See **ASTRONOMY; PHYSICS.**

EKACAESIUM. See **CHEMISTRY.**

ELECTIONS. See **UNITED STATES**; also articles on the various States and countries.

ELECTRICAL ENGINEERS, AMERICAN INSTITUTE OF. A national organization representing the electrical engineering profession; founded in 1884. The objects of the institute are the advancement of the theory and practice of electrical engineering and of the allied arts and sciences, the maintenance of a high professional standing among its members, and the development of the individual engineer. It is governed by a board of directors, elected by the membership, consisting of a president, the 2 junior past presidents, 10 vice presidents, 12 directors, and a treasurer. In 1930 there were 58 sections of the institute located in various cities throughout the United States and 106 branches in colleges giving courses in electrical engineering. Three annual conventions are held, in addition to regional, local section, and branch meetings. The 1930 winter convention was held in New York City Jan. 27-31; the summer convention in Toronto June 23-27; and the Pacific Coast convention in Portland, Ore., Sept. 2-5. Much of the institute's work is accomplished through its standing and technical committees, of which there were 40, in 1930. It maintains, in cooperation with other national engineering societies, the engineering societies library and a national employment service. There are three grades of members as follows: Associate, member, and fellow. The total membership on Oct. 1, 1930, was 18,301.

The principal publications of the Institute are the monthly *Journal*, the quarterly *Transactions*, the *Standards of the A. I. E. E.*, and the *Year Book*. The medals awarded by the institute in 1930 included the Edison Medal, to Dr. Frank Conrad of the Westinghouse Electric and Manufacturing Company for his contributions to radio broadcasting and short-wave radio transmission; Lamme Gold Medal, to William J. Foster for his contribution to the design of rotating, alternating current machinery; John Fritz Medal, to Admiral Watson Taylor, U. S. N., for outstanding achievement in marine architecture, for revolutionary re-

sults, and for persistent research in hull design; and Hoover Medal (in conjunction with the national societies of civil, mining, and mechanical engineers), to President Herbert Hoover in commemoration of his civic and humanitarian achievements. The Commission of Washington Award for 1930 was voted to Dr. Mortimer E. Cooley, dean-emeritus of the colleges of engineering and architecture of the University of Michigan, for his vision and constructive leadership in the education of the engineer.

The officers of the institute elected for 1930-31 were: President, William E. Lee; junior past-presidents, R. F. Schuchardt and Harold B. Smith; vice-presidents, Herbert S. Evans, W. S. Rodman, C. E. Fleager, E. C. Stone, C. E. Sission, H. V. Carpenter, G. C. Shaad, I. E. Moulthrop, H. P. Charlesworth, and T. N. Lacy; directors, F. C. Hanker, E. B. Meyer, H. P. Liversidge, J. Allen Johnson, A. M. MacCutcheon, A. E. Bettis, J. E. Kearns, F. W. Peek, Jr., C. E. Stephens, A. B. Cooper, A. E. Knowlton, and R. H. Tapscott; national treasurer George A. Hamilton; national secretary, F. L. Hutchinson. Headquarters are in the Engineering Societies Building, 33 West 39th Street, New York City.

ELECTRICAL INDUSTRIES. According to the estimates of the National Electric Light Association, electric power companies in the United States expended some \$850,000,000 for new construction, extension, and betterment of facilities in 1930. Of this amount approximately 70 per cent was for transmission and distribution facilities, and 30 per cent for power houses. Construction programmes in many cases were accelerated to sustain or promote employment, and were spread, generally, throughout the country.

Approximately 2,750,000 horse power of additional generating capacity was placed in operation during the year, or an increase of some 7 per cent. Of this, 2,000,000 horse power, or 73 per cent, was in fuel-burning plants, and 750,000 horse power was in hydro-electric plants. Some 10,000 miles of transmission line, together with a large mileage of distribution lines, were added.

The industry noted the addition of some 550,000 new customers, of which 472,000 were new domestic users, and it was recorded that 70 per cent of all American homes were wired. The average household customer had increased his consumption during the year from an annual rate of 500 kilowatt hours to 550 kilowatt hours, and the increase of electricity for cooking and water-heating was a particularly important element, as where this business was most fully developed, the increase for consumption in households was highest.

In the electrification of some 100,000 additional farms during the year, a gain of 18 per cent was recorded, and was the largest number ever added in a single year. Since 1923 the number of electrified farms had increased at a rate which doubled every 3½ years. By the end of 1930, over 680,000 farms were electrified, and marked increases were taking place, both in the way of numbers and facilities.

Considering the output of electric power for the entire United States, the 1930 record was 1.6 per cent less than for 1929, but 9 per cent above 1928. The aggregate generation by all power sources contributing to the public supply was approximately 89.08 billion kilowatt hours. The production of hydro-electric plants was cut down by the drought, and emphasized the importance

of fuel-burning plants, and of inter-connection of facilities, which continue to develop.

The gross revenues from all classes of customers of the electric lighting and power companies in 1930 was estimated at approximately 3 per cent above 1929, or \$2,009,357,000. The increase in electricity used by household consumers and small power and light concerns more than offset the lessened demand from industrial power users. There was a decline in the average price per kilowatt hour for home use of approximately 5 per cent, and it was found that with increased consumption, so that local plant capacity could be more fully utilized, prices for domestic electricity would continue lower.

The importance and growth of the electrical industry in 1930 was indicated by the estimates of the *Electrical World* (New York), which gave the capital investment as \$23,590,000,000, as against \$12,650,000,000 in 1920, and \$5,740,000,000 in 1910. The revenue of the industry for 1930 was estimated by the same authority as in excess of \$6,240,000,000, as compared with \$3,370,000,000 in 1920, and approximately \$1,025,000,000 in 1910. The extent of the industry is indicated in some of the bulletins of the U. S. Census of Manufactures for 1929, as, for example:

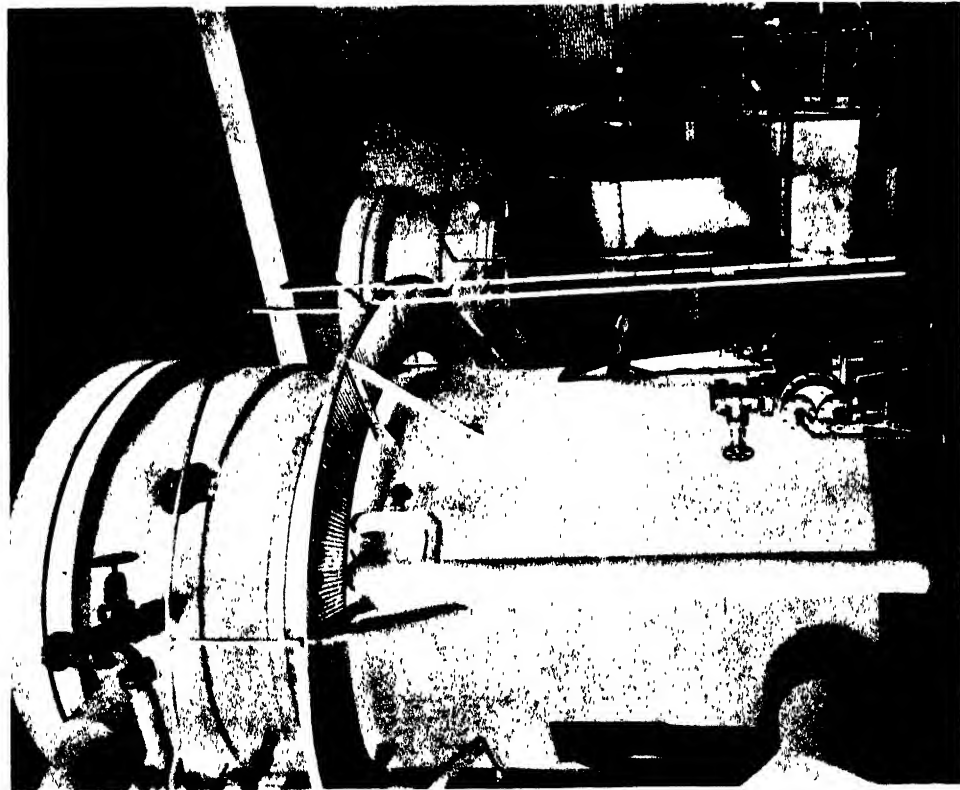
| | |
|---|---------------|
| Radio apparatus | \$342,000,000 |
| Insulated wire and cable | 296,000,000 |
| Generators, motor generators, etc. | 168,000,000 |
| Household appliances | 76,000,000 |

The electrical manufacturing industry in 1930 was estimated as capitalized at approximately \$2,000,000,000, and the annual value of the manufactured products, it was interesting to note, almost equaled the capital invested.

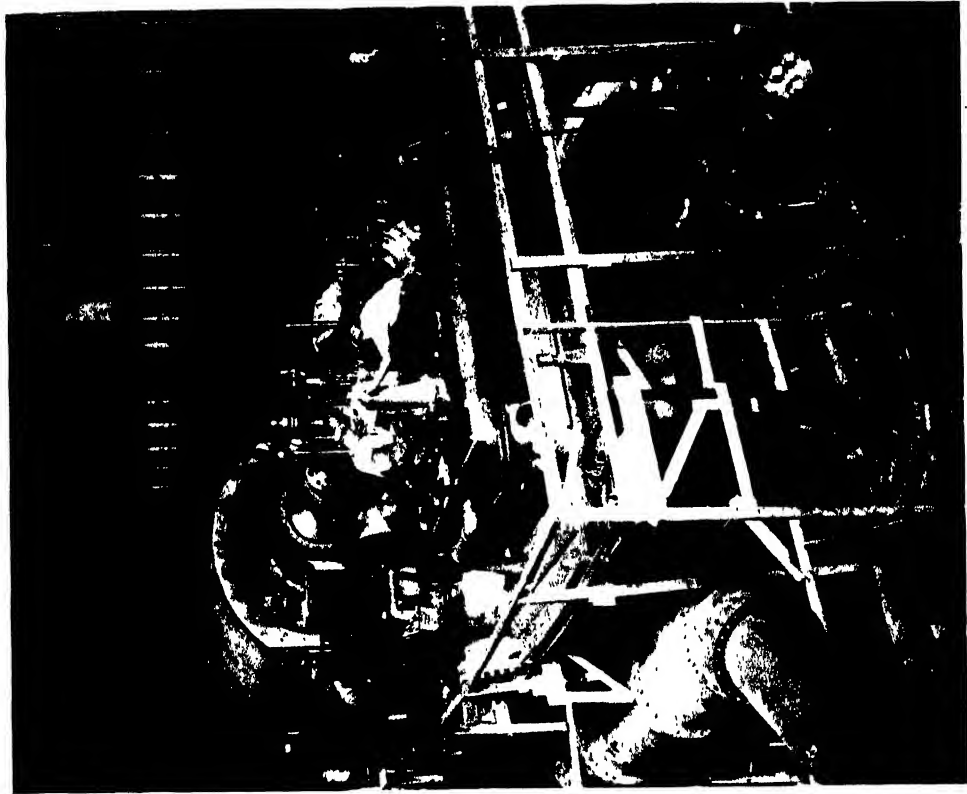
A notable development of the year was the increased use of electric welding in building construction. (See BRIDGES.) Eighty-four additional cities and towns permitted the use of electric welding in place of power riveting, which, on account of noise, had become a serious menace. The 19-story office building of the Dallas Power and Light Company was completely welded, and during the year the Dallas Gas Company began work on a structure of 22 stories, which was to be completely fabricated with arc-welding.

One of the developments of the year from the General Electric Company was thyrite, which was utilized in lightning arrestors installed on systems operating with the highest commercial voltages used. This was thought to afford protection in a field where important researches had been under way to secure electric service uninterrupted by such natural phenomena.

ELECTRIC LIGHTING. A preliminary estimate of the number of incandescent lamps sold in the United States during 1930 indicated a total of 563,778,000 for both large and miniature lamps, according to the review of the electrical industry by John Liston in the *General Electric Review* for January, 1931. Toward the close of the year, there were added to the line of inside-frosted lamps the 150, 200, 300, and 500-watt sizes, which had previously utilized only clear glass. A pre-focused spot lamp was developed for theatre spotlight service, which overcame difficulties heretofore experienced in focusing these lamps in service and permitted an accurate adjustment of the spotlight mirror at the factory with the lamp in a definitely fixed position. The photoflash lamp, a new development in the field



From General Electric Co.
Generator and Condenser Boilers of the 10,000 kw. Mercury Turbine Generator Unit at South Meadow Station, Hartford Electric Light Company, Hartford, Conn.



From General Electric Co.
Assembling for Factory Test 110,000 kw. Vertical Compound Steam Turbine Generator Set for Ford Motor Company

of photography, incorporated a radically new principle in lamp making. It consists of a bulb and base, similar to the familiar 100-watt lamp, but differs from that lamp in that instead of having the usual coiled filament it consists of several sheets of extremely thin aluminum foil in an atmosphere of pure oxygen. A tiny 1.5-volt filament, coated with a special getter, accelerates the start of the flash. The lamp will operate equally well on any voltage from 1.5 to 125 volts. The duration of the flash is about $\frac{1}{60}$ th of a second, sufficiently fast to stop the usual movements of people. A single lamp provides ample light for photographing individuals and small groups. More lamps in suitable reflectors are required for larger assemblies.

A leading development of the year was the use of batteries of flood lights to illuminate baseball and football fields for evening games. On May 2 a league game of baseball was played at night at Des Moines, Iowa, under conditions of illumination practically approximating daylight. Flood lights of the General Electric Company were installed with such success at this field that during the year 18 baseball fields and 89 football fields were permanently equipped for night games.

The use of flood lighting in connection with large buildings was illustrated in connection with the Merchandise Mart in Chicago, said to be the largest building in the world. Here, in an elaborate scheme of illumination, more than 600 General Electric projectors were used.

During the year street lighting installations were studied and developed on a larger scale than previously, both permanently and in connection with special celebrations, as, for example, the Mardi Gras celebration at New Orleans.

ELECTRIC RAILWAYS. The important advance to be recorded during 1930 in the field of electric transportation was due, in large measure, to marked progress in the electrification of steam lines. The most notable work of the year in the United States, probably, was that of the Delaware, Lackawanna Railroad, which, on August 1, began the electric operation of its Montclair Division, and at the end of the year had completed the electrification of the main line between Morristown and Hoboken. On this system multiple-unit cars are used, employing 3000 volts direct current, which was employed for the first time in the United States, and for the first time on a large scale in any part of the world. A new type of converting unit was employed where the power supply was provided by mercury-arc rectifiers. See DYNAMO-ELECTRIC MACHINERY. The general plan involved the use of a total of 141 motor-trailer units, each consisting of a 3000-volt motor car and semi-permanently coupled trail car, and about 40,000 kilowatts of mercury-arc rectifier converting equipment located in five substations. Trains of eight and ten cars were put into use and operated successfully. It was planned to extend the electrification to Dover early in 1931.

At the new Union Terminal in Cleveland, Ohio, 22 204-ton 3000-volt locomotives were in active use during the year, eliminating steam engines in the congested districts of the city, the electric zone extending from Collinwood on the east through the Union Terminal to Linnale on the west, a distance of 17 miles. It was found that these new locomotives could handle larger trains at greater speed even than was anticipated, and the innovation was considered a distinct success.

Progress also was made in the extensive electrification programme of the Pennsylvania Railroad, and a section between Philadelphia and Trenton was placed in service, using multiple-unit motor cars. Two high-speed passenger locomotives were built during the year, and work was being done on additional passenger locomotives and a freight unit. The plans developed by the General Electric Company, involved twin motors for the passenger locomotives, with a rating of 1250 horse power each, or 2500 horse power applied to the two driving axles of the unit. For the freight locomotives there were four motors of the single armature type, with approximately 2500 horse power for four driving axles. The electrification programme, in progress during the year, eventually would require some 300 locomotives when in full operation.

Still another development of the year was the extensive use of self-propelled locomotives in connection with the West Side electrification of the New York Central lines in New York City. There were placed in service 35 oil-electric-battery locomotives, capable of operating either from external power, or from the oil-engine-storage-battery plant which they carried. These particular locomotives were used principally for switching service south of Sixtieth Street. The New York Central had been electrified from Grand Central Terminal as far north as Harmon, and all passenger service for a number of years had been worked by electric locomotives. In 1930 six of 42 6-axle freight locomotives were placed in service on this section, and the remainder were to be delivered during the following year. With this development the complete elimination of steam locomotives from Manhattan Island was in sight.

The General Electric Company supplied the Great Northern Railway during the year with four new generator-type locomotives, similar to those in use, while for the New York, New Haven, and Hartford Railroad, 10 new 200-ton A-C, D-C locomotives of larger size than any previously in service were being constructed at the Erie Works of this same company. These locomotives were designed for handling main line passenger trains in and out of the New York Central Terminal, or possibly into the Pennsylvania Terminal.

The electrification of the Reading Company around Philadelphia made rapid progress during the year, and line construction was completed while motor-car equipment was well under way. The latter involved motors and transformers for 40 motor cars, two control equipments, three 8000-kv-a. transformers for the distribution system, and 40 high-speed, single-phase circuit breakers. An improvement in the motors, which the General Electric Company had designed for this service, was supplying them with 12 poles, which would give better commutating characteristics.

In Chicago, as well as in New York, oil-electric locomotives were placed in service, while the Delaware, Lackawanna and Western Railroad installed locomotives of this type in their electric zone for handling freight. These were capable of operating either from the 3000-volt trolley or from oil-engine-battery power. Various types of oil-electric locomotives for freight switching, or industrial railways were placed in service during the year.

For branch line service on steam railways, the gas-electric car not only was increasing its mileage, but also was being built with greater capacity. Cars of this nature able to haul four trailers

were extensively built, and were used by the Minneapolis & St. Louis Railroad, the Canadian Pacific Railway, the Gulf, Mobile and Northern Railway, and the Chicago, Burlington and Quincy Railroad. The Lehigh Valley and the Erie had gas-electric motor cars equipped with two units aggregating 600 horse power, while a gas-electric drive was provided for a 200-ton wrecking unit of the Cleveland Union Terminal Company. This latter device not only had motors geared to four of the eight axles, but electric cranes at each end capable of handling loads up to 105 tons. A similar unit was under construction for the New York Central zone in New York City. It was believed that the gas-electric car would meet many of the conditions that had developed in branch line service where bus and truck competition otherwise would involve the abandonment of service.

A notable summary of the *Electrification of Steam Railroads*, not only in the United States, but throughout the world, was prepared by the Electrification of Steam Railroads Committee representing steam railways, power companies, consulting engineers, and electrical manufacturers. This study covered not only the United States, but other countries, and was published by the National Electric Light Association in September, 1930.

ELECTRONS. See CHEMISTRY; PHYSICS.

ELEMENTS. See CHEMISTRY; ASTRONOMY; PHYSICS.

ELMIRA COLLEGE. An institution for the higher education of women in Elmira, N. Y.; founded in 1852 and operating under its present charter since 1855. The enrollment for the autumn of 1930 was 592. There were 60 members of the faculty. The endowment of the college amounted to \$837,420; and the income for the year was \$431,251. There were 30,000 volumes in the library. President, Frederick Lent, Ph.D., D.D., LL.D.

ELVERSON COLLECTION. See ART SALES.

EMERSON, EDWARD WALDO. An American author, son of the philosopher, Ralph Waldo Emerson, died Jan. 27, 1930, in Concord, Mass., where he was born July 10, 1844. He was graduated from Harvard University in 1866 and, in 1874, received a medical degree there. After practicing medicine for several years, he gave his entire time to literary work. As his father's literary executor, he wrote *Emerson in Concord* (1888) and edited *Correspondence of John Sterling and Ralph Waldo Emerson, with Sketch of Sterling's Life* (1897), *Centenary Edition of the Works of Ralph Waldo Emerson* (annotated, 1903), and *Emerson's Journals* (with W. E. Forbes, 1909). His other works include *Life and Letters of General Charles Russell Lowell* (edited, 1907); *Life of E. K. Hoar* (with M. Storey, 1911); *Henry Thoreau as Remembered by a Young Friend* (1917); *The Early Years of the Saturday Club of Boston, 1855-1870* (1918).

EMERTON, JAMES H. An American naturalist and illustrator, died in Boston, Mass., Dec. 5, 1930. He was born in Salem, Mass., in 1847. He was considered one of the leading authorities on spiders in the United States, contributing 11 papers on "The New England Spiders" to the *Transactions of the Connecticut Academy* (1882-1915) and publishing *The Structure and Habits of Spiders* (1878) and *Common Spiders of the United States* (1902). He also constructed zoological and anatomical models for museums in Cambridge, New Haven, New York, Philadelphia,

and Washington, and illustrated Packard's *Guide to the Study of Insects*, Scudder's *Butterflies in North America*, A. E. Verrill's papers in *Reports of the United States Fish Commission* (1874-84), and C. S. Minot's *Embryology*. He was secretary of the New England Federation of Natural History Societies from 1906 to 1919.

EMIGRATION. See IMMIGRATION; GREAT BRITAIN, and other countries under *Population*.

EMORY UNIVERSITY. A coeducational institution for higher learning in Atlanta, Ga.; founded in 1836. The enrollment for the autumn of 1930 was 1209, distributed as follows: College of arts and sciences, 547; school of business administration, 117; graduate school, 65; school of theology, 51; law school, 56; medical school, 209; library school, 50; junior college at Oxford, 74; junior college at Valdosta, 40. The enrollment for the 1930 summer session was 834. The faculty numbered 238, 143 of whom were full-time members. The endowment amounted to \$4,582,230, and the income for the year was \$861,542. There were 115,000 volumes in the library. A new auditorium costing \$250,000 was under construction in 1930. It was the gift of Mrs. C. H. Candler and T. K. Glenn as a memorial to their father, Wilbur Fiske Glenn. President, Harvey W. Cox, Ph.D., LL.D.

EMPIRE FREE TRADE. See GREAT BRITAIN under *History*.

EMPLOYER'S LIABILITY. See WORKMEN'S COMPENSATION.

EMPLOYMENT. See UNEMPLOYMENT.

ENCYCLOICALS. See ROMAN CATHOLIC CHURCH.

ENDERBY LAND. See POLAR RESEARCH under *Antarctic*.

ENDOWMENTS, COLLEGE. See UNIVERSITIES AND COLLEGES.

ENGINEERING. See BOILERS; BRIDGES; CANALS; DAMS; DYNAMO-ELECTRIC MACHINERY; FIRE PROTECTION; GARBAGE AND REFUSE DISPOSAL; PORTS AND HARBORS; RADIO COMMUNICATIONS; TUNNELS; ETC.

ENGINES, GAS OR OIL. See INTERNAL COMBUSTION ENGINES.

ENGINES, STEAM. See STEAM TURBINES.

ENGLAND. The largest and most densely populated part of the island of Great Britain. See GREAT BRITAIN.

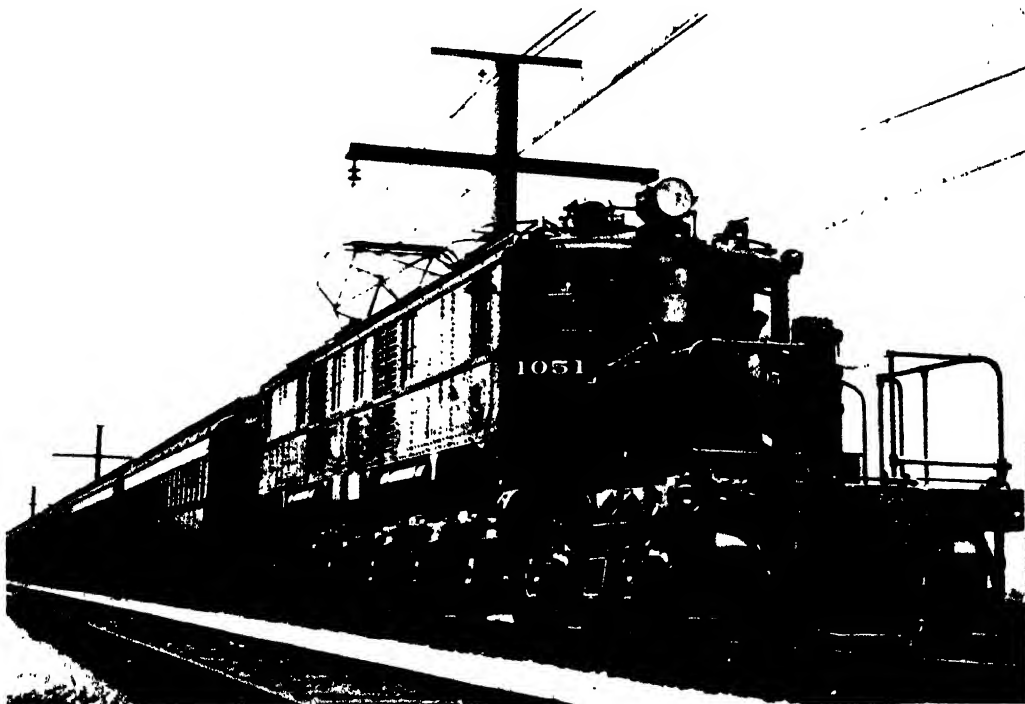
ENGLAND, CHURCH OF. The Established Church of England. Its faith is represented in the United States by the Protestant Episcopal Church (q.v.). The King is the supreme governor of the church, possessing the right to nominate to vacant archbishoprics and bishoprics. The King and the First Lord of the Treasury also appoint to certain deaneries, prebendaries, and canonries, and the Lord High Chancellor to certain canonries. For administrative purposes, the country is divided into two provinces: The Convocation of Canterbury and the Convocation of York, each under the control of an archbishop. The church assembly, established in 1920 "to deliberate on all matters concerning the Church of England and to make provisions in respect thereof," consists of three houses, composed of bishops, clergy, and laity, respectively, the laity being elected every five years by the lay members of the diocesan conferences, which consist of representatives elected by members of the church. Every measure passed by the church assembly must be submitted to an ecclesiastical committee, consisting of 15 members of the House of Lords and 15 members of the



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ELECTRIC TRANSPORTATION

House of Commons. This committee reports on each measure to Parliament, and the measure becomes a law if it is passed by both Houses of Parliament. Parochial affairs are managed by parochial church meetings of parishioners and by church councils elected by such meetings. In 1929 the number of Easter communicants was 2,475,846; of baptisms, 444,013; of incumbents, 12,864; of dioceses, 43; and of clergymen, between 16,000 and 17,000. Voluntary parochial contributions received during the year amounted to £7,086,883; total contributions from all sources were £9,910,053.

The outstanding event of 1930 was the holding of the seventh Lambeth Conference. Three hundred and eight names appear on the official list of Bishops "assembled from divers parts of the earth," attending the conference. The conference was inaugurated by services at Canterbury Cathedral and at St. Paul's Cathedral on July 5 and 6. From July 7 to 12 the conference sat in full session to discuss the following subjects: The Christian doctrine of God, the life and witness of the Christian community, the unity of the church, the Anglican communion, the ministry of the church, youth and its vocation. The further consideration of these subjects was referred to large and carefully selected committees which reported to full sessions of the conference held from July 28 to August 9. A thanksgiving service at Westminster Abbey on Sunday, August 10, marked the close of a memorable gathering. An encyclical letter from the bishops was issued during the same week. It was accompanied by the text of the resolutions formally adopted by the conference and by the reports of its committees and aroused widespread interest and discussion.

The more outstanding among these resolutions referred to war and peace, marriage and sex, and unity among Christians. The conference indorsed arbitration as a method of settling international disputes and appealed to the religious leaders of all countries to give their support to the ideals for which the League of Nations stood. The most controversial of the 12 resolutions, which were adopted in regard to marriage and sex, was that pertaining to birth control. This was summed up as follows: "In those cases where there is a clearly felt moral obligation to limit or avoid parenthood, and where there is a morally sound reason for avoiding complete abstinence, the conference agrees that other methods may be used, provided that this is done in the light of the same Christian principles."

In regard to unity among Christians, the conference requested the Archbishop of Canterbury to appoint Anglican representatives, and to invite the Ecumenical Patriarch to appoint representatives of the churches of the East, to be a doctrinal commission in preparing a joint statement on points of difference and agreement between the Anglican and Eastern churches. The conference also made overtures to the recently united Church of Scotland and evangelical free churches of England for the establishment of a closer relationship, and sympathetically received the proposals for the union of Anglicans, Methodists, Presbyterians, and Congregationalists in missionary work in South India.

By a happy coincidence the year of the Lambeth Conference was marked by a number of important diocesan functions of special interest. At Canterbury special services were held during June to mark the dedication of the Norman cathedral 800

years before and other landmarks in the cathedral's history. Norwich celebrated in August the thirteen hundredth anniversary of the foundation of the original see of East Anglia. Diocesan jubilee services were held at Southwark Cathedral in May, and similar celebrations in the following month marked the twenty-fifth anniversary of the formation of the see of Birmingham. A great service held in Liverpool Cathedral on July 13 to commemorate the jubilee of the formation of the diocese was attended by about 200 of the members of the Lambeth Conference. On June 25 the King and Queen and other members of the royal family attended the first of a series of several services of thanksgiving held to mark the reopening of the eastern portion of St. Paul's Cathedral, London, which had been closed since March, 1925, for repair and restoration. Another important event was the reopening on November 4 of St. George's Chapel, Windsor, which had been under repair for ten years.

The usual meetings of the Convocations of Canterbury and York took place in February, when resolutions of protest against the persecution of religion in Russia were passed. Neither convocation assembled in July owing to the Lambeth Conference, but special meetings of both were held in November when the Archbishop of Canterbury and the Archbishop of York took the opportunity of dealing with some of the criticisms of the resolutions passed at the Lambeth Conference.

Many matters of great importance came before the Church Assembly which held, as usual, three five-day sessions during the year. The measures which received final approval were the Clergy Pensions (older incumbents) Measure, the Pluralities Measure, and the Benefices (transfer of rights of patronage) Measure, the Episcopal Pensions (sodor and man) Measure, the Benefices (Diocesan Board of Patronage) Measure, the Benefices (exercise of rights of presentation) Measure, the Channel Islands (representation) Measure, and the Channel Islands (church legislation) Measure. The first three of these Measures had already received the royal assent. The Clergy Pensions (older incumbents) Measure supplemented earlier legislation in respect to pensions by providing a certain and uniform system of pensions for those clergy who were too old to come within the scope of the Clergy Pensions Measures of 1926 to 1928. The Pluralities Measure raised the limit of the annual value of benefices tenable in plurality from £200 to £400 and enabled commissioners under the Union of Benefices to recommend the creation of a plurality instead of a union of the benefices concerned. The secret transfer of advowsons had long been the subject of complaint, and the Benefices (transfer of rights of patronage) Measure imposed upon a patron who wished to transfer an advowson the obligation to disclose his intention of so doing both to the bishop of the diocese and to the parishioners of the parish concerned. The two other measures dealing with the long vexed question of patronage were attempts to provide means and machinery whereby the views of those most immediately concerned might be put forward and considered before an appointment to a benefice was finally made.

At its spring session, after a full day's debate, the Assembly adopted by 382 votes to 105 a resolution, moved by the Archbishop of York, expressing the desirability of a commission being ap-

pointed to inquire into the present relations of Church and State. At the autumn session the Archbishop of Canterbury announced the names of the commissioners appointed by himself and the Archbishop of York and stated that Viscount Cecil of Chelwood had consented to preside. The general principles of the majority report of the Archbishops' commission on religious education were approved at the spring session and the recommendations of the commission in regard to the establishment of a central council of religious education were the subject of a long debate which resulted in the recommendations being approved by a narrow majority. On the completion of the first ten years of the existence of the Assembly a volume of essays by the Archbishop of York and other well-known churchmen, entitled *The Church Assembly and the Church*, was issued during the autumn session of the assembly.

The Church Congress resumed its series of annual meetings—interrupted in 1929 by a well-attended gathering, in October at Newport, over which the Bishop of Monmouth presided. The Anglo-Catholic Congress was held in London in July when it was estimated that 20,000 persons were present at an open-air service at Stamford Bridge attended by the Patriarch of Alexandria and about 20 bishops. The Islington Clerical Conference of Evangelical clergy was held on January 14 at the Church House, Westminster, and in April the 13th Conference of Evangelical Churchmen—formerly known as the Cheltenham Conference—met at St. Peter's Hall, Oxford, the general subject of the conference being "God's Call to Union." "Problems of Personal Life" was the subject discussed at the 17th Conference of Modern Churchmen, held at St. Hugh's College, Oxford, August 18-23 under the presidency of the Dean of St. Paul's.

The year was marked by several changes in the episcopate. Dr. J. R. Harmer, who had been Bishop of Rochester since 1905 (after being Bishop of Adelaide for ten years), resigned his see and was succeeded by Dr. Martin Linton Smith, Bishop of Hereford. The Bishop of Coventry (Dr. C. L. Carr) was translated to Hereford, and the Rev. Mervyn George Haigh, the principal chaplain to the Archbishop of Canterbury, was nominated to the see thus rendered vacant. Another vacancy was created by the sudden death on October 28 of Dr. Ernest Harold Pearce, Bishop of Worcester since 1919.

An addition to the list of Bishops Suffragan was made by the appointment on March 28 of Canon E. S. Woods to be Bishop Suffragan of Croydon and Archdeacon of a newly-constituted Archdeaconry of Croydon, while still retaining his position as Vicar of Croydon. The resignation on March 29 of Dr. R. E. Trefusis (who died only a few weeks later), Bishop Suffragan of Crediton for more than 33 years, was followed by the appointment of the Ven. W. F. Surtees, Archdeacon of Exeter. Another change due to resignation was the appointment of Canon G. A. Hollis, principal of Wells Theological College, as Bishop Suffragan of Taunton in the room of Dr. C. F. de Salis. By an order in council gazetted October 31, the Rev. C. R. Hone, rector of Whithy and Archdeacon-designate of Pontefract, was appointed to the newly created Suffragan Bishopric of Pontefract. Canon Sherwood Jones, rector of Middleton, was appointed Bishop of Hulme in place of the Rev. Dr. J. C. Hill, who resigned.

Among the outstanding events affecting the

episcopate overseas were the resignations of Dr. W. M. Carter, Archbishop of Capetown; Dr. E. F. Robins, Bishop of Athabasca, (who returned to England as Assistant Bishop in the diocese of Norwich); and Dr. C. H. Golding-Bird, Bishop of Mauritius, who had been appointed Assistant Bishop in the Diocese of Guildford and Archdeacon of Dorking. Dr. F. W. de Witt Batty, Coadjutor Bishop of Brisbane, was elected Bishop of Newcastle, New South Wales, in succession to Dr. G. M. Long who died suddenly while attending the Lambeth Conference, and the Ven. G. W. Douglas, Archdeacon of Korogwe, was appointed Bishop of Nyasaland in place of the late Dr. T. C. Fisher.

Preëminent among the churchmen who died during 1930 was the Most Rev. Randall Thomas Davidson, former Archbishop of Canterbury (q. v.). His death on May 25 was the occasion of tributes from men of all classes and creeds, showing that his successor, the Most Rev. Cosmo Gordon Lang, had aptly expressed the feeling of Christians throughout the world in applying to him the words, "He had in his own generation served the counsel of God." Another notable figure was Dr. George Forrest Browne (q. v.), who died at the advanced age of 97 on June 1. He will be remembered for his work as Bishop of Stepney (1895-97) and Bishop of Bristol (1897-1914), as well as for his work in elucidating the early history of the church he served so long. The Ven. Ronald Irwin (Archdeacon of Dorking), Canon Morley Stevenson, Canon A. J. P. Shepherd, Canon Charles Theobald (at the age of 98), Canon H. P. Cronshaw, Canon R. D. Swallow, Canon G. H. Shorting, Chancellor H. E. Campbell, and Canon G. H. Whitaker were among other well-known names in a long list of clergy, while among laymen prominently identified with the work of the church were such members of the Church Assembly as Prof. C. H. Turner (q. v.), Chancellor A. T. Lawrence (q. v.), and Col. Geo. Hesketh, as well as Miss Eleanor Harrison and Miss Edith Nettleton, two missionaries, who were murdered by Chinese bandits.

The church assembly's budget for 1931, amounting to £145,078, was adopted at the summer session. In view of the serious shortage of clergy (to which renewed attention was drawn in the report of the commission on the staffing of parishes presented to the church assembly in November), a generous response was once more made to Earl Grey's appeal for sponsors for ordination candidates. Upwards of £26,162 was raised by this means during 1930, making a total sum of £113,071 contributed since 1926 towards making provision for affording financial aid to 592 specially selected candidates for holy orders.

The officers of the church assembly in 1930 were: Chairman, the Archbishop of Canterbury; vice-chairman, the Archbishop of York; treasurer, Col. Sir R. Williams, Bart.; secretary, Sir Philip W. Baker-Wilbraham, Bart.; assistant secretary, Guy H. Guillum Scott; chairman of the house of bishops, the Archbishop of Canterbury; chairman of the house of clergy, the Archdeacon of St. Albans. Headquarters are at 8 Dean's Yard, Westminster, S. W. 1, London. See INDIA under *History*.

ENGLISHITE. See MINERALOGY.

ENGLISH STUDIES. See PHILOLOGY, MODERN.

ENTOMOLOGY, ECONOMIC. The year 1930 was made notable in the field of entomology by the

release on November 15, after 19 months, of the Federal quarantine on Florida products as an outcome of the apparently successful campaign of eradication conducted against the Mediterranean fruit fly. The Medfly, probably the most destructive of all insect enemies of fruits, which since its appearance in Spain in 1842 had spread throughout the world, was discovered for the first time on the North American continent at Orlando, Florida on April 6, 1929. Its dire threat to American horticulture was at once met by the Federal Government and the State of Florida cooperating in a campaign of eradication from some 1000 infested properties, scattered over 20 counties in the central part of the State, which resulted in this most fortunate outcome—an outstanding accomplishment in the field of applied entomology.

Probably the most outstanding development in insect infestation as affecting American agriculture was the finding of an exceedingly heavy infestation of the pink bollworm over a large area in the Salt River Valley of Arizona, where the growing of long-staple cotton is a specialty, followed by an emergency appropriation by Congress to aid in its eradication. The importance of the inspection of imported products as a protection against the introduction of foreign insect pests was emphasized by the detection and destruction by inspectors at Atlanta, Georgia, in the cotton belt, of a small package of cotton seed infested by the pink bollworm that had been sent by mail from India. The importance of the passenger carrying airplane as a potential source of danger in the introduction of pests such as the Medfly in infested fruits discarded en route was called to attention. On the other hand the airplane was pressed into service as an aid in the introduction of insect parasites. The Argentine ant was first discovered in Louisiana whence it has spread into adjoining States and California and was reported during the year as having appeared in February in a greenhouse at Baltimore, Maryland.

NECROLOGY. The year saw the passing of Prof. Stephen A. Forbes of Illinois, one of the most remarkable characters known in the history of American entomology, who died on March 13 at the age of 86. On August 24, Mrs. Anna Botsford Comstock, author of popular works on insects, passed away at her home in Ithaca, N. Y., at the age of 76.

MEDITERRANEAN FRUIT FLY. The Federal quarantine on Florida products was released on November 15 as a result of the successful outcome of the campaign of eradication of the Medfly. No infestation had been found in a commercial grove since Nov. 16, 1929, and only two very minor infestations had been located since that date, one on Mar. 4, 1930, in Orlando consisting of 10 larvae in two sour oranges, the other on July 25, 1930, consisting of two pupæ recovered from the soil under the fruit of a sour orange in a back yard in St. Augustine. An intensive inspection of fruits both in groves and in packing houses was to be continued indefinitely as a precaution against the spread of any infestation that might develop in the future and the eradication work with any such infestation was to be conducted by the Florida Plant Board.

In the course of this work the Federal Government expended approximately \$6,355,000. The work of the year was carried on under an emergency appropriation of \$1,290,000 which became available Dec. 21, 1929, and an appropriation of \$1,740,000 made available May 27. An emergency

fund of \$1,500,000 was made available for the work at the discretion of the President should infestation of sufficient number and intensity to justify its expenditure occur. The eradication was accomplished largely through the application of poison bait sprays and the enforcement of clean culture methods.

On January 9 the Secretary of Agriculture announced the appointment of a Federal fruit-fly board composed of five outstanding entomologists of which W. C. O'Kane of New Hampshire was the chairman. The work was carried on under the direction of Dr. Wilmon Newell until March 20, when for two and one half months the Federal work was discontinued due to lack of available funds, after which it was continued under the direction of the chairman of the fruit-fly board. In the course of the eradication work there were destroyed by official forces some 608,000 boxes of citrus fruits, 50,000 bushels of host vegetables and 28,000 bushels of minor and noncitrus fruits. In research work conducted in Hawaii during the winter and spring of 1929-30 it was found that a cold-storage temperature between 30° and 31° F. for 15 days was fatal to Medfly eggs and larvae present in the fruit. Since these temperatures are well within the range of standard cold-storage practice and can be easily maintained without risk of freezing this method was authorized on March 4 near the end of the shipping season in the spring, for use in the place of the lower temperature previously employed.

MEXICAN FRUIT WORM. A heavy infestation of the Mexican fruit worm involving 106 properties was found in fruit growing in Matamoras, Mexico in September, 1929, and in three back-yard plantings at Brownsville across the river in Texas. The infested areas on both sides of the Rio Grande were cleaned up, poisoned bait was applied to the trees and fly traps kept baited. The pest appeared to have passed the zone of defense in western Mexico, having appeared in the state of Sinaloa on the Gulf of California where it presents an increasing threat to fruit centres in the Southwestern States, it already having been intercepted in two lots of plums by inspectors stationed at Nogales, Arizona.

ORIENTAL FRUIT MOTH. The oriental fruit moth by 1930 had invaded practically all important peach-growing districts east of the Rocky Mountains from Canada to Georgia. It caused severe injury to the peach and has become an important enemy of the apple and quince. Work with so-called bait traps gives promise of considerable aid in its control. The rearing and distribution in the orchards of parasites, particularly the *Macrocentrus ancylivora* which also attacks the strawberry leaf-roller, carried on by the Federal Bureau of Entomology and a number of State experiment stations has brought about a high percentage of parasitism. This parasite was observed in Connecticut to have parasitized from 80 to 100 per cent of the larvae by August in orchards where liberations had been made of parasites received from New Jersey. As high as 80 per cent of the eggs were found parasitized by September 5 in an orchard at New Haven by *Trichogramma minutum*. Extended observations in Delaware indicate that a large amount of the damage to late apples is due to the work of the oriental fruit moth which after the peach crop has been picked centres its attack on apples.

CODLING MOTH. The injury caused by the codling moth to fruit was quite generally severe in the

Eastern United States and in the Mississippi Valley region but was much below normal in the Northwest. It appeared to have been stimulated by the unusually high summer temperatures, and severe late injury was reported from the entire drought area. The activities in control work resulting from the spray-residue situation continued with the view to securing an effective substitute for lead arsenate. Several fluorine compounds have proved nearly equal in effectiveness to lead arsenate when used in the arid sections of the Northwest. Cryolite and the fluosilicates of potassium and barium have given the greatest promise. The combination of nicotine sulphate with weak white oil emulsions proved equal in effectiveness to lead arsenate in the Northwest, and in Kansas, in an unusually dry season, was nearly as satisfactory. In New Jersey pineol soluble diluted with equal parts of water when properly applied destroyed 100 per cent of the overwintering larvæ, with no injury to the bark. In Washington State nicotine oil combinations proved as effective as lead arsenate when applied in the cover sprays for the first brood and was decidedly more effective when applied in the second brood sprays. In Idaho the combination of lead arsenate and oil produced 15 per cent more sound apples than when the arsenic was used alone. In work with banding materials and chemicals 97 per cent of the cocooning larvæ were found to be destroyed in this way. Work in New Jersey indicated that either white oil pyrethrum or nicotine tannate will give as good control of the codling moth as will the arsenic sprays.

PINK BOLLWORM. The appearance of the pink bollworm in the long-lint cotton fields of the Salt River Valley of Arizona, where it was first discovered at Gilbert on Oct. 24, 1929, was an event of great importance which called for the best efforts of the entomologist. Restrictions were at once placed by the State prohibiting the movement of unsterilized cottonseed from any gin in the valley. Sterilizers were constructed and in operation within 30 days. After delimiting the infestation, which was found to involve 40,000 acres of cotton, all shipments of cotton products which might spread the infestation were traced. On January 9 two noncotton zones covering 134,400 acres were declared, with a restricted zone surrounding of 205,440 acres. An intensive cleanup and eradication campaign conducted by the Federal Department of Agriculture coöperating with the State on a 50-50 basis included a thorough cleanup of the fields by cutting and burning the stalks and volunteer or stub cotton.

The work was made possible through an emergency appropriation by Congress which provided for compensation for the loss suffered by farmers, through enforcement of the noncotton zone, one half of which expense was to be met by the State. The eradication of the extensive outbreak of the pink bollworm that occurred in 1927 in several counties of western Texas was brought to a successful conclusion with their release on November 17 from all quarantine restrictions, only a single infestation, in the 1928 crop, having been discovered since the 1927 crop.

MEXICAN BOLL WEEVIL. It was concluded after three years of experimental work in Florida that calcium arsenate diluted with hydrated lime, when well mixed and diluted, will control the boll-weevil as well as will the undiluted material. The boll-weevil parasite *Bracon melitor* appeared in cotton fields throughout Georgia and destroyed as

high as 18 per cent of the larvæ in bolls and 35 per cent in hanging squares.

THURBERIA OR ARIZONA BOLL WEEVIL. The *Thurberia* boll weevil has now become generally distributed in all of the cotton areas in the Santa Cruz Valley of Arizona and the infestation was much heavier in 1929 than ever before. The safeguards enforced to prevent its spread into non-regulated areas are the same as those used for the control of the pink bollworm.

JAPANESE BEETLE. The extension of the Japanese beetle regulated area during the fiscal year ended June 30 resulted in an increase of 22,535 square miles with about 43,888 square miles extending from Massachusetts to Virginia now under regulation. The quarantine regulations were revised to bring the State of Rhode Island and counties in Massachusetts, New York, Pennsylvania, Delaware, and Virginia under regulation.

ASIATIC BEETLES. The quarantine that had been maintained for a year against the Asiatic beetle and the Asiatic garden beetle in States from Connecticut to Virginia and the District of Columbia was raised on March 1. This came as a result of investigations and surveys which showed that their habits and economic status did not warrant its maintenance.

MEXICAN BEAN BEETLE. The Mexican bean beetle increased its range slightly in the Northeastern States, having spread into Connecticut and Massachusetts where it was found for the first time in 1929. Owing to the lack of normal precipitation and the warm weather the mortality of the beetle was higher than usual, it being reported as either absent from fields or decidedly reduced in numbers throughout the New England and Middle Atlantic regions. Under the weather conditions prevailing in South Carolina in 1929 magnesium arsenate was the only arsenic that was effective in controlling it and harmless to the plant.

EUROPEAN CORN BORER. The spread of the European corn borer during the year 1929 was about normal in the western area or 20 to 30 miles from the known infestation. Commercial damage by it to the corn crop still remained small and was confined to the older infested area near Lake Erie and to particularly favorable areas in Southeastern Massachusetts and Rhode Island. The winter mortality of the larvæ was considerably lower in southern Ontario than during the first three years of the infestation. The work with parasite introduction progressed quite satisfactorily, approximately 600,000 parasites of 17 species having been released during the season up to July. The recovery of parasites from previous liberations was very encouraging. The infestation in the Maritime Provinces of Canada continued very local and light. In the Philippines where it is one of the most important enemies of corn in some localities over 50 per cent of the crop was destroyed.

SATIN MOTH. The satin moth was abundant in the spring and heavily infested poplar and willow trees in the New England area. It continued to spread northward and appeared in New Brunswick and Nova Scotia. In British Columbia the infestation continued to spread on Vancouver Island and in the Lower Fraser Valley.

GIpsy Moth. The increased infestation by the gipsy moth in the barrier-zone area in the western part of New England and eastern New York in 1929 made a deficiency appropriation by Congress of \$100,000 necessary in March with which to thoroughly clean up and spray the area infested.

In the extermination work in New Jersey a single gipsy moth infestation was found in Picataway and it appears that the ten-year effort to eradicate the pest from the State has been almost accomplished. An infestation covering quite an area discovered in December, 1929, at North Roslyn, Long Island, N. Y., was scouted and cleaned up.

ALFALFA WEEVIL. The alfalfa weevil which was originally known to occur in a comparatively small area around Salt Lake City, Utah, appeared in a rather severe infestation at Medford, Oregon, some 200 miles from the nearest known infestation. This is the first known spread of the pest west of the Cascade Mountains.

VEGETABLE WEEVIL. The vegetable weevil, first discovered in Mississippi, is now known to occur in 116 counties in the States of Louisiana, Mississippi, Alabama, and Florida and to also occur in California.

DATE SCALE ERADICATION. In continuation of the eradication work with the date scale the inspection force was tripled and inspections were carried on over the entire date-growing areas of Arizona and California, interrupted only by the more frequent inspection and treatment of infested gardens. Many thousand infested palms in abandoned seedling gardens were dug out and destroyed.

INSECTICIDES, REPELLENTS AND INSECT CONTROL. Rotenone, one of the insecticidal constituents of derris root and other fish poisoning plants, when dissolved in acetone and used in .05 to 2 per cent solutions, was found to give excellent protection against the clothes moth and other major fabric pests when the woolen goods were thoroughly impregnated. The protection imparted to the treated fabric appeared to equal that imparted by any proprietary moth-proofing solution now offered the public and a public service patent application was filed by the Federal Department of Agriculture.

A further study of poison-bait applications for adults of the Mediterranean fruit fly definitely established the practicability and usefulness of copper carbonate as a substitute for arsenical poisons and this spray was utilized widely by growers and others during the season. Experiments extending over a three-year period in New York indicate that the lubricating oil emulsion is an efficient and economical treatment for use against the onion maggot. Spreaders including oil derivatives and various oleates were discovered in Florida that will reduce the cost of nicotine sprays as aphicides by half. A ball of paradichlorobenzene the size of a moth ball (1/6 oz.) was found when placed in cyclamen flats as the plants were set out in Illinois to be the most practical means of control for the destructive cyclamen mite ever developed.

In work in New York State lime-sulphur containing nicotine sulphate was the spray preferred for use against the rosy apple aphid. Pyrethrum extract and soap was found in New Jersey to destroy wireworms without injuring the plants on which they are feeding. It was reported that the fumigation of highly absorptive commodities such as nut meats, in vacuum, is greatly facilitated by the admixture of carbon dioxide with other gases.

PARASITE CONTROL OF INSECT PESTS. There was an increased activity in the work of rearing and introducing insect parasites of some of the more important pests with many reports of real accomplishments. This was particularly true of the work with the larval and egg parasites of the

oriental fruit moth. The first plant for the commercial production of the many host *Trichogramma* egg parasite was established in California where a stock of this parasite was offered for sale by a commercial entomologist. The species was employed with considerable success against the sugar-cane borer in Louisiana cane fields. A detailed report was made of the remarkable control of the coconut moth, which threatened the copra industry of Fiji, brought about through the introduction of the tachinid parasite *Ptychomyia remota* from the Federated Malay States.

INSECTS AND DISEASE. The common house mosquito *Culex pipiens* was implicated in the transmission of both fowl and pigeon pox of poultry. The transmission was found to take place for as long as 38 days after the mosquito became infected and probably for the course of its life. *Aedes albopictus*, a mosquito common in the Philippines was discovered to be an effective carrier of dengue fever, as is the yellow fever species. Observations made at the front in the World War have led to investigations which show that the larvæ of certain flies bring about a remarkable healing of wounds and inflamed bones (osteomyelitis). Nearly 300 patients have been treated with success in this way. A study of methods of propagating the larvæ for use in surgery (q.v.) was begun.

INSECT TRANSMISSION OF PLANT DISEASE. False cranberry blossom, the most serious disease of the cranberry in New Jersey was found to be carried from plant to plant by the blunt-nosed leaf hopper. A disease of peanuts known locally in North Carolina as "pouts" which resembles the tipburn of potatoes was found to be caused by leaf hoppers. Two different aphid species were discovered to be capable of transmitting the virus of tobacco mosaic from tomato to various solanaceous hosts. A mosaic-like disease of beans in Haiti was discovered to be transmitted by a leaf hopper.

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EPI'RUS. An ancient geographical expression for the northernmost division of Greece; after the Balkan Wars of 1912-13, the name attached to an administrative province formed in northwest Greece from newly acquired territories.

EPISCOPAL CHURCH. See PROTESTANT EPISCOPAL CHURCH.

EPWORTH LEAGUE. See METHODIST EPISCOPAL CHURCH.

ERITRE'A. An Italian colony on the African coast of the Red Sea, extending 670 miles from Cape Kasar to Cape Dumeirah on the Strait of Bab-el-Mandeb. Area, 45,754 square miles; population, at the census of 1921, 402,793 natives and 4681 Europeans. The seat of government is Asmara, situated 7765 feet above sea level, with a population of 18,500 (3500 Europeans). Massawah is the principal trade centre, with an estimated population of 12,275. The natives are

chiefly Coptic Christians and Mohammedans. The local trade is almost entirely confined to camels, oxen, sheep, goats, and their products. For 1928, imports were valued at 195,627,391 lire and exports at 93,712,746 lire. In 1929-30, the estimated revenue and expenditure of the colony were: Colonial revenue, 48,351,435 lire; State contribution, 22,501,435 lire; expenditure for civil administration, 31,466,185 lire; for military purposes, 16,885,250 lire. In 1929 there were 258 miles of railway. Governor in 1930, Corrado Zoli (appointed in 1928).

ERGOSTEROL. See VITAMINS.

ERLANGER, ər'läng-ər, ABRAHAM LINCOLN. An American theatrical manager, died in New York City, Mar. 7, 1930. Born in Buffalo, N. Y., May 4, 1860, he moved while a child with his parents to Cleveland, Ohio, and was educated in the public schools of that city. He formed a partnership with Marc Klaw in New York City and, from a small beginning as a theatrical booking firm, Klaw & Erlanger became producers of plays and owners of many theatres. Mr. Erlanger was also a member of a number of other theatrical firms and, organizing them into the Theatrical Syndicate, he, as director, gained control of the leading theatres and touring companies of the United States. In 1907 the Shubert Brothers' interests were incorporated with those of Klaw & Erlanger, but later withdrawn. Klaw & Erlanger added vaudeville to their other productions, playing in more than 50 houses in the United States, but later abandoned the field. In 1920 Mr. Erlanger dissolved his partnership with Mr. Klaw, but continued to produce plays. His productions after this date include *Just Suppose* and *Monsieur Beaucaire* (1920); *The Perfect Fool* and *Two Little Girls in Blue* (1921); *The Yankee Princess* and *To the Ladies* (1922); *Hassan* (1924); *Ilconcymoon Lane* and *Happy Go-Lucky* (1926); *The Nineteenth Hole* (1927). Among the productions of Klaw & Erlanger were Hall Caine's *The Christian*; *Ben Hur*; *The Merry Widow*; and *The Pink Lady*.

EROSION. See SOILS.

ERSATZ PREUSSEN. See NAVAL PROGRESS.

ESH'ER, REGINALD BALIOL BRETT, SECOND VISCOUNT. An English statesman and author, died Jan. 22, 1930, in London, where he was born June 30, 1852. The son of the first Viscount Esher, a distinguished English jurist, he was educated at Eton and at Trinity College, Cambridge University. He served as private secretary to Lord Hartington, a political leader opposing Disraeli, from 1878 to 1885. During 1880-85, he was also a Liberal member of Parliament for Penryn and Falmouth. From 1895 to 1902, he was secretary to the Office of Works, organizing the second Jubilee and the funeral of Queen Victoria, and the coronation of King Edward VII. In 1902 he was appointed on the commission to inquire into the conduct of the South African War, in 1904 he became chairman of the War Office Reconstitution Committee, and he was a permanent member of the Committee of Imperial Defense. At the beginning of the World War, he went to France, where he performed various military duties. Lord Esher, as a personal friend of the rulers of England, was believed to possess important influence in the government. As deputy-governor and, later governor of Windsor Castle (1901-30), he had access to the papers of Queen Victoria. As the result of his research at Windsor, he published *The Correspondence of Queen Victoria* (1907)

and *The Girlhood of Queen Victoria* (1912). He also wrote *Footprints of Statesmen* (1892); *Today and To-morrow* (1910); *Influence of King Edward: Essays* (1914); *After the War* (1918); *The Tragedy of Lord Kitchener* (1921); *Ionious* (1923); *Cloud-Capt Towers* (1927), his reminiscences. In 1921 Lord Esher sent his diary and a sealed package of papers dealing with Lord Haig's work in France to the trustees of the British Museum with instructions that they should not be opened until 1981. It was expected that the diaries, when opened, will yield valuable information for the historian of the period.

ESKIMO STUDIES. See ANTHROPOLOGY.

ESSAYS. See LITERATURE, ENGLISH AND AMERICAN; FRENCH LITERATURE; GERMAN LITERATURE; ITALIAN LITERATURE; SCANDINAVIAN LITERATURE; SPANISH LITERATURE; ETC.

ESTONIA. A republic on the eastern shore of the Baltic, bounded by the Gulf of Finland on the north, Russia on the east, and Latvia on the south. Formerly a part of the Russian Empire, it was declared independent on Feb. 24, 1918, and its independence was recognized by Soviet Russia by the treaty of Feb. 2, 1920. Capital, Tallinn (Reval).

AREA AND POPULATION. The total area is about 18,353 square miles and the estimated population on Jan. 1, 1929, was 1,116,553, of whom 87.7 per cent were Estonians, 1.7 per cent Germans (Balts), and 10.6 per cent Russians and other nationalities. The populations of the chief cities in 1929 were: Tallinn, 132,000; Tartu (Dorpat), 65,000; Narva, 27,000; Pärnu, 22,000.

EDUCATION. Elementary education is free and compulsory for children between the ages of 7 and 16, under a law which became effective Jan. 1, 1930. Elementary schools in 1927-28 numbered 1333, of which 1286 were public and 47 were private schools. There were 80 middle schools (28 private), besides various special and professional institutions. The University of Tartu (Dorpat) had 4008 students in 1928 and the Technical Institute at Tallinn, 504 students.

PRODUCTION. Agriculture and dairy farming are the principal occupations, engaging 70 per cent of the population. The area under cultivation (1928) was 2,532,799 acres, while forests occupied 2,200,000 acres, meadows, 2,602,274 acres, and pastures, 1,826,402 acres. Agricultural production in 1927-28 was valued at \$65,800,000, including \$29,300,000 in field crops and \$36,500,000 in animal products. Production of the leading crops, in bushels, in 1929 was: Wheat, 1,268,000; rye, 5,748,000; barley, 5,654,000; oats, 10,451,000; potatoes, 27,621,000; linseed, 461,000. Live-stock in 1929 included 604,616 cattle, 474,730 sheep, 279,439 swine, and 205,406 horses.

Butter represents about 26 per cent of the total exports. Dairy factories in 1927 numbered 384, of which 85 per cent were coöperative. Other important industries involve the production of paper, cement, oil (from shale), timber, matches, flax, and leather articles. The output of shale oil in 1929 was 517,650 metric tons (446,216 in 1928).

COMMERCE. Estonian imports in 1929 totaled 122,967,500 crowns (131,373,500 crowns in 1928) and exports amounted to 117,471,300 crowns (127,108,900 crowns in 1928). The Estonian crown equaled about \$0.268. The balance of trade was unfavorable for the second consecutive year, the surplus of imports totaling 5,496,200 crowns, as against 4,264,600 crowns

in the preceding year. Leading sources of imports were: Germany, 37,107,000 crowns; United Kingdom, 12,360,000 crowns; Poland, 9,665,000; Sweden, 6,746,000. Exports went mainly to: United Kingdom, 44,707,000 crowns; Germany, 31,276,000 crowns. The United States in 1929 took exports valued at \$873,600 (\$1,092,500 in 1928) and furnished imports valued at about \$800,000. Dairy products, timber, textile products, and paper were the chief exports; grain and flour, raw cotton, fish and fish products, metals, and machinery the leading imports.

FINANCE. In the budget for 1929-30, total revenues were estimated at 93,800,000 crowns and total expenditures at 92,500,000 crowns, including ordinary revenues of 84,800,000 crowns and ordinary expenditures of 80,600,000 crowns. The budget for 1930-31, as accepted by Parliament Mar. 23, 1930, called for expenditures of 91,775,200 crowns. Actual revenues in 1928-29 totaled 92,162,000 crowns and actual expenditures, 90,786,000 crowns. The public debt on Mar. 31, 1929, totaled 111,470,460 crowns, of which 110,904,181 represented the external and 566,279 the internal debt. Of the foreign debt, about \$16,062,000 was held in the United States.

COMMUNICATIONS. The total mileage of Estonian railways in 1929 was 1126 miles, of which 695 miles were broad gauge and 431 miles narrow gauge. During the year ended Mar. 31, 1929, the railways carried 8,475,000 passengers and 2,110,000 metric tons of freight, the total revenues being \$4,179,830, or \$578,589 more than in the previous year. The railway, telephone, and telegraph systems are Government owned. A total of 2814 vessels of 922,260 tons entered and 2856 vessels of 918,170 tons cleared the ports in 1928. In the same year the merchant marine consisted of 74 steamers of 38,767 tons and 291 sailing vessels of 24,815 tons.

GOVERNMENT. According to the constitution of Dec. 21, 1920, executive power is in the hands of a state head or "State Elder" and a ministry, both chosen by and responsible to the State Assembly; legislative power, in the hands of the State Assembly of 100 members elected for three years on the basis of proportional representation and by direct, universal, and secret suffrage. Provision is made for referendum and legislative initiative. The composition of the State Assembly following the elections of May 11-13, 1929, was as follows: Socialists, 25; Agrarians, 24; Settlers, 14; Radicals, 10; Populists, 9; Workers' Party, 6; Minority Nationals, 5; Christian party, 4; and Houseowners, 3. Prime Minister and State Head in 1930, Otto Strandmann (Radical), heading a coalition of the Farmers' Union, and the Christian, People's, Radical, and Settlers' parties.

HISTORY. The struggle between radical and conservative elements assumed a more violent aspect in 1930 after the municipal elections held at the end of January, in which the extreme Right and Left parties registered gains. The Communists were charged with the assassination on April 4 of Gen. J. Unt, a leader in the Estonian independence movement in 1917-18. The following day the Workers' party, which was dominated by Communists, was ordered dissolved by Minister of Interior Kalbus. M. Kalbus, who had held the same post in four Cabinets, resigned on April 12 ostensibly because of ill health, his post being filled by Ado Anderkopp of the Radical party. To curb radical excesses, Parliament on

July 3 passed a military emergency law, extending the powers of the State Head, who is also commander-in-chief of the army, and investing him with authority to dissolve Parliament in certain emergencies.

The conservative Agrarians were no less discontented than the Socialists and Communists with the policies of the Centre parties forming the Government. They demanded farm relief in the form of a protective tariff, Government loans on more favorable terms to stimulate farming, reductions in the budget, in the membership of the State Assembly, and in the salaries and pensions of Government officials, restriction of the franchise to taxpayers, an extension of powers of the Executive, and downward revision of inheritance taxes. Alleged efforts of Agrarian Opposition leaders to engineer a *coup d'état* early in August, led to the arrest of two of them and the imposition of fines equivalent to a jail term of two months.

Further steps toward the cultural and political rapprochement of Estonia and Latvia, were taken during the visit of Foreign Minister Lattik to the Latvian capital in September. Arrangements for the establishment of a customs union between the two countries were virtually completed in 1929. This movement for closer co-operation, in which Lithuania was included, received something of a check as a result of fears aroused in Latvia and Lithuania by an exchange of visits between President Moscicki of Poland and State President Strandmann of Estonia. Assurances were given by both Poland and Estonia that the visits had no political implication other than the promotion of good will. A Finnish-Estonian commercial treaty was ratified by the Estonian Parliament Mar. 29, 1930.

ETHIOPIA (ABYSSINIA). A country of east Africa, situated between the Anglo-Egyptian Sudan and the European colonies fringing the Red Sea and the Gulf of Aden. Capital, Addis Ababa, with a population of from 60,000 to 70,000; ruler in 1930, Negus (King) Tafari Makonnen.

The area is estimated at about 350,000 square miles and the population at 10,000,000, of whom somewhat less than 3,000,000 are Abyssinians proper. The Abyssinians, who constitute the ruling race, are Christians of Hamitic origin. The Gallas, comprising two-thirds of the population, Somalis, and Danakil are other important tribes. Besides the capital, Dire Dawa (population, 30,000) and Harrar (population about 40,000) are the chief cities. The gradual abolition of domestic slavery, still a recognized institution, was provided for in an edict issued by Negus Tafari in March, 1924.

PRODUCTION, ETC. Ethiopia is a strictly pastoral and agricultural country, possessing numerous cattle, sheep, and goats. There are small and crudely cultivated crops of grain, cotton, sugar cane, dates, coffee, and grapes. Hides, skins, wax, grain, and coffee are the only products of sufficient quantity for export. The forests abound in valuable timber and include extensive growths of wild coffee plants. Foreign enterprise is stimulating the more extensive cultivation of coffee and cotton. Iron ore and placer gold are mined to some extent and potash deposits were being exploited in 1930 with the aid of Italian capital. Coal, copper, silver, and platinum also are found.

Ethiopia's total foreign trade in 1926 amounted to 588,000,000 French francs, of which 385,000,-

000 francs represented the trade passing through Djibouti, French Somaliland, 138,000,000 francs that via Eritrea, and 65,000,000 francs that via other routes. Exports consist mainly of hides and skins, coffee, wax, ivory, and civet; imports of cotton textiles, artificial silk, corrugated sheets, hardware, etc. A railway from the port of Djibouti extended 488 miles to Addis Ababa. The mileage of highways of all kinds in 1930 was estimated at 2050 miles, including 50 miles of macadamized roads in and near the capital, 1000 miles of miscellaneous rough highways, and 1000 miles of caravan tracks and trails.

GOVERNMENT. Under the constitution adopted Oct. 31, 1907, and modified in 1919, the supreme power rests with the King, who, since 1907, has been assisted by a cabinet and, since 1910, by the Council of Elders. There is no popular representation, the governmental system being essentially that of a feudal monarchy, in which the Coptic Church plays an influential and conservative rôle. In 1923 Ethiopia joined the League of Nations.

HISTORY. Modernization of the ancient and still largely feudal Kingdom of Ethiopia, which since the World War had proceeded gradually under the enlightened leadership of the King, was greatly advanced as a result of developments during 1930.

A serious revolt led by conservative and clerical elements opposed to the King's progressive policies was crushed in a decisive battle on March 31. On Apr. 3, 1930, occurred the death of the Empress Zauditu (q.v.), who since her coronation in 1917 had ruled jointly with Ras Tafari and had stood as a bulwark of conservative and isolationist sentiment. These events left the way clear for the proclamation of Ras Tafari as Emperor, with the title of Haile Selassie I, the speeding up of the tempo of westernization, and more rapid eradication of the slave trade, which still persisted in the country.

The revolt against Negus Tafari broke out early in the year under the leadership of Ras Gugsa Wali, divorced husband of Zauditu. The battle of March 31 was fought with forces estimated at 50,000 on each side. The King triumphed largely through the aid of three pursuit planes, manned by French pilots, whose bombs and machine gun fire precipitated the rout of Ras Gugsa's followers. The rebel chief was killed in the fighting.

Barbaric splendor and lavish pageantry marked the coronation of Negus Tafari as Emperor on November 2. The ritual was performed by the Coptic Archbishop of Ethiopia in the presence special plenipotentiaries from the leading world powers, including the United States. The Emperor's consort, Waziru Menen, was crowned Empress Etege Menen at the same time. The cost of the ceremony was estimated at \$3,000,000. Everett Colson, assistant to the American financial adviser in Haiti, was selected as financial adviser to the Emperor on Sept. 27, 1930, from a list of financial experts submitted by the State Department in Washington on request of the Abyssinian representatives there.

Of outstanding importance in connection with the development of Ethiopia was the conclusion on Mar. 1, 1930, with British consent, of a preliminary agreement between the Government and The J. G. White Engineering Corporation of New York for the construction of the long-contemplated dam at the outlet to Lake Tsana to impound the waters of the Blue Nile. The dam,

together with a road connecting it with Addis Ababa, was estimated to cost about \$15,000,000. In accordance with the preliminary agreement, the American company in October commenced detailed investigations of the engineering problems involved in building the dam and the road. These were to be completed late in 1931, when another conference of representatives of the company and of the governments of Great Britain, the Sudan, and Ethiopia, was to be held to take final action upon the project.

An Anglo-Ethiopian treaty of 1902 bound Ethiopia not to permit the construction of the Lake Tsana dam "except in agreement with his Britannic Majesty's Government and the government of Sudan." Construction of the dam was delayed for nearly 30 years by Ethiopia's refusal to sanction its construction under British auspices, for fear of further encroachments upon the country's independence, and by British reluctance to have the work done by a non-British firm.

ETHNOGRAPHY. See ANTHROPOLOGY.

ETHNOLOGY. See ANTHROPOLOGY; EXPLORATION.

EUGENICS. See ZOÖLOGY.

EUROPEAN CORN BORER. See CORN; ENTOMOLOGY, ECONOMIC.

EUROPEAN FEDERAL UNION. See UNITED STATES OF EUROPE; INTERPARLIAMENTARY UNION; INTERNATIONALISM.

EVANGELICAL CHURCH. A denomination formed by the union of the Evangelical Association and the United Evangelical Church. The former was the outgrowth of a religious movement started in Pennsylvania in 1800 by the followers of Jacob Albright. In 1892 a number of ministers and members organized themselves into a separate denomination known as the United Evangelical Church. At length the growing conviction that the two churches should be reunited led to the appointment of commissions which drew up the so-called enabling act. The new organization was officially established in Detroit in 1922. At the time of merging the Evangelical Association had 167,416 members and the United Evangelical Church, 92,001. At the end of 1930 there was a total membership of 260,852, of whom 223,565 were in the United States and Canada. There were 12,989 persons received into membership during the year on profession of faith.

In 1930 the denomination had 23 conferences in the United States, 2 in Canada, 1 in Japan, 2 in Germany, and 1 in Switzerland. There were 2020 itinerant preachers and 411 local preachers. Sunday schools numbered 2803 with a total enrollment of 361,219 persons; 613 schools were in Europe, chiefly in Germany and Switzerland, with an enrollment of 42,068. The Christian Endeavor Society membership was 44,093. There were also 1627 woman's missionary societies, with a membership of 43,393. The total value of all church property was \$38,965,388. The amount of money raised during the year totaled \$7,082,013, an average of \$27.15 per member.

The chief schools of the denomination are: North Central College and the Evangelical Theological Seminary in Naperville, Ill.; Western Union College in Le Mars, Iowa; Albright College and the School of Theology in Reading, Pa. The denomination also maintains two orphanages and six old people's homes in the United States, as well as several hospitals. Official periodicals are the *Evangelical-Messenger* and *Christliche Bot-*

schafter, published in Cleveland, Ohio. A quadrennial general conference was held in Milwaukee, Wis., October, 1930.

EVANGELICAL SYNOD OF NORTH AMERICA, THE. A religious communion strictly evangelical in principle as historically crystallized from the Reformation of the sixteenth century and as embodied in the Reformed and Lutheran doctrinal statements, accepting these statements as far as they agree. Where they disagree the Evangelical Synod adheres to the pertinent passages of Holy Scripture and avails itself of the liberty of conscience prevailing in the Evangelical Church. The communion was founded in 1840 at Gravois Settlement, Mo., and was consolidated in 1877 with similar communions. It is organized into 19 districts and has a synodical administration, with legislative powers vested in the biennial district conferences and the quadrennial general conference; the congregations are self-governing in strictly local affairs.

The Evangelical Synod, in 1929, had 1303 congregations, 1119 pastors, and 258,228 individual members, also 1300 Sunday schools with an enrollment of 189,228. Money raised by the congregations for all purposes amounted to \$6,344,406, while the total value of church property was \$44,246,488. Missionary work was carried on in the United States, India, and Honduras. The home mission board, which reported a total income of \$110,478, employed 110 pastors in 136 fields in the United States. The foreign mission board, which reported a total income of \$205,922, employed 32 missionaries and 317 native helpers in India and 11 missionaries in Honduras.

The denomination supports three educational institutions: Eden Theological Seminary in Webster Groves, Mo.; Elmhurst College in Elmhurst, Ill.; and Oakwood Institute in Cincinnati, Ohio. It also publishes the following periodicals: *The Evangelical Herald*; *The Tidings*; *The Light Bearer*; and *Der Friedensbote*. The Rev. C. W. Locher, D.D., became president of the Evangelical Synod on the death of the Rev. J. Baltzer in 1930. Administrative offices of the general council are at 2013 St. Louis Ave., St. Louis, Mo.

EVOLUTION. See ANTHROPOLOGY; ZOÖLOGY.

EXCAVATIONS. See ANTHROPOLOGY; ARCHAEOLOGY.

EXCHANGE, FOREIGN. See FINANCIAL REVIEW.

EXHIBITIONS. See ART EXHIBITIONS.

EXNER, FELIX M. An Austrian meteorologist, died Feb. 7, 1930, in Vienna, where he was born Aug. 23, 1876. After studying at the University of Vienna, where he received the Ph.D. degree in 1900, he became assistant at the Zentralanstalt für Meteorologie und Geodynamik. In 1908 he was appointed professor of cosmical physics at the University of Innsbruck, returning to the University of Vienna in 1917 as director of the Zentralanstalt and professor of geophysics. His research work was concerned with the mechanics of changes of pressure and the correlation of meteorological factors in different parts of the world. He was joint editor of the *Meteorologische Zeitschrift* from 1909 to 1923 and was the author of *Dynamische Meteorologie* (1924).

EXPERIMENTAL PSYCHOLOGY. See PSYCHOLOGY.

EXPERIMENT STATIONS. See AGRICULTURAL EXPERIMENTAL STATIONS.

EXPLORATION. Popular interest in exploration in 1930 centred largely in the various

expeditions to the Arctic and Antarctic regions, discussed under POLAR RESEARCH. Nevertheless, collecting expeditions from the various museums were active in many regions of the world and explorers, aided in many cases by airplanes, materially extended man's knowledge of the globe. Archaeological and anthropological investigations are described under their separate headings. The centenary of the Royal Geographical Society was celebrated at its London headquarters during the week of Oct. 19, 1930. Many foreign scientists were in attendance. In connection with the centenary, the society published *The Record of the Royal Geographical Society, 1830-1930*, by Hugh Robert Mill. It was announced that the International Geographical Congress would meet in Paris, Sept. 16 to 24, 1931.

NORTH AMERICA. An expedition sponsored by the National Geographic Society and headed by Dr. Robert F. Griggs studied the processes of revegetation on Kodiak Island, Alaska, which was covered with a blanket of pumice by the eruption of Mt. Katmai in 1912. The exploration and prospecting of the Canadian North by airplane and by Canadian Mounted Police patrols continued during the year. Completion of the topographic survey of the United States by 1948 was envisaged in an intensified programme inaugurated early in 1930 by the Hoover Administration. Up to that time, only 44 per cent of the country had been mapped under the original programme adopted in 1880. Archaeological sites in Arkansas and New Mexico were visited by Dr. Clark Wissler of the American Museum of Natural History, New York City. The rugged and archaeologically unknown Carrizo Mountain region in northeastern Arizona was studied by an expedition headed by Charles L. Bernheimer and Earl Morris.

CENTRAL AMERICA. The Mayan ruins of Central America again attracted the attention of a number of scientists. During December, 1930, an expedition under the auspices of the Pennsylvania University Museum, using a twin-motored amphibian plane, explored three groups of ruins in British Honduras and Guatemala which evidently had not been examined before. Approximately 10,000 square miles of territory in Mexico, Guatemala, and British Honduras which had not been viewed previously from the air and which few foot parties had penetrated were reconnoitered by plane. Numerous photographs were taken. Ruins at El Gallo, 15 miles east of Lake Peten, Guatemala, were surveyed and many previously unreported features were noted. The expedition was headed by Percy Childs Madeira, Jr., of Philadelphia, with Gregory Mason as field leader. Dr. George C. Vaillant and Clarence Hay of the American Museum of Natural History conducted archaeological investigations in Mexico and Guatemala and Gilbert C. Klingel headed another expedition from the same museum which sailed in December, 1930, to spend a year and a half in the West Indies and Central America studying lizards. An expedition of the New York Zoological Society studied ocean life in the vicinity of Bermuda. Other ocean studies were conducted in the Bahamas by the Bacon-Miner Expedition of the American Museum of Natural History.

SOUTH AMERICA. An expedition of 11 members headed by Capt. Vladimir Perfilieff sailed from New York Dec. 26, 1930, to record native and animal life of the Matto Grosso region of Brazil

with sound films. The expedition was expected to require a year. The National Geographic Society dispatched an expedition under Dr. Ernest G. Holt to study geographic conditions in the virtually unknown region of the Brazil-Venezuela boundary. The deltas of the Orinoco and the Amazon were studied and photographed by another National Geographic Society expedition, which made an aerial survey of air routes along the east coast of South America. Accompanied by his wife and representatives of the American Indian Heye Foundation, Dr. Herbert Spencer Dickey ascended the Orinoco River to within 50 miles of its source. The Otley-Anthony South American Expedition of the American Museum of Natural History returned to New York in April, 1930, after having collected mammals from various localities and conducted a reconnaissance of a wide area. The party visited six South American republics, crossing the Andes six times. An archaeological reconnaissance of Ecuador and Peru was made by Dr. Ronald L. Olson of the same museum.

AFRICA. One of the most notable African explorations of 1930 was that made into the Libyan Desert in October and November by Major Bagnold, of the British Army Signal Corps. Accompanied by five British officers and officials and using three converted Ford automobiles, Bagnold covered 3100 miles of desert, of which 300 miles were through the supposedly impenetrable "sand sea," in search of the "lost oasis of Zerzura." The oasis was not found, but the expedition discovered the possibility of an automobile route directly south from Assiut to the Sudan, entered unexplored territory east of Selima, and found stone ruins of an ancient civilization about 150 miles north of Owenat.

ASIA. Returning to Washington in the spring of 1930, Dr. Joseph Rock reported on his explorations and extensive collections in Szechwan Province, China, as head of the National Geographic Society's 1927-30 Asiatic Expedition. The gorges of the Yatung River, at one place more than two miles deep, were visited by the expedition. The inaccessibility of the Himalayan peaks was again demonstrated by the failure of a party of European mountaineers, headed by Prof. G. O. Dyhrenfurth, in a dramatic effort to scale Kangchenjunga, which, with an altitude of 28,150 feet, is eclipsed only by Everest. Jonsong Peak, 24,340 feet high, was scaled by six members of the expedition on June 3 and June 8 in two parties. Although it was the highest mountain summit ever reached by man, a higher altitude was reached by the 1924 Everest expedition. For a stirring narrative of the expedition, consult F. S. Smythe, *The Kangchenjunga Adventure* (London, 1930).

Another fruitful season was spent in the fossil fields of the Gobi Desert by Roy Chapman Andrews. Forty complete fossils of shovel-tusked mastodons were found in one deposit. The Morden-graves Expedition to Russian Turkestan secured prized specimens of the saiga antelope and of the long-haired Siberian tiger for the American Museum of Natural History. Professor Kulik, head of the Russian Academy of Science Expedition to study the giant meteorite which fell in an isolated region of Siberia in 1908, returned to Moscow in October after spending two years in scientific observations of the phenomenon. He reported that all vegetable and animal life within a radius of nearly 100 miles of the meteorite had

been wiped out and that the surrounding terrain was pitted with enormous holes. Discovery of a glacier in the Sablya range of the Urals at 64°-65° north latitude by a Russian expedition under A. Aleshkov disposed of the general belief that the Urals possessed no permanent ice.

OCEANS. A complete survey of the South Sandwich Islands, lying 1200 miles east-southeast of the Falkland Islands, was made by scientists on board the new research ship of the Royal Geographical Society, *Discovery II*. The islands were found to be of little value. A report of deep-sea studies carried on by the ill-fated ship, *Carnegie*, of the Carnegie Institution of Washington, previous to its destruction in Western Samoa in 1929, was given before the American Geophysical Union meeting in Washington on May 1, 1930. Samples taken by the *Carnegie* showed that the Pacific waters were divided into three general layers—an upper layer where an active plant and animal life is maintained, a middle layer in which a decomposition of organic remains is taking place, and a lower layer which represents water conducted from polar regions.

See ANTHROPOLOGY, ARCHEOLOGY, GEOGRAPHIC SOCIETY, NATIONAL; and GEOGRAPHICAL SOCIETY, AMERICAN.

EXPOSITIONS. **IBERO-AMERICAN EXPOSITION.** This beautiful exposition was opened on May 9, 1929, in Seville and continued until June 21, 1930. On June 23 President Hoover sent a message of congratulation to the King of Spain on the success of the exposition "which had given such brilliant expression to the close association of Spain and all the Americas." The usual awards of diplomas of honor, gold and silver medals were made at the close of the event and the U. S. Department of Commerce received a grand prize and diplomas of honor went to the Bureau of Lighthouses, Bureau of Foreign and Domestic Commerce, Patent Office, and Motion Picture division of Foreign and Domestic Commerce, while gold medals were awarded to the Bureau of Standards, Division of Information of the Bureau of Mines, Bureau of Aeronautics, Radio Division, Steamboat Inspection Service, and Bureau of Navigation. Also a number of exhibitors from the United States received awards, notably grand prizes to the R. C. A. Victor Corporation, the General Motors Corporation, and the Chrysler Automobile Company. In October the United States Government formally presented to the city of Seville two pavilions which were used in the Ibero-American Exposition. The buildings were received by the Mayor, Count Acion, from American Vice Consul Smyth. The Barcelona Exposition was formally closed on January 15 as an international event, King Alfonso and Premier de Rivera participating in the ceremonies.

BELGIUM. Conspicuous among the features with which the centenary of the independence of Belgium was celebrated was a series of international exhibitions which were held in Antwerp and Liège and art exhibitions in Brussels and Mons.

Antwerp. This exposition occupied a triangular space of about 123 acres, less than a mile and a half distant from the centre of the city from which it was easily accessible by means of several street railways, motor busses, and other vehicles. The grounds were beautifully laid out with attractive parks and lovely lakes. The exhibits were organized in five sections as follows: (1) Colonial, including colonial products, and all kinds of articles destined for and used in the Colonies; (2)

Maritime, consisting of maritime works and navigation in every detail, as well as the management, working, and equipment of sea and inland ports; (3) Transport, comprising short distance transport, motor cars, air service, and aeroplanes; (4) Agricultural and Horticultural, with methods of instruction, clearing of land, forestry, dairy-farming, and flowers and decorative plants; and (5) Retrospective Flemish Art which was described as "the moral crowning of it all, as it will be a real glorification of the past." In addition there were on tracts of land comprising seven acres each a "Park of attractions," and a reproduction of "Old Antwerp," resembling the similar feature of the exposition held in Antwerp in 1894. The exposition was opened on April 26, by King Albert and members of the royal family who visited on foot the exhibits and the King made an address extolling the vitality of Belgium's industry and the extension of her commerce through Colonial undertakings. The exposition continued open until October 31.

Brussels. The capital city of Belgium contributed to the centenary two art exhibits, one of which was held in the Palais des Beaux-Arts, restricted to art work of the period 1830-1930 and was described as "the finest collection of Belgian painting ever assembled." The other was devoted to "Ancient Belgium Art," that is, to work done prior to 1830 and was also of superior character.

Liège. The exposition held in Liège was devoted chiefly to science and methods of imparting scientific instruction. The site chosen covered an area of 165 acres and was on both sides of the river Meuse, which was spanned by two bridges. There were ten large pavilions devoted to exhibits as follows: Mining, Metallurgy, Mechanics and Education; Electricity and Sciences; Transport and Engineering; Chemistry, Textile Manufacture; Belgian ministerial departments; Arms, motorcycles and bicycles; Glass and Ceramics; Festival Hall; Sugar; and Gas. These were in the modernistic style, with pyramidal setbacks and high straight façades. Special pavilions surrounded with gardens were erected by Czechoslovakia, Egypt, France, Italy, Japan, Luxemburg, Netherlands, Poland, Spain, and Switzerland, while Austria, Brazil, Chile, China, Colombia, Germany, Great Britain, Greece, Morocco, Rumania, Sweden, and Turkey were among the nations exhibiting in the International Pavilion. There was a special exhibition of old Walloon art, which included paintings and statues by old masters, crafts such as brass hammering and silversmith work, enamels, crystals, and pottery.

More than 40 international congresses of sciences were held during the life of the Exposition including the Thirteenth International Congress of Geology, the Congress of the French Association for the Advancement of Sciences, the Fifth International Congress of Physiotherapy, the annual meeting of the International Scientific Radiotelegraphy Union, the Juristic Congress of the International Wireless Committee, and the International Union for Pure and Applied Chemistry. The exposition was formally opened by King Albert and Queen Elizabeth on May 3 and continued until November 1.

Mons. In this ancient city that suffered so tragically in the invasion of 1914 there was assembled under the auspices of "Les amis du Hainaut," by Louis Pierore, a well-known connoisseur of art, a collection from the works of

the masters of the province of Hainaut comprising 115 canvases, supplemented by drawings, prints, manuscripts, sculpture, and applied art.

FUTURE EXPOSITIONS: Paris. A great international colonial and overseas exposition of which Marshal Lyautey was appointed president was under active preparation to be held in the Bois de Vincennes, just outside of Paris, in 1931. After the exposition the colonial palace was to serve as a permanent museum for French overseas territories. American participation was solicited and Congress appropriated \$250,000 for the cost of preparing an exhibit. Later the President appointed C. Bascom Slemp commissioner-general, who then visited Paris in September and under whose direction plans were prepared for a display of products from the colonial possessions of the United States. Later in the year Dean Wallace Brett Donham, of the Harvard Graduate School of Business Administration, was appointed President of the American Committee, which included George Harrison Phelps, of Detroit, Chairman; and Pierre C. Cartier, Dr. Alexis Carrel, Congressman Sol Bloom of New York, and Jean Tillier, director of the French Line, as Vice-Presidents. The United States was erecting on the Paris Exposition grounds, as the official American exhibit, a life-size replica of Mount Vernon, the home of George Washington, which was to be furnished and decorated in the original manner.

Chicago. In accordance with the provisions of the Act of Congress the President was authorized whenever \$5,000,000 had been raised by the citizens of Chicago to invite all foreign governments to participate in the world's fair to be held in that city in 1933, and when that information was conveyed to President Hoover by Rufus C. Dawes and Maj. L. R. Lohr, president and general manager respectively of the exposition, the State Department was instructed by President Hoover to issue the invitations. In January the plans for the Exposition began in part to be given to the public, and announcement was made that one of the islands was to be a colossal outdoor relief model of the United States on the scale of one foot to a mile, which means that it would be 3000 feet long and half that wide. But the exaggeration of the vertical relief was to be about ten times the national scale, making the Colorado Rockies 20 to 30 feet in height above the lake level and 10 to 20 feet above the ground on either side. Actual work on the buildings was begun on May 27 when the first shovel of dirt was dug for the Grant Park structure which was to be the \$300,000 Administration Building located east of the Outer Drive between the Field Museum and Soldier Field. It was to be 3 stories high, 340 by 120 feet, of concrete and asbestos board, with a metal ribbed roof. Construction of buildings for transport display was to follow.

Science was to play the leading rôle in exhibits of the Exposition because science had been the cause of most of the great transformations of the century of progress. Thus botanists were to tell the story of the growing mastery of man over the soil. The story of steel was to be set forth under the direction of men from great research laboratories. The astounding advances in medicine were to be recorded by eminent physicians, physiologists, chemists, and bacteriologists. Nor were the social sciences to be neglected. Every branch of knowledge was to be treated in its relation to human life. Science and invention were to be shown, throughout the hundred-year

period, altering the habits of the common man, changing the nature of the home, building great cities where rude log cabins used to stand, binding the continent together so that journeys which a century ago took months may now be accomplished in hours. The World's Fair trustees signified their intention of coöperating with the trustees of the Art Institute in the matter of erecting a building for the department of fine arts for the Exposition of 1933, which later should serve as the permanent home of the Art Institute of Chicago.

Regina. An international grain fair to be held during July 25–August 6, 1932, in Regina, Sask., was proposed by a Canadian organization of which the Governor-General is the patron. The purpose of the exhibition and conference was to stimulate interest in the improvement of the quality of cereal crops throughout the world and the dissemination of the latest knowledge on agriculture in general. Sixty foreign countries were invited to participate and prize money amounting to \$200,000 was promised. The financial support of Canada in 1929 was assured by a grant of \$100,000 and another of equal amount by the latest session of Parliament. The Canadian Pacific and the Canadian National Railways promised \$25,000 each, and aid was given by many other leading corporations of the Dominion. The exhibits were to be housed in a building being erected for the purpose at a cost of \$250,000 by the city of Regina and the Province of Saskatchewan.

Vancouver. It was proposed to hold a world's fair in British Columbia in 1936, and for that purpose the premiers of Manitoba, Saskatchewan, Quebec, and other provinces, as well as the authorities of the Canadian railways systems offered their cordial support. It was believed that a Vancouver world's fair would cost Vancouver and Canada not less than \$15,000,000. If it succeeded in cementing Asiatic contacts it would be worth to the Pacific Coast and to all North America a sum in industrial prosperity beyond calculation.

TRADE FAIRS: Leipzig. The usual spring fair was held during March 2–8. At the close it was claimed that an atmosphere of distinct optimism regarding business prospects for the near future prevailed in spite of political and economic uncertainties, and that preliminary reports indicated that unexpectedly good business was done, especially with regard to the sale of German products abroad. Home buying power, however, was naturally weak and limited owing to the depression that had prevailed for some time. It was claimed that 33,000 foreigners of which 3000 were from the United States, visited the fair, which was 12 per cent more than the previous year, but the number of exhibitors decreased by 11 per cent because the smaller German companies were unable to bear expenses.

The year 1930 marked the one hundredth anniversary of American participation in the fair, 10 merchants having crossed in 1830 in a sailing ship and then proceeded by order to the fair.

On May 31 an International Fur and Hunting Exposition was opened in Leipzig and was continued during the summer. The exhibits included virtually everything relative to the industry, and the display as a whole was regarded the most complete ever assembled. Five thousand square feet in the "Hall of the Nations" was occupied by the U. S. Departments of Commerce and Agriculture in a joint exhibit depicting the preservation, breeding, and trapping of the leading fur-

bearing animals of the United States and in giving statistical information on the size of the American fur industry and the methods by which it was carried on. The autumn fair was held during August 31 to September 6, at which there were about 8500 concerns exhibiting their wares. A special feature was an office where information about the tariff laws of all countries could be obtained. The theatres gave special performances.

Nantes. This famous fair, the fourth of its kind, held in Nantes, France, during Apr. 3–14, 1930, was of particular interest to manufacturers of agricultural implements and machinery, the automotive industry and firms generally whose products find their principal markets in agricultural districts.

EXTENSION WORK IN AGRICULTURE.

See AGRICULTURAL EXTENSION WORK.

FACTA, LUIGI. An Italian statesman, died Nov. 5, 1930, in Pinerolo, Piedmont, where he was born Sept. 16, 1861. On graduation from the University of Turin he began the practice of law, and in 1892 became Liberal Deputy for Pinerolo in the Italian Chamber. He entered official life in 1900 and was several times Under-Secretary of Justice, and of the Interior. In 1910 he became Finance Minister in the Luzzatti Cabinet and during 1911–14 in that of Giolitti. After supporting Giolitti in his stand for neutrality, he gradually became an interventionist, approving Italy's entry into the World War on the side of the Allies. He reentered the Government in 1917 as Minister of Justice in the Orlando Cabinet and as Finance Minister in the last Giolitti Ministry (1920–21). In February, 1922, he became Premier, holding that office until the march of the Fascisti on Rome in October. While Premier he presided over the International Economic Conference which met in Genoa in the spring of 1922. Although an anti-Fascist, he was made a senator for life in 1924 by his successor, Mussolini, in recognition of his "distinguished services to the State."

FAILURES. See BANKS AND BANKING; BUSINESS REVIEW; FINANCIAL REVIEW.

FAIRS. See EXPOSITIONS.

FALKLAND ISLANDS. A colony of the British Crown situated in the South Atlantic 300 miles east of the Strait of Magellan, consisting of: East Falkland, 2580 square miles; West Falkland, 2038 square miles; including in each case various adjacent small islands, about 100 in number. In addition to these are South Georgia, with an estimated area of 1000 square miles, and other dependencies, including the South Shetlands, the South Orkneys, the Sandwich group, and Graham Land, together with all unknown seas and lands of the Antarctic Ocean extending as far as the South Pole. Title to the Falkland Islands also is claimed by Argentina. The estimated population in 1928 was 2296 (998 females). In the same year the chief town, Stanley, had 988 inhabitants. Sheep raising, whaling, and seal hunting are the chief occupations. In 1928 there were 631,405 sheep pastured on 2,248,000 acres. Whale oil exported in 1928, amounted to 787,826 barrels. Total exports in 1928 were valued at £4,225,106; total imports, £583,087. In the same year revenue totaled £268,110; expenditure, £191,005. Governor in 1930, Arnold W. Hodson.

FAR EASTERN AREA. See SIBERIA.

FARM ACTIVITIES. See AGRICULTURE; AGRICULTURAL EXTENSION WORK; AGRICULTURE,

UNITED STATES DEPARTMENT OF; COÖPERATION; DAIRYING; HORTICULTURE; LIVESTOCK; ETC.

FARM BOARD. See AGRICULTURE; UNITED STATES under *Administration*.

FARM BUREAUS, FARM DEMONSTRATION, ETC. See AGRICULTURAL EXTENSION WORK.

FARM COÖPERATIVES. See AGRICULTURE.

FARMERS' COÖPERATIVE ASSOCIATIONS. See COÖPERATION.

FARMERS' INSTITUTES. See AGRICULTURAL EXTENSION WORK.

FARMER'S NATIONAL GRAIN CORPORATION. See AGRICULTURE.

FARM LAND BANKS. See FINANCIAL REVIEW.

FARM LAND VALUES. See SOILS.

FARMS, FARMING. See AGRICULTURE; AGRICULTURAL EXTENSION WORK.

FAROE ISLANDS. A group of 21 islands belonging to Denmark and lying midway between the Shetlands and Iceland. Area, 540 square miles; population in 1925, 22,835. The capital is Thorshaven, with 2896 inhabitants. Sheep farming and fishing are the main occupations. A Nationalist movement has been gaining strength for some years. On July 29, 1930, there were anti-Danish demonstrations in Thorshaven, during which the Danish flag in front of the Government buildings was replaced by the Faroe Islands flag. A resolution demanding complete independence was introduced into the local Parliament September 13 by the Nationalist party. It was opposed by the party in power. See DENMARK.

FASCISM. See GERMANY, ITALY, FRANCE, AUSTRIA, and FINLAND under *History*.

FAUNCE, WILLIAM HERBERT PERRY. An American clergyman and former president of Brown University, died in Providence, R. I., Jan. 31, 1930. He was born in Worcester, Mass., Jan. 15, 1859, and was graduated from Brown University in 1880 and from the Newton Theological Institution in 1884. Meanwhile, he was an instructor at Brown University (1881-82). He was pastor at the State Street Church in Springfield, Mass. (1884-89), and at the Fifth Avenue Baptist Church of New York City from 1889 to 1899. After 1899, Dr. Faunce was president of Brown University, retiring as emeritus president in June, 1929. He lectured in the divinity school of the University of Chicago in 1896-97, was a member of the board of resident preachers at Harvard University in 1898-99, and Lyman Beecher lecturer at Yale University in 1907-08. He was president of the World Peace Foundation. In addition to contributions to religious and educational periodicals, he wrote *The Educational Ideal in the Ministry* (1908); *What Does Christianity Mean?* (1912); *Social Aspects of Foreign Missions* (1914); *Religion and War* (1918); *The New Horizon of State and Church* (1918).

FEDERAL COUNCIL OF THE CHURCHES OF CHRIST IN AMERICA. An organization established in 1908 by 28 Protestant denominations to act for them in matters of common interest. At the end of 1930 it included most of the major Protestant denominations of the United States, as follows: Northern Baptist Convention; National Baptist Convention; Free Baptists; Seventh-Day Baptists; General Convention of the Christian Church; Churches of God in North America (General Eldership); Congregational Churches; Disciples of Christ; Evangelical Church; Evangelical Synod of North America; Friends; Methodist Episcopal Church;

Methodist Episcopal Church, South; African Methodist Episcopal Church; African Methodist Episcopal Zion Church; Colored Methodist Episcopal Church in America; Methodist Protestant Church; Moravian Church; Presbyterian Church in the United States of America; Presbyterian Church in the United States (South); Protestant Episcopal Church; Reformed Church in America; Reformed Church in the United States; Reformed Episcopal Church; United Brethren in Christ; United Presbyterian Church of North America; United Lutheran Church in America. Of these, all were full and official members with the exception of the United Lutheran Church, whose relationship was consultative, and the Protestant Episcopal Church, whose national council co-operates in certain specified areas of work.

The total number of local churches included in the constituency of the Federal Council according to the Census of Religious Bodies issued by the United States government in 1920, was 136,076; clergymen numbered 116,644 and the total communicant membership, 22,010,312.

The council, made up of members designated by the several denominations to act for them, meets quadrennially, the last meeting having been held in Rochester, N. Y., in 1928. It has an executive committee, of about 100, meeting annually. An administrative committee, including one or more official representatives from each of the denominations, meets monthly in New York City. This committee includes cooperative agencies carrying on specialized work for the churches, among them being the Home Missions Council, the Council of Women for Home Missions, the Council of Church Boards of Education, the American Bible Society, the Student Volunteer Movement for Foreign Missions, and the International Council of Religious Education. The council also serves as a connecting link between the churches and great social agencies, such as the American Red Cross, child welfare organizations, and the U. S. Bureau of Public Health.

Special tasks of the council are carried on by a group of commissions. The commission on evangelism develops a united approach to the evangelistic work of the churches. The commission on the church and social service is the centre through which the churches deal unitedly with social issues, giving particular attention to the developing of better relations in industry. The department of research and education issues a weekly information service bulletin in which contemporary social questions are discussed from the standpoint of Christianity; it also makes special studies from time to time, the outstanding one in 1930 being an investigation of the Centralia (Wash.) affair, involving the killing of four World War veterans by members of the I. W. W. on Armistice Day, Nov. 11, 1919.

The commission on church and race relations furthers efforts of the churches in promoting co-operation and good will between the white and colored peoples in the United States. The commission on international justice and good will endeavors to mobilize the Christian forces to abolish war by building up effective international agencies for coöperation, devoting its attention during 1930 especially to the development of projects for good will between children of the United States and other countries, to the study of the reduction of naval armaments, and to support of American membership in the Permanent Court of International Justice. Other commissions of

the council deal with Christian education, relations with religious bodies in Europe, religious work in the Canal Zone, army and navy chaplains, and relations with the Eastern churches.

The programme of the council is carried on with funds contributed in part by individuals interested in the work and in part by appropriations from the various denominations. The official organ is the *Federal Council Bulletin*, issued monthly and furnishing general religious news. Important publications during 1930 included: *The Handbook of the Churches*; *The Social Work of the Churches*; and *Rural Social Resources*. The council also sponsors a series of religious radio programmes, broadcast over a nation-wide hook-up of stations and including three Sunday afternoon addresses and a daily period of morning worship.

The officers of the council in 1930 were: President, the Rev. Francis J. McConnell, Methodist Episcopal bishop of the New York City area; chairman of the executive committee, the Rev. Walter L. Lingle, president of Davidson College; chairman of the administrative committee, the Rev. Luther A. Weigle, dean of the Yale Divinity School; chairman of the Washington committee, the Rev. William F. McDowell, Methodist Episcopal bishop of the Washington area; and chairman of the Western committee, the Rev. Herbert L. Willett. National offices are at 105 East Twenty-second Street, New York City, the general secretaries being the Rev. Charles S. Macfarland, the Rev. John M. Moore, and the Rev. Samuel McCrea Cavert. Offices also are maintained in the Woodward Building, Washington, and at 77 West Washington Street, Chicago.

FEDERAL FARM BOARD. See AGRICULTURE; HORTICULTURE.

FEDERAL PRISONS. See CRIME.

FEDERAL RECEIPTS AND EXPENDITURES. See PUBLIC FINANCE.

FEDERAL RESERVE BANKS. See BANKS and BANKING; also FINANCIAL REVIEW.

FEDERAL TERRITORY. An area of 940 square miles within the State of New South Wales, set aside in 1909 as the site of a Federal capital for the Australian Commonwealth. Estimated population Jan. 1, 1930, 8282, of whom about 6900 resided in the new capital city, Canberra. The Federal Government was moved to Canberra in 1927.

FEDERATED MALAY STATES. A group of states, constituting a large part of the Malay Peninsula, under the protection of Great Britain, comprising: Perak, with an area of 7800 square miles; population in 1921, 599,055; capital, Taiping; Selangor, 3156 square miles; population, 1921, 401,009; capital, Kuala Lumpur, the largest city in the federation with a population of 80,000; Negri Sembilan, 2550 square miles; population, 1921, 178,762; capital, Seremban; Pahang, 14,000 square miles; population, 1921, 146,064; capital, Kuala Lipis. The total area is 27,500 square miles; the population in 1921 was 1,324,890, including 510,821 Malays, 494,548 Chinese, 305,219 natives of India, 5686 Europeans, and 3204 Eurasians. The estimated population in 1928 was 1,533,611. The Government restricted Chinese immigration in 1930 to relieve unemployment. In 1927 there were 1179 schools with an average attendance of 69,861.

PRODUCTION. Rice, coconuts, rubber, sugar, tapioca, pepper, gambier, and nipa palms are the chief products. The main industries are the rais-

ing of rubber and the mining of tin. In addition to valuable timber, the forests produce resins, canes, and gutta-percha. Besides tin, gold and coal are mined extensively; other minerals found but not worked in quantities are lead, iron, copper, tungsten, manganese, silver, zinc, plumbago, mercury, arsenic, and scheelite. Electric power for the exploitation of the Perak tin mines was made available by the completion in 1930 of a hydroelectric project on the Perak river near Chen-deroh. In 1928, imports totaled £22,277,700 and exports £32,422,705. For 1927, comparative figures were £20,309,979 and £39,619,922. Estimates placed the 1929 rubber production at between 300,000 and 350,000 long tons.

FINANCE. Revenues in 1928 totaled £11,159,815 (£12,297,187 in 1927) and expenditures, £12,717,161 (£10,880,790 in 1927). The public debt on Jan. 1, 1929, stood at £9,255,000, part of which represented the contribution toward the Singapore naval base.

COMMUNICATIONS. The railway system of the whole peninsula south of Siam was government owned or controlled. In 1928 it extended 1111 miles, with about 81 miles of additional line under construction. The highways, which made possible intensive motor competition with the railways, consisted (1928) of 2672 miles of surfaced roads, and 105 miles of unsurfaced roads. There were in addition 1952 miles of bridle roads and paths. In the same year the telephone and telegraph lines aggregated 2926 miles.

GOVERNMENT. The states are under British protection, with the Governor of the Straits Settlements as *ex officio* High Commissioner. There is a native ruler, assisted by a British Resident, in each of the four states. High Commissioner in 1930, Sir Cecil Clementi.

FEDERATION OF LABOR, AMERICAN. See LABOR, AMERICAN FEDERATION OF.

FELTON, SAMUEL MORSE. An American engineer and railroad president, died in Chicago, Ill., Mar. 11, 1930. He was born in Philadelphia, Pa., Feb. 3, 1853, and was educated at the Massachusetts Institute of Technology. In 1868 he was a rodman on the Chester Creek Railroad, and in 1870-71 leveler and assistant engineer on the Lancaster Railroad. He was promoted rapidly, serving as chief engineer and then as general superintendent and general manager of several roads (1873-85). From 1885 to 1890, he was vice president of the Erie Railroad and, during 1890-92, president of the East Tennessee, Virginia & Georgia Railway. He was president of the Louisville Southern Railroad in 1891-93, and, at the same time, vice president of the Memphis & Charleston, the Mobile & Birmingham, and of the Knoxville & Ohio railroads. He was president and receiver for the Cincinnati, New Orleans & Texas Pacific Railway during 1890-99; receiver for the Columbus, Sandusky & Hocking Railway, 1897-99, and for the Kentucky and Indiana Bridge Company from 1893 to 1900. He was president of the Chicago & Alton Railroad from 1899 to 1907, and, during 1907-09, president of the Mexican Central Railway Company. In 1909 he became president of the Chicago Great Western Railroad, and chairman of the board in 1925. In 1916 he served as consulting engineer and railway adviser to the chief of engineers of the United States army, and on the entrance of the United States into the World War, was appointed director general of military railroads by the Secretary of War (1917). Before returning to the active presidency

of the Chicago Great Western Railroad, Mr. Felton served as chairman of the Port and Harbor Facilities Commission of the United States Shipping Board (1918-19). He was awarded the Distinguished Service Medal by the United States and the Cross of the Legion of Honor by France.

FENCING. International fencing competition in 1930 was featured by a series of matches for the Col. Robert Thompson Trophy held in London in July between American and British teams. The United States won by 25 points to 23. In the annual Amateur Fencers' League of America tournament held in New York City, Lieut. George C. Calnan, U. S. N., regained the national and open foils championships, defeating Joseph Levis of Boston, the 1929 titleholder, in both final matches. The national sabre championship was captured by Norman Cohn, of the New York Fencers' Club, and the national *épée* title by Marcel Pasche of the J. Sanford Saltus Club, New York.

Yale University won the team championship in the annual intercollegiate tournament for the fourth successive year, as well as the foils and the *épée* titles. The Columbia team retained the sabre title, while Yale and the Army tied for three-weapon honors. In the women's division, Mrs. Harold Van Buskirk won the national foils title, defeating Miss Marion Lloyd in the final, and the Salle d'Armes Vince team, New York, consisting of Miss Lloyd, Miss Dorothy Locke, and Miss Joy Magnus, captured the national team title. Nedo Nadi, famous Italian fencer, visited the United States during the year and engaged leading American fencers in impressive exhibitions.

FERGUSON, WILLIAM J. An American actor, died in Pikesville, Md., May 4, 1930. He was born in Baltimore, Md., June 8, 1849, and made his first appearance on the stage with a stock company at Ford's Theatre, Washington, in 1864 where a year later, when playing in *Our American Cousin*, he witnessed the assassination of President Lincoln. He was subsequently a member of Mrs. Conway's Stock Company in Brooklyn and of Wallack's Company. His first notable success was as Captain Redfern, the detective, in *Jim, the Penman*. With John T. Raymond he appeared in *Colonel Sellers* and with Richard Mansfield played character rôles, such as the valet in *Beau Brummell*. He later appeared in *Hazel Kirke*; *The Fatal Card*; *The Girl from Maxim's*; *The Brighton Burglary*; *A Modern Magdalen*; *Romco and Juliet*; *The Secret of Polichinelle*; *Friquet*; *The Walls of Jericho*; *The Love Letter*; *The Toy-maker of Nuremberg*; and *The Turtle*. At the time of his death he was engaged in writing his reminiscences, entitled *W. J. Ferguson's Sixty Years on the New York Stage, or a Peep Behind the Scenes*.

FERRANTI, SEBASTIAN ZIANI DE. An English electrical engineer and inventor, died in Zurich, Switzerland, Jan. 13, 1930. He was born in Liverpool, Apr. 9, 1864, and was educated at the Hampstead School, at St. Augustine's College, Ramsgate, and at University College, London. He began the construction of his first dynamo at the age of 14, and continued his interest in electricity. The S. Z. de Ferranti & Co. was established at Charterhouse Square in 1883, with Dr. Ferranti as engineer to the company. In 1886 he was appointed engineer to the Grosvenor Gallery Company, formed to light by electricity the Grosvenor Gallery. Under the direction of Dr. Ferranti, the station was moved to Deptford and expanded to form the London Electric Supply Corporation.

For this early high-tension station, he designed generators, transformers, mains, and all the complicated switchgear. Resigning his position as chief engineer to the London Electric Supply Corporation in 1892, he established at Hollinwood, near Manchester, a plant for the manufacture of electrical apparatus. He designed and installed the million-volt transformers later used in the National Physical Laboratory at Teddington. As president of the Institution of Electrical Engineers in 1910-11, he made an address notable for prophecies of trends in electrical development. In his work, Dr. Ferranti dealt with the difficult problem of generating and distributing electrical energy by alternating currents. His inventions, or suggestions for inventions, of electrical apparatus include the Ferranti alternator, the Ferranti rectifier, the Ferranti concentric cable, the Ferranti steam engine, the Ferranti switchgear, the Ferranti steam valve, the Ferranti electric house meter, an induction furnace, systems of electric welding, and high-speed spinning machinery for cotton mills. He was a fellow of the Royal Society.

FERRIS, JEAN LÉON GÉRÔME. An American painter, died Mar. 18, 1930, in Philadelphia, Pa., where he was born Aug. 8, 1863. He first studied with his father, Stephen James Ferris, and then with Christian Schuessle in Philadelphia. In 1884 he entered the Académie Julian in Paris, where he was a pupil of Bouguereau. After studying privately with Gérôme, he went to London, in 1888, to study historical painting at the South Kensington Museum. His best known work is a series of 60 paintings depicting outstanding events in American history, which he commenced in 1900 and which, since 1917, has been housed in Congress Hall, Philadelphia. It is characterized not only by able technique but by skill in differentiation of type. Among the important titles are: "The Eve of Discovery"; "The Mayflower Compact"; "The First Thanksgiving"; "The Landing of William Penn"; "The Bell's First Note"; "Writing the Declaration of Independence"; "The Darkest Hour, Valley Forge"; "The Ship That Sunk in Victory"; "Washington's Inauguration"; "Lincoln and the Flag"; and "Let Us Have Peace." Mr. Ferris also made a special study of early types of American vehicles, ships, and ordnance, models of which are displayed in the Congress Hall Museum.

FERSMANITE. See MINERALOGY.

FERTILIZERS. In the neighborhood of 650 firms were engaged in the manufacture of fertilizers and fertilizer materials during the year in the United States. The fertilizer industry continued to utilize the rapid developments in the production of fixed nitrogen compounds and of concentrated fertilizers. The constantly increasing use of inorganic fertilizer materials, the tendency to eliminate low-grade fertilizers, and the increased use of synthetic fertilizer salts continued and expanded, and were gradually transforming the fertilizer industry into a chemical industry. Researches and investigations were concentrated largely on the development of new manufacturing processes and the further improvement of those already in use, the production of new fertilizer compounds, and the development of new sources of raw materials and of the utility of by-products from other industries for this purpose.

Remarkable progress was made in the development of synthetic fertilizer materials, especially in the fixation of atmospheric nitrogen. Accord-

ing to the Bureau of Chemistry and Soils of the U. S. Department of Agriculture the possibility of cheapening the cost of ammonia production seemed most promising through the development of the synthetic ammonia process. Considerable progress was made in determining the mechanism by which ammonia catalysts function, and iron catalysts appeared to be particularly active in ammonia synthesis. New catalysts also were developed which operate at lower temperatures and give more complete conversion. Progress was made in the production of urea from ammonia and carbon dioxide, and the factors influencing the conversion of ammonium carbonate to urea and the means of controlling them in commercial production were more completely defined.

Information continued to accumulate on the formation of the nitrogen oxides and on the effects of certain poisons on the catalysts which was of both scientific and industrial importance in nitrate fertilizer production. Evidence also was obtained that light of a very short wave length will serve as an activator of nitrogen. The total supply of nitrogen fixed commercially continued to be but a small percentage of that constantly being fixed in or added to the soil by natural agencies. It was determined in this connection that the fixation of nitrogen by *Azotobacter* requires no appreciable quantity of energy, but the presence of either calcium or strontium is essential.

The United States was still dependent in large measure upon imports for its nitrogen supply. Agriculture continued to be the largest user of nitrogen and led also in the variety of forms used. The growth of the world's fixed nitrogen industry was not so marked. The world's largest air fixation plant in Germany, for example, was reported to have produced less nitrogen than at any time since reaching its capacity, its output being little more than one-half that of the previous year. The principal British fertilizer export was ammonium sulphate which showed a substantial increase. Certain French companies started the direct production of calcium nitrate and nitro-phosphate by the gas-oven arc process.

The German potash industry appeared to be operating at approximately the same level as during the previous year, and its most notable competitor was the production in France. The constant gain in potash output by the United States, Poland, and Spain did not seriously threaten the German position. Some Russian potash was offered in the world markets for delivery from the Solikamsk mines in 1931.

Promising new potash deposits were encountered in the Province of Navarra in Spain, the stratum being nine meters thick. Progress in the development of American potash was encouraging according to the Bureau of Chemistry and Soils, the current annual production of potash salts being more than 100,000 tons valued at \$3,000,000. However, the United States still spends about \$23,000,000 annually for imported salts, of which \$18,000,000 is for agricultural potash.

Information continued to accumulate on low-cost methods for the production of potash from available potash bearing minerals. *The Report of the Secretary of Agriculture* for 1930 stated that the feasibility of volatilizing the potash from leucite by smelting with special reagents, and of subsequent recovery of the potash in concentrated form was demonstrated. This can be done to special advantage simultaneously with the volatilization of phosphoric acid. The materials thus ob-

tained can be combined to form potassium phosphate, a highly concentrated fertilizer. Enormous deposits of leucite exist in Wyoming along with plentiful supplies of high-grade phosphate rock and cheap fuels. The alunite of Utah appeared to be a promising raw material for potash and alumina, and progress was made in the development of improved extraction methods that increase the latent potash resources of the raw material and the commercial quality of the alumina. The commercial possibility also was indicated of effecting practically complete separation of the potash as sulphate from the associated calcium and magnesium compounds of Texas polyhalite by ammonia-carbon-dioxide treatment, according to the Bureau of Chemistry and Soils. Ammonium sulphate is produced as a by-product.

Phosphoric acid represented an item of expense in American fertilizer practice almost as great as nitrogen, according to the Bureau of Chemistry and Soils, and efforts were continued to develop methods for more economically converting phosphate-bearing minerals into suitable available fertilizer materials with the conservation of important by-products. Studies of the complete chemical composition of the various grades and types of phosphate rock were continued to provide a basis for this work. Information continued to accumulate regarding the relation of the various impurities of phosphate rock, such as carbonates, sulphates, and fluorine, to the chemical composition of the natural rock, it being shown that fluorine is definitely combined as a part of the phosphate bearing mineral. Further evidence also was obtained that furnace methods for the production of phosphoric acid will lower costs, allow the utilization of low-grade materials now discarded, and produce highly concentrated products. Consideration also was given to possible improvements in the production of phosphoric acid by the sulphuric acid process, and some evidence was obtained of the possibility of substituting dilute phosphoric acid for sulphuric acid in the production of phosphatic fertilizers. Fluosilicates, by-products of phosphate production, offered possibilities as substitutes for arsenic compounds in the manufacture of insecticides. The Netherlands superphosphate industry continued to occupy a predominant position in the world market. New deposits of phosphates aggregating 5,000,000 metric tons were opened in Algeria.

Interest continued in the development of concentrated fertilizers containing two or three of the essential nutritive elements and 30 per cent or more of plant food, attention being devoted especially to ammoniated superphosphate. Work was continued on the preparation of potassium nitrate, it being discovered that this salt may be produced by the treatment of potassium chloride with the oxides of nitrogen. The Department of Agriculture and the State agricultural experiment stations continued the experimental comparison of concentrated fertilizers with ordinary strength fertilizers on prominent soil types, bringing out the superiority of the former in many cases, especially on soils of good water-holding capacity. The development of special fertilizer-distributing machines adapted to the concentrated materials also continued with considerable success.

Fertilizer consumption in the United States was again estimated at approximately 8,000,000 short tons during 1930. This continued to be considerably below the potential productive capacity of

the factories. The United States was again below European countries in the profitable use of fertilizers. Germany continued to lead the world in the consumption of fertilizers, it being estimated by the U. S. Department of Commerce that approximately one-fourth of the total world consumption of chemical plant food is in Germany. German consumption during the year ended April 30, 1930, established a new high record in spite of depressed agricultural conditions. According to Horace Bowker (*The American Fertilizer*, Vol. 7 (1930) No. 11, pp. 23-26) crops in the United States take out of the soil about 5.75 billion pounds more phosphorus, nitrogen, and potash than is replaced. C. J. Brand (*The American Fertilizer*, Vol. 73 (1930) No. 11, pp. 26-28d) stated that the possibilities of expanding fertilizer consumption in the United States were relatively unscratched. Although the United States had 340,000,000 acres of crop land more than Germany, she used 346,000 tons less of plant food.

According to the latest available figures there was a general decline in the production of fertilizer materials during the year. Although superphosphate production during October, 1930, was below the level of October, 1929, manufacturers' stocks of superphosphate increased from September to October, 1930, and were 15 per cent greater than during the same period of the previous year. On the other hand ammonium sulphate production declined each month following April, 1930, and during October was 26 per cent less than for October, 1929. There was again a decided decrease in imports of fertilizers and materials, the decline being very rapid during the year. Imports were at the lowest level since 1926. Imports of nitrogenous materials showed the greatest decline. It appeared, however, that the volume of trade during the year approximated that of 1929. The United States export tonnage of rock phosphate during 1930 exceeded that of any year since 1913. Exports of by-product ammonium sulphate were curtailed during the year, and the imports rose sharply in the last quarter. Probably the outstanding event of the year was the agreement reached between European producers of atmospheric nitrogen and representatives of the Chilean nitrate industry designed to limit production, avoid competition, and maintain prices. See CHILE under *Production*.

BIBLIOGRAPHY. Sources of information regarding progress in the production and use of fertilizers are numerous. Current progress is recorded in *The Fertilizer Review* published by the National Fertilizer Association at Washington, D. C., and in *The American Fertilizer* published in Philadelphia, Pa. Statistics of the fertilizer trade and industry will be found in reports of the Bureau of Foreign and Domestic Commerce, especially in the weekly *Commerce Reports*, and of the Census Bureau of the Department of Commerce. Other publications of interest were: C. J. Brand, *Recent Developments in the Fertilizer Industry* (Washington, D. C., 1930); J. Weigert and F. Fürst, *Sorte und Düngeung* (Berlin, 1929); and J. König, *Die Ermittlung des Düngerbedarfs des Bodens* (Berlin, 1929).

FESTIVALS. See MUSIC.

FEWKES, J(ESSE) WALTER. An American ethnologist, died in Forest Glen, Md., May 31, 1930. He was born in Newton, Mass., Nov. 14, 1850, and was graduated from Harvard University in 1875, taking his Ph.D. degree there in 1877. After pursuing the study of zoölogy further

at the University of Leipzig, he was appointed in 1881 assistant in the Museum of Comparative Zoölogy at Harvard. In 1890 he became editor of the *Journal of Ethnology and Archaeology*, and five years later was appointed ethnologist with the Bureau of American Ethnology which was under the direction of the Smithsonian Institution. His first field experience was as director of the Hemenway Southwestern Archaeological Expedition in Arizona from 1891 to 1894. Subsequently, during 1908-26, he was in charge of the excavation and repair of prehistoric cliff dwellings and Indian pueblos in Mesa Verde National Park, Colo.; Casa Grande and Pueblo, Ariz.; and Weeden Island, near Tampa, Fla. He was promoted to be chief of the Bureau of American Ethnology in 1918, serving until his resignation in 1928. He was also president of the American Anthropological Society during 1911-12 and was vice president of several other scientific societies. The LL.D. degree was conferred on him by the University of Arizona in 1915. In 1892 he was created a knight of the Order of Isabella the Catholic of Spain. His works include: *Snake Ceremonials at Walpi* (1894); *Archæological Expedition to Arizona* (1895); *Two Summers' Work in Pueblo Ruins* (1897); *Aborigines of Porto Rico and Neighboring Islands* (1907); and *Casa Grande, Arizona* (1913).

FICTION. See LITERATURE, ENGLISH AND AMERICAN; FRENCH LITERATURE; GERMAN LITERATURE; ITALIAN LITERATURE; SCANDINAVIAN LITERATURE; SPANISH LITERATURE.

FIDELITY AND SURETY INSURANCE. See INSURANCE.

FIELD ATHLETICS. See ATHLETICS, TRACK AND FIELD.

FIELTIZ, fē'lits, ALEXANDER VON. A German composer, died in Bad Salzungen July 30, 1930. He was born in Leipzig, Dec. 28, 1860, and studied piano in Dresden under Schulhoff and composition under Kretschmer. After serving as orchestra leader in Zürich, Lübeck, and Leipzig, he went to live in Capri, Italy, in 1887 on account of his health. After his return to Germany in 1897 he was for some time a teacher in Stern's Conservatory in Berlin. During 1905-08 he taught at Ziegfeld's Musical College in Chicago, and also conducted the Chicago Symphony Orchestra, organized by himself and not connected with the orchestra of the same name (which then was the Theodore Thomas Orchestra). In 1908 he returned to Stern's Conservatory, and in 1915 became director. He was chiefly known as composer of songs, of which the cycles *Mädchenlieder* and *Eliland* are the best known. He was also the composer of two suites for the orchestra and the operas *Vendetta* (1891) and *Das Stille Dorf* (1900).

FIGDOR SALE. See ART SALES.

FIJI ISLANDS. A British Crown Colony, comprising a group of about 250 islands in the South Pacific, of which some 80 are inhabited. Area, 7083 square miles; population on Dec. 31, 1928, including Rotuma, estimated at 176,793 (157,266 in 1921). Of the 1928 population, 4569 were Europeans, 91,029 Fijians, and 70,996 Indians. The capital, Suva, on the south coast of Viti Levu, had 1741 inhabitants in 1921.

Bananas, coconuts, maize, sugar cane, tobacco, rice, pineapples, cotton, and timber are the principal products. In 1927, imports and exports were £1,408,609 (£1,483,169 in 1928) and £1,635,935 (£2,633,238), respectively. Revenue in 1929

amounted to £677,944 and expenditures to £642,124. On Jan. 1, 1930, the public debt stood at £944,878. The total tonnage entered and cleared from the ports of the islands in 1928 was 1,353,049. A private narrow-gauge railway runs from Tavua 120 miles to Sigatoka. Executive power is vested in a governor, appointed by the Crown, who is aided by an executive council and a legislative council, of which the governor is president. The governor is also high commissioner for the Western Pacific. Governor in 1930, Sir Murchison Fletcher (appointed 1928).

FILM WORK. See MOTION PICTURES; PHOTOGRAPHY.

FINANCE. See PUBLIC FINANCE, and sections under *Finance* for each country.

FINANCIAL REVIEW. Business in the United States during the year 1930 was characterized by fairly steady decline to an apparent low point in November. Inasmuch as December is always a difficult month for comparisons because of the existence of a large holiday trade, it would be out of the question to say whether the low point of November would be the expected "turning point" in the post-panic depression or not. But the steady decline of business until toward the end of the year was an accomplished fact—some indexes of production showing that the total turnover for the month of November was the smallest since 1908. This course of development was considerably masked by the fact that during the year extended effort was made to put forth encouraging statistics and statements of business operations, in the endeavor to have it appear that satisfactory progress toward recovery was being generally made. In spite of these efforts, the decline continued with a volume of business toward the close of the year which amounted to a little more than 75 per cent of pre-panic figures, while corporation net earnings lost about 30 per cent and railroad net earnings were off 30-33 per cent.

STOCK EXCHANGE OPERATIONS. Transfers on the N. Y. Stock Exchange reached a total of approximately 800,000,000 shares for the year or about 30 per cent below the 1,125,000,000 shares transferred during 1929. The total volume of bonds was a little over \$3,000,000,000 as against not far from the same figure a year before. While it was true that there were no such remarkable turnovers on individual days as had occurred in 1929, the process of liquidation and of "unloading" which was going forward in the market at intervals throughout the year resulted in some heavy days' transactions, there being a total of 93 days on which transfers exceeding 3,000,000 shares each, took place. Upon 45 occasions dealings exceeded 4,000,000 shares and a considerable number of intermediate days of heavy activity were also registered. On 18 days transfers were over 5,000,000 shares and on 2 days over 6,000,000 each. It was unfortunately true, however, that most of this selling was for the purpose of realizing so that it did not prove profitable to financial houses and the value of Stock Exchange seats toward the end of the year fell as low as \$86,000.

Reviewing the experience of the stock market during the 12 months, it becomes evident that three major periods may be recognized. The first of these covered the months of January-May inclusive and were characterized by efforts to produce a kind of after panic boom. Many stocks rose in value materially, recovering a substantial percentage of the ground that they had lost in

the autumn of 1929. This trading was partly artificial,—brought about for the purpose of liquidating holdings on as favorable a basis as practicable. In part, it was due to the erroneous expectations of traders who were of the opinion that the panic would be short-lived and that recovery would assert itself very promptly.

At the end of the first period, consideration of very unfavorable earnings statements issued by corporations had begun to show conclusively that the advance of business toward its old levels was not going forward as had been predicted or asserted. Accordingly a fresh selling movement started, gained great headway during June, and went on sporadically during the summer and early autumn. It was accentuated and accelerated by the fact that earnings statements continued to become less and less satisfactory as time went by, the summer quarter particularly proving disappointing. With the autumn, a third period in the history of the exchange opened. In this, special banking influences began to exert themselves, growing out of the fact that bank failures had become numerous and were also on the average considerably larger per unit. In consequence of such failures, it had become necessary to "unload" security holdings or in other cases to sell them in order to provide resources which would permit the banks to meet demand obligations and so avoid failure. From this developed a special weakness in bonds during the autumn with stocks also declining sharply.

The banks in general had at the opening of the year been inclined to feel that they ought to make a strong attempt at liquidation. During January and February, such efforts were obviously in the process of making. They were, however, set at naught by the great flood of new issues which had been poured out upon the market, and by the continuing succession of issues which absorbed the entire savings capacity of the nation, beside leaving a balance which had to be carried by more and more increase of bank credit. The efforts of the banks to bring about liquidation gradually slowed down. During the latter part of the spring and early summer, there was a rearrangement of credit in which brokers' loans were gradually transferred to the form of direct bank loans on securities. During the latter part of the season, with this adjustment nearly completed, many investors began to desire to purchase securities at attractive prices, and fresh demands were made on the banks for accommodations. The result was that, taking the year as a whole, the volume of loans protected by securities was very little reduced, the maximum cut being only about \$400,000,000 out of a total of about \$7,500,000,000. At the same time, the banks increased their own investment holdings, with the result that at the close of the year, the total amount of bank funds engaged in investments and loans on securities aggregated nearly as much as at the opening of the year. It might fairly be said, therefore, that practically no progress had been made in relieving the banks during the twelve months. See BANK AND BANKING.

No account of the banking situation of 1930 or for that matter of financial conditions at large would be complete without a summary of the extent to which commodities were a factor in speculation and the speculative use of bank loans. The year had begun with a very large overstock of staple commodities such as copper, wheat, sugar, coffee, and a great variety of staples of other

kinds. Early in the year, the arrangements for price control of these items had begun to break down. Copper sank to 10 cents during the year after a first break during the spring which set it back to 14 cents. Wheat fairly steadily declined to a level of 75 cents in Chicago. The great stock of automobiles which had been over-produced just prior to the beginning of 1930 was gradually worked off, but the output for the year which

activity during the third quarter followed by almost complete stagnation in the fourth quarter. The accompanying tabulation gives the results for the year as a whole, according to the *New York Journal of Commerce* compilation.

MOVEMENT OF GOLD. The movement of gold out of the United States, which had been in progress at the opening of January, did not long continue but shortly slowed and then came to a stop. Imports of gold on a sporadic basis then set in, and continued at intervals for the remainder of the year with the result that about \$300,000,000 net increase was the result of the year's operations. The Federal Reserve Bank statement for the close of the year showed that approximately all the imported gold had been transferred to the Reserve System. Throughout the year the question of what is called "free gold" at Reserve Banks (the surplus of gold held above that required to furnish the legal holdings behind notes and deposits) continued to receive extended discussion and investigation, with the result that the narrowness of this free gold became more than ever apparent. Such narrowness resulted from the fact, especially, that the distribution of the gold among reserve banks was such as to render a considerable part of it unavailable at points where it was wanted. The export balance of the United States remained about the same as during the preceding year, owing to the fact that despite a great falling off in the total volume of trade, there was about the same relationship as before, between the two branches of the business.

The movement of silver during the year was, however, more troublesome than that of gold. Due to the great fluctuations in its price, artificial currents of silver were set up and tended strongly to disturb trade with the far East.

The tables on page 264 summarize the situation.

INTERNATIONAL BALANCE. The export business of the United States was considerably interfered with during the year 1930 by reason of a disturbance of conditions following upon the panic of 1929 and the later spread of this panic practically to all parts of the world. Very early in the year, the movement of goods out of the country which had already suffered a severe setback during the latter part of 1929 underwent

SUMMARY OF NEW FINANCING

| | 1930 | 1929 |
|---------------------------|-----------------|-----------------|
| FOREIGN | | |
| Government and municipal: | | |
| Bonds | \$688,923,588 | \$178,816,161 |
| Corporate: | | |
| Bonds | 414,398,000 | 251,000,000 |
| Stocks | 19,100,000 | 33,508,847 |
| Total | 433,498,000 | 284,503,847 |
| Total foreign .. | 1,122,421,588 | 463,320,008 |
| DOMESTIC | | |
| State and municipal: | | |
| Bonds | \$1,064,402,752 | \$1,074,476,451 |
| Railroad: | | |
| Bonds | 814,822,000 | 466,438,000 |
| Stocks | 172,469,670 | 62,221,620 |
| Total | 986,791,670 | 528,659,620 |
| Public utility: | | |
| Bonds | 1,619,360,600 | 920,214,500 |
| Stocks | 609,498,984 | 638,930,226 |
| Total | 2,228,859,584 | 1,559,144,726 |
| Industrial: | | |
| Bonds | 629,700,000 | 579,998,700 |
| Stocks | 452,903,506 | 1,998,865,351 |
| Total | 1,082,603,506 | 2,578,364,051 |
| Financial: | | |
| Bonds | 214,015,000 | 339,569,500 |
| Stocks | 252,497,538 | 1,934,926,607 |
| Total | 466,512,538 | 2,274,496,107 |
| Farm loan: | | |
| Bonds | 22,000,000 | ..... |
| Real estate: | | |
| Bonds | 87,974,400 | 189,272,500 |
| Stocks | 6,000,000 | 87,099,235 |
| Total | 93,974,400 | 276,371,735 |
| Domestic bonds, total .. | 4,451,774,752 | 3,569,969,651 |
| Domestic stocks, total .. | 1,493,369,698 | 4,721,543,039 |
| Total domestic .. | \$5,945,144,450 | \$8,291,512,690 |
| Grand total .. | \$7,067,566,038 | \$8,754,832,698 |

PROPORTION OF REFUNDING—1930

| | New capital | Refunding | Total |
|--------------------------------|-----------------|---------------|-----------------|
| Foreign: | | | |
| Government and municipal | \$589,908,588 | \$99,015,000 | \$688,923,588 |
| Corporate | 408,498,000 | 25,000,000 | 433,498,000 |
| Domestic: | | | |
| State and municipal | 1,031,119,752 | 33,283,000 | 1,064,402,752 |
| Railroad | 824,777,170 | 162,014,500 | 986,791,670 |
| Public utility | 1,819,298,364 | 409,561,220 | 2,228,859,584 |
| Industrial | 898,115,236 | 184,488,270 | 1,082,603,506 |
| Financial | 427,267,538 | 39,245,000 | 466,512,538 |
| Farm loan | 22,000,000 | ..... | 22,000,000 |
| Real estate | 91,724,400 | 2,250,000 | 93,974,400 |
| Total | \$6,112,709,048 | \$954,856,990 | \$7,067,566,038 |

had been in 1929 above 5,500,000 cars was cut to 3,500,000. In these circumstances, and with no apparent tendency to reduce over-produced stocks of commodities in general, the year inevitably saw a shrinkage of prices, and a steady downward drive of the value of shares which were dependent upon these staple articles, for their future prospects.

NEW ISSUES. New issues during 1930 should have been greatly reduced in amount but during the first half of the year, ran on at about the same rate as during the preceding year. The first six months saw a total on the market of about \$4,500,000,000. Then came a sharp reduction of

another recession, so that it was evident, by the middle of the year, that trade had fallen behind by about 20 per cent. The close of the 12 months practically indicated a general decline of about 25 per cent of the year. This shrinkage was due to two facts—a natural falling off resulting from the reduction of buying power in foreign countries, and an artificial reduction due to the shrinkage in commodity prices which made the export value of American products appear decidedly less important than would have been the case had shipments been priced at somewhat the same level as in the preceding year. Exports of manufactured goods (except automobiles which fell off 44 per

ANALYSIS OF CHANGES IN MONETARY GOLD STOCK

(From Federal Reserve Bulletin)
[End-of-month basis. In millions of dollars]

| Month | Gold stock at end of month | Increase (+) or decrease (-) during month | | | |
|-----------------------|----------------------------------|---|--|-------------------------------------|---|
| | | Total | Through net gold import or export | Through earmarking operations | Through domestic production, etc. ^a |
| 1929—November | 4,367 | - 19.2 | - 23.2 | + 1.0 | + 2.3 |
| December | 4,284 | - 82.9 | - 64.4 | - 22.0 | + 3.5 |
| Total (12 mos.) ..... | .... | + 142.2 | + 175.1 | - 55.4 | + 22.7 |
| 1930—January | 4,293 | + 8.8 | + 4.0 | + 2.5 | + 2.3 |
| February | 4,355 | + 61.9 | + 60.0 | + 0.0 | + 1.9 |
| March | 4,423 | + 68.2 | + 55.5 | + 13.0 | + 0.3 |
| April | 4,491 | + 68.5 | + 65.7 | + 0.5 | + 2.3 |
| May | 4,517 | + 25.9 | + 23.5 | + 2.0 | + 0.5 |
| June | 4,535 | + 17.6 | + 13.9 | + 2.0 | + 1.7 |
| July | 4,517 | - 18.4 | - 19.6 | - 3.0 | + 4.3 |
| August | 4,501 | - 15.5 | - 19.6 | + 0.0 | + 4.2 |
| September | 4,511 | + 10.2 | + 2.5 | + 4.0 | + 6.4 |
| October | 4,535 | + 23.3 | + 26.4 | - 6.1 | + 3.1 |
| November | 4,571 | + 36.3 | + 33.3 | - 2.1 | + 3.8 |
| December | 4,593 | + 21.5 | + 30.6 | - 15.2 | + 6.0 |

^a For detailed explanation of this figure, which is derived from preceding columns, see Federal Reserve Bulletin for December, 1928, p. 831.

cent) held up unexpectedly well, some specialties even increasing in volume. The decline in imports which ran substantially parallel with that of exports resulted in a net balance not very far from that of the preceding year, the total being in round numbers \$4,000,000,000 exported and \$3,260,000,000 imported, or an excess of approxi-

mately \$740,000,000 in exports over imports.

In the accompanying table, figures relating to the export-import situation of the United States are furnished on a monthly basis. The so-called balance of international payments for the preceding year is also furnished as issued by the Department of Commerce in its usual annual survey.

UNITED STATES FOREIGN TRADE AND GOLD MOVEMENTS

| 1929 | Merchandise | | Exports | Gold | Imports |
|-----------------|---------------|---------------|--------------|--------------|---------|
| | Exports | Imports | | | |
| January | \$488,023,000 | \$368,897,000 | \$ 1,378,000 | \$48,577,000 | |
| February | 441,751,000 | 369,442,000 | 1,425,000 | 26,913,000 | |
| March | 489,849,000 | 383,818,000 | 1,635,000 | 26,470,000 | |
| April | 425,264,000 | 410,666,000 | 1,594,000 | 24,687,000 | |
| May | 385,013,000 | 400,149,000 | 467,000 | 24,097,000 | |
| June | 393,176,000 | 353,403,000 | 550,000 | 30,762,000 | |
| July | 402,861,000 | 352,980,000 | 807,000 | 35,524,000 | |
| August | 380,564,000 | 369,358,000 | 881,000 | 19,271,000 | |
| September | 437,163,000 | 351,304,000 | 1,205,000 | 18,891,000 | |
| October | 528,514,000 | 391,063,000 | 3,805,000 | 21,321,000 | |
| November | 442,254,000 | 338,472,000 | 30,289,000 | 7,123,000 | |
| December | 426,551,000 | 309,809,000 | 72,547,000 | 8,121,000 | |
| 1930 | | | | | |
| January | 410,838,000 | 310,968,000 | 8,948,000 | 12,908,000 | |
| February | 348,835,000 | 281,707,000 | 207,000 | 60,198,000 | |
| March | 369,601,000 | 300,460,000 | 290,000 | 55,768,000 | |
| April | 331,732,000 | 307,824,000 | 110,000 | 65,835,000 | |
| May | 320,048,000 | 284,683,000 | 82,000 | 23,552,000 | |
| June | 294,659,000 | 250,343,000 | 26,000 | 13,938,000 | |
| July | 266,650,000 | 220,558,000 | 41,529,000 | 21,889,000 | |
| August | 297,761,000 | 218,417,000 | 39,332,000 | 19,714,000 | |
| September | 312,220,000 | 226,352,000 | 11,133,000 | 13,680,000 | |
| October | 327,169,000 | 247,324,000 | 9,266,000 | 35,635,000 | |
| November | 289,000,000 | 201,700,000 | 5,008,000 | 40,159,000 | |
| December | 273,000,000 | 209,000,000 | 36,000 | 30,647,000 | |

ESTIMATED BALANCE OF INTERNATIONAL PAYMENTS OF THE UNITED STATES: CALENDAR YEARS 1928 (REVISED) AND 1929 (SUBJECT TO REVISION)

[In millions of dollars]

| Classes of international transaction | 1928 (revised) | | | 1929 | | |
|---|----------------|--------|---------|---------|--------|---------|
| | Credits | Debits | Balance | Credits | Debits | Balance |
| COMMODITY TRADE | | | | | | |
| Merchandise exports and imports (as reported) | 5,128 | 4,091 | + 1,037 | 5,241 | 4,400 | + 841 |
| Silver | 87 | 68 | + 19 | 83 | 64 | + 19 |
| Bunker coal and oil sales to foreign vessels | 50 | 11 | + 39 | 46 | 11 | + 35 |
| Ship chandling, ship repairs, and tonnage dues | 45 | 34 | + 11 | 54 | 37 | + 17 |
| Sale of vessels | 8 | 8 | ..... | 8 | 10 | - 7 |
| Unrecorded parcel-post shipments | 20 | 20 | ..... | 20 | 20 | ..... |
| Adjustments for differences in year-end lags ..... | .... | 55 | - 55 | 43 | .... | + 43 |
| Other merchandise adjustments ..... | .... | 201 | - 201 | .... | 214 | - 214 |
| Total commodity trade (as adjusted) | 5,333 | 4,483 | + 850 | 5,490 | 4,756 | + 734 |
| MISCELLANEOUS INVISIBLE ITEMS | | | | | | |
| Freight payments and receipts: | | | | | | |
| Ocean and Great Lakes traffic | 183 | 167 | - 84 | 142 | 208 | - 66 |
| Railway earnings on transit shipments | 14 | 40 | - 26 | 12 | 40 | - 28 |
| Foreign inland freight on United States imports ..... | .... | 20 | - 20 | .... | 21 | - 21 |

ESTIMATED BALANCE OF INTERNATIONAL PAYMENTS OF THE UNITED STATES: CALENDAR YEARS 1928 (REVISED) AND 1929 (SUBJECT TO REVISION)—(Continued)
[In millions of dollars]

| | 1928 (revised) | | | 1929 | | |
|---|----------------|--------|--------------------|---------|--------|--------------------|
| | Credits | Debits | Balance | Credits | Debits | Balance |
| Tourist expenditures: | | | | | | |
| Canada | 82 | 256 | — 174 | 91 | 284 | — 193 |
| Mexican border | 6 | 32 | — 26 | 7 | 38 | — 31 |
| Overseas (including West Indies) | 75 | 516 | — 441 | 82 | 517 | — 435 |
| Ocean-borne passenger traffic (by "substitution") * | 89 | .... | + 89 | 94 | .... | + 94 |
| Earnings of long-term private investments: | | | | | | |
| Received from American investments abroad | 817 | .... | + 817 | 876 | .... | + 876 |
| Paid to foreign investors in the United States ..... | .... | 252 | — 252 | .... | 270 | — 270 |
| Earnings of short-term interest and commissions: | | | | | | |
| Collected from foreigners abroad | 76 | .... | + 76 | 100 | .... | + 100 |
| Paid to foreigners abroad ..... | .... | 107 | — 107 | .... | 144 | — 144 |
| Immigrant remittances | 25 | 250 | — 225 | 24 | 247 | — 223 |
| War-debt receipts of United States Treasury: | | | | | | |
| Interest | 160 | 3 | + 157 | 150 | 5 | + 145 |
| Principal | 50 | .... | + 50 | 62 | .... | + 62 |
| Other United States Government receipts; United States Government payments; and foreign representations here | 53 | 110 | — 57 | 60 | 152 | — 92 |
| Missionary and charitable contributions, etc. .... | .... | 51 | — 51 | .... | 49 | — 49 |
| Motion-picture royalties | 70 | 6 | + 64 | 70 | 6 | + 64 |
| Insurance transactions | 70 | 70 | ..... | 70 | 70 | ..... |
| Minor miscellaneous items: | | | | | | |
| Imports of Canadian electric power ..... | .... | 3 | — 3 | .... | 4 | — 4 |
| Foreign subscriptions to American press | 5 | 3 | + 2 | 5 | 3 | + 2 |
| Patents and copyright sales and royalties; legal fees .. | 15 | 15 | ..... | 15 | 15 | ..... |
| American advertising abroad | 5 | 48 | — 43 | 5 | 50 | — 45 |
| Cablegrams, radiograms, and telephone services | 28 | 19 | + 4 | 27 | 19 | + 8 |
| Total of commodity and miscellaneous items | 7,101 | 6,451 | + 650 | 7,382 | 6,898 | + 484 |
| MOVEMENT OF PRIVATE LONG-TERM CAPITAL | | | | | | |
| New American investments abroad: | | | | | | |
| 1. Foreign securities publicly offered here (par value) ^b ..... | .... | 1,484 | — 1,484 | .... | 696 | — 696 |
| 2. Deduct for "refunding to Americans" | 238 | .... | 238 | 35 | .... | + 35 |
| 3. Deduct for American underwriters' commissions .. | 59 | .... | 59 | 15 | .... | + 15 |
| 4. Deduct for securities issued below par | 63 | .... | 63 | 11 | .... | + 11 |
| 5. Add new "direct investments" abroad by Americans ..... | .... | 378 | — 378 | .... | 335 | — 335 |
| 6. Add foreign stocks and bonds bought from foreigners in small lots ^c ..... | .... | 556 | — 556 | .... | 588 | — 588 |
| Reductions of previous American investments abroad: | | | | | | |
| 7. Bond-redemption payments received from foreigners .. | 260 | .... | 260 | 166 | .... | + 166 |
| 8. Sinking-fund payments received from foreigners .. | 101 | .... | 101 | 110 | .... | + 110 |
| 9. Resale to foreigners of direct investments | 50 | .... | 50 | 58 | .... | + 58 |
| 10. Foreign stocks and bonds resold to foreigners ^c | 451 | .... | + 451 | 442 | .... | + 442 |
| New foreign investments in the United States: | | | | | | |
| 11. Direct investments | 70 | .... | 70 | 31 | .... | + 31 |
| 12. American stocks and bonds sold to foreigners ^c | 1,503 | .... | + 1,503 | 1,537 | .... | + 1,537 |
| Reductions of previous foreign investments in the United States: | | | | | | |
| 13. Redemption and sinking-fund payments to foreigners ..... | .... | 70 | — 70 | .... | 77 | — 77 |
| 14. Purchase of American properties from foreigners .. | .... | .... | ..... | .... | 15 | — 15 |
| 15. American stocks and bonds bought back from foreigners ^c ..... | .... | 1,015 | — 1,015 | .... | 1,080 | — 1,080 |
| Total of private, funded-capital items | 2,795 | 3,503 | — 708 ^d | 2,405 | 2,791 | — 386 ^d |
| MOVEMENT OF SHORT-TERM CAPITAL | | | | | | |
| Net change in international banking accounts, as revealed by questionnaire ..... | .... | 226 | — 226 | + 13 | .... | + 13 |
| PURE CASH ITEMS | | | | | | |
| Gold | 561 | 169 | — 392 | 117 | 292 | — 175 |
| Changes in earmarked gold | 68 | 188 | — 120 | 128 | 73 | + 55 |
| United States paper currency ..... | .... | .... | ..... | .... | .... | ..... |
| Total of gold and currency | 629 | 357 | 272 | 245 | 365 | — 120 |
| Grand total, all items | 10,525 | 10,537 | — 12 ^e | 10,045 | 10,054 | — 9 ^e |

* Largely a deduction from American tourist expenditures.

^b Issued outside our balance-of-payment area. Usually American statistics of public offerings include those of all Territories and possessions; although Hawaii, Porto Rico, and Alaska are parts of our customs area.

^c One of four important items whose amounts are extremely uncertain. It is supposable that most of the net discrepancy in the entire statement (arising from errors and omissions) results from errors in this group of items. Accordingly the original estimates of these items were all altered according to a uniform ratio which would eliminate 60 per cent of the net discrepancy in the entire statement. Before the items were thus altered, the net discrepancies for the years 1928 and 1929 were respectively — 31 and — 23.

^d Estimated "net export of long-term private capital."

^e Discrepancy, due to net errors and omissions. Total errors and omissions would probably be much greater, since they tend to offset one another.

COMMODITY PRICES. Although commodity prices had shown a very decided degree of stability during the years of 1927-29—a stability which has been erroneously ascribed by many to some policy on the part of the Federal Reserve Board—the year 1930 revealed an unprecedentedly dis-

turbed situation. Credit inflation had now been brought back to a close, while the enormous stocks of goods which had accumulated in most staple industries during the preceding year or two were pressing heavily upon the market. This was conspicuously true of such items as wheat, copper,

sugar, coffee, cotton, and a great variety of others. Before the end of spring, 1930, very decisive recession had occurred in nearly every essential staple and this downward movement continued practically throughout the year, leaving the level of prices at the end of December, substantially at low point, with an index of approximately 87, as compared with 93 at the beginning of the 12 months (the base or 100, being the prices of 1926). Prices of agricultural products had been especially weak. Cotton and wheat which had been temporarily held up by the policy of the Farm Board during the last two months of 1929 were especially reactionary. The closing quotation of wheat for the year (No. 2 red) was approximately 76 cents in Chicago, as compared with 146½¢ the year earlier, cotton also which had been 17.30 at the end of 1929 was 10 cents (middling upland) at the end of 1930. These figures, and particularly wheat, would have been much lower, judging from prices abroad, had it not been for the policy of the Government and particularly of the Farm Board. Family beef which was quoted at \$27 to \$29 at the end of 1929 suffered in sympathy with cereals, closing 1930 at 20 but mess pork which had been \$26.50 closed at \$28.50. See AGRICULTURE; LIVESTOCK; and articles on various commodities.

FOREIGN EXCHANGE. General conditions in foreign exchange had been tolerably satisfactorily maintained during the year although the suspension of specie payments in Argentina which had been announced just at the close of 1929 continued to exert an unfavorable inference on the currency quotation of that country, while gold exports were very heavy. There was difficulty also in maintaining the exchange position of countries like Brazil, where doubt existed as to the debt situation and its probable future. Some signs of weakness were also shown in the currency quotations of certain of the European states, particularly those where stabilization had not yet been effected, as for example in Spain. Bankers were troubled by the difficulty they experienced in regulating the movement of gold and in checking the inward movement to France and the United States, while Great Britain and Germany, as well as other countries, by reason of loss of gold experienced some difficulty in maintaining a satisfactory rate for their own currencies. The operations of the International Bank, of which a great deal was said, turned out to be a factor of little or no significance, the operation of the bank being small and the only transaction in which it was interested, but might have affected exchange, being the placing of a loan of \$300,000,000 in connection with the adjustment of German reparations during the month of June. The accompanying table sketches the foreign exchange situation for the year.

MONEY RATES. Money rates underwent further great changes in 1930. Starting the year with rates of either 4½ or 5 per cent at Federal Reserve Banks, according to location, rates were cut in New York to 4 per cent on February 7, 3½ per cent on March 14, 3 per cent on May 2, 2½ per cent on June 20, and 2 per cent on December 23. The other Federal Reserve Banks had made similar cuts either before or after those of the Federal Reserve of New York, although their rates remained at the close of the year ½ or 1 per cent higher than those of the latter institution. Early in the year, the demand for call money had been greatly reduced and the price of it had

FOREIGN EXCHANGE (CABLE RATES), SHOWING MONTHLY FLUCTUATIONS IN 1930

| Par | 1930 Jan. 24 | 1930 Feb. 27 | 1930 Mar. 27 | 1930 Apr. 28 | 1930 May 27 | 1930 June 27 | 1930 July 29 | 1930 Aug. 25 | 1930 Sept. 29 | 1930 Oct. 27 | 1930 Nov. 24 | 1930 Dec. 30 | 1929 Dec. 29 |
|----------------|-----------------|-----------------|-----------------|-----------------|----------------|-----------------|-----------------|-----------------|------------------|-----------------|-----------------|-----------------|-----------------|
| England | \$4.866 | \$4.8662 | \$4.8606 | \$4.8650 | \$4.8621 | \$4.86 | \$4.87 | \$4.87 | \$4.8597 | \$4.8584 | \$4.8538 | \$4.8537 | \$4.8828 |
| France | .039 | .0392 | .0391 | .0391 | .0392 | .0392 | .0393 | .0393 | .0392 | .0392 | .0392 | .0392 | .0394 |
| Italy | .052 | .0523 | .0524 | .0524 | .0524 | .0523 | .0524 | .0523 | .0523 | .0523 | .0523 | .0523 | .0523 |
| Spain | .193 | .1923 | .1925 | .1925 | .1925 | .1925 | .1925 | .1925 | .1925 | .1925 | .1925 | .1925 | .1925 |
| Netherlands | .402 | .4018 | .4008 | .4013 | .4025 | .4022 | .4028 | .4029 | .4034 | .4027 | .4024 | .4026 | .4038 |
| Denmark | .268 | .2675 | .2677 | .2680 | .2677 | .2676 | .2682 | .2682 | .2677 | .2675 | .2675 | .2674 | .2684 |
| Norway | .268 | .2672 | .2674 | .2679 | .2677 | .2676 | .2681 | .2681 | .2676 | .2675 | .2674 | .2674 | .2684 |
| Sweden | .268 | .2684 | .2683 | .2690 | .2688 | .2686 | .2691 | .2689 | .2686 | .2685 | .2684 | .2680 | .2698 |
| Switzerland | .193 | .1932 | .1929 | .1936 | .1939 | .1938 | .1944 | .1944 | .1940 | .1941 | .1937 | .1939 | .1946 |
| Germany | .238 | .2389 | .2386 | .2387 | .2387 | .2382 | .2390 | .2388 | .2381 | .2382 | .2384 | .2381 | .2396 |
| Austria | .140 | .1425 | .1425 | .1425 | .1425 | .1425 | .1425 | .1425 | .1425 | .1425 | .1425 | .1425 | .1425 |
| Czechoslovakia | .029 | .0296 | .0296 | .0296 | .0296 | .0296 | .0296 | .0296 | .0297 | .0297 | .0296 | .0296 | .0297 |
| Argentina | .965 | .9129 | .8553 | .8590 | .8814 | .8683 | .8215 | .8234 | .8128 | .7731 | .7770 | .7047 | .9258 |
| Canada | 1.00 | .9886 | .9946 | .9996 | .9990 | .9995 | 1.0015 | .9993 | 1.00125 | 1.0015 | 1.0015 | .9984 | .9987 |
| Hongkong | ... | .4025 | .3800 | .3775 | .3737 | .3475 | .3200 | .3300 | .3235 | .3200 | .3125 | .2700 | .4200 |
| Calcutta | .365 | .3637 | .2825 | .3625 | .3618 | .3612 | .3612 | .3612 | .3606 | .3606 | .3600 | .3600 | .3650 |
| Manila | .500 | .4975 | .4975 | .4975 | .4975 | .4962 | .4962 | .4962 | .4962 | .4962 | .4962 | .4962 | .4975 |

* Demand rate.

fallen. It continued to rule generally below rates at the Federal Reserve Bank of New York and was in large supply up to the end of the year when trades took place as low as $1\frac{1}{2}$ per cent. Business rates on the other hand showed very little change. There was a slight downward movement from time to time, as demands declined, leaving supply rather in excess of current requirements, but up to the close of the year the average charge throughout Western and Southern cities had fallen only to about the level of 1928 or a trifle lower. Even these figures were attained only by "weighting" the returns, thereby giving a decidedly different result from that which actual figures would have furnished.

The great liquidation of brokers' loans which took place throughout the year resulted in a corresponding transfer of credits to the banks and this great demand for bank credit tended to keep up rates in spite of the decline that was occurring in commercial requirements. Federal Reserve credit did not respond very closely to the changes in discount rates, but continued to move irregularly in accordance with changes in demand, rather than changes in the condition of the stock market.

In the investment field, the year was characterized by several severe shrinkage of price which carried both stocks and bonds down to practically the level of 1927 by the end of the year. Holders of fixed rate securities of the best grades succeeded fairly well in maintaining their position owing to the demand of investors seeking a "safe" means of placing their funds. Second-grade bonds lost ground heavily, particularly those of railroads, and preferred stocks also underwent very decided recession. There were likewise severe losses in common stocks, even among those which possessed well-sustained dividend records of long continuance. Changes in these directions occurred as a result of general lack of confidence and could not be directly traced to alterations in the rate or supply of money.

See BANKS AND BANKING; BUSINESS REVIEW; PUBLIC FINANCE; TAXATION; and articles on various commodities.

FINE ARTS. See PAINTING; SCULPTURE; ART EXHIBITIONS; ART MUSEUMS; ART SALES.

FINLAND. An independent republic of Europe, bounded on the east by Russia, on the north by the Arctic Ocean and Norway, on the west by Sweden and the Gulf of Bothnia, and on the south by the Gulf of Finland. Formerly a grand duchy of the Russian Empire, it was declared independent Dec. 6, 1917, and became a republic under the constitutional law of July 17, 1919. Capital, Helsinki (Helsingfors).

AREA AND POPULATION. Finland has an area of 132,608 square miles, excluding water area, and a population estimated at 3,611,791 on Jan. 1, 1929, as compared with 3,364,807 at the census of 1920. Only 17.65 per cent of the population were urban residents in 1928. In the same year births numbered 77,523; deaths, 48,713; and marriages, 25,520. Emigration in 1929 totaled 7889 (5055 in 1928). The chief towns, with their populations on Jan. 1, 1929, were: Helsinki (Helsingfors), 227,375; Turku (Åbo), 63,918; Tampere (Tammerfors), 54,015; Viipuri (Viborg), 54,120. Of the 1920 population, 2,754,228 spoke Finnish, 340,963 Swedish, 4806 Russian, 2378 German and 1603 Lapponic. Finnish and Swedish are both official languages. The great majority of the Finns adhere to the Lutheran religion.

EDUCATION. Elementary schools in 1928 numbered 9639, with 336,481 pupils. There were 194 secondary schools, with 46,834 students; three universities (one Finnish at Helsinki and one Finnish and one Swedish at Turku), with 5170 students in 1929; and numerous technical, commercial, agricultural, infant, and professional schools. The primary school age is from 7 to 15 years. About 93 per cent of the population over 15 are literate.

PRODUCTION. Finland is unsuited to agriculture, although 65 per cent of the population gain a livelihood from the cultivation of less than 7 per cent of the total land area. Only a small part of the cereals consumed can be raised in the country, due to extreme weather conditions and the scarcity of fertile land. There were 250,749 farms in 1920, devoted mainly to rye, barley, oats, potatoes, and hay. Cattle raising and dairying were expanding in 1930 and butter and cheese products ranked third among the chief exports. Livestock in 1928 included 1,916,610 cattle, 1,313,910 sheep, 393,746 horses, 434,838 swine, and 10,592 goats.

Forests, chiefly pine and spruce, constitute the chief source of industrial wealth. They cover three-fourths of the total area and 40 per cent are state owned. Wood-working industries employ nearly half of all industrial workers and their products constitute over four-fifths of all exports. Production of newsprint in 1929 was 201,908 tons; of other paper, 112,249 tons; of cellulose (dry weight), 609,656 tons; of mechanical pulp (dry weight), 166,700 tons. Sawn timber sold was 9,960,000 standards and the production of plywood totaled 140,000 cubic meters. Other leading industries produce paper, food, drink, textiles, machinery, ships, leather articles, clay and stone products, and light and power. Copper is the only valuable metal found in large quantities. Manufacturing establishments in 1928 totaled 4021 and employed 169,729 persons, as compared with 3787 employing 159,141 in 1927. Gross value of production in 1929 was 13,721,344,200 marks, of which 6,264,625,100 marks was added during the process of manufacture. Wages paid totaled 2,277,044,000 marks (1 mark equalled \$0.0252).

The coöperative movement dominates all commercial activities, coöperative societies handling about one-third of the retail and one-half of the wholesale trade of the country. At the end of 1926 there were over 5000 coöperatives, with more than 700,000 members.

COMMERCE. While Finnish imports declined noticeably in 1929 to 7,001,000,000 marks from 8,012,907,000 marks in 1928, exports increased slightly to 6,430,000,000 marks from 6,245,282,000 marks in the previous year. The unfavorable balance of trade was reduced to 571,000,000 marks, as compared with 1,767,625,000 marks in 1928. The drop in imports in 1929 was attributed to the economic depression, while the reëntry of Russia into the timber exporting business reacted unfavorably on the Finnish lumber industry. Both imports and exports declined during the first half of 1930, as compared with the same period in 1929.

FINANCE. Budget revenues for 1930 were estimated at 4,469,300,000 marks (1 mark equalled to \$0.0252) and budget expenditures at 4,595,500,000 marks, as compared with actual receipts of 4,342,000,000 marks and estimated expenditures of 4,272,300,000 marks in 1929. The esti-

mated deficit of 126,200,000 marks for 1930 was to be covered from the Treasury surplus.

The public debt at the end of February, 1930, totaled 3,105,800,000 marks, of which 2,555,200,000 marks represented the foreign funded debt, 196,000,000 marks the foreign floating debt, and 354,600,000 marks the funded internal debt. The foreign debt was increased in 1930 by the flotation of a \$12,000,000 bank loan in France and of a \$8,000,000 loan for the city of Helsinki (Helsingfors) in the United States. Public finance is featured by the stable currency, large capital investments, mainly in Government-owned enterprises, and a comparatively small public debt.

COMMUNICATIONS. Of the 3232 miles of railway lines in operation in 1929, all but 165 miles belonged to the state. Revenues of the state lines in 1928 totaled 891,871,000 marks and the total expenditures were 713,010,000 marks. There were 19,251 miles of main highways in the same year, while a remarkable system of lakes, linked with each other and with the sea by canals, furnished other means of international communication. A total of 55,475 vessels and 17,171 timber rafts used the canals in 1928. The telegraph system, with 12,297 miles of wire, and part of the telephone system (10,037 miles of wire) were state owned also.

GOVERNMENT. Executive power is vested in a president elected for six years by 300 electors, who are chosen by direct election in the same manner as members of the Diet. Legislative power is exercised by the Diet (single chamber) in conjunction with the President. The latter governs through Ministers appointed by him, his decisions being taken in the Council of State of 10 Ministers, who are responsible to the Diet. Members of the Diet are elected for three years by direct vote of all citizens over the age of 24. The composition of the Diet following the elections of July 12, 1929, was: Social-Democrats, 59; Agrarians, 60; National Unionists, 28; Socialist Labor (Communist), 23; Swedish party, 23; Finnish Progressive party, 7. President in 1930, Dr. Lauri Relander, elected February 16, 1925. The Council of State, appointed Aug. 16, 1929, was Agrarian and included: Prime Minister, Kyösti Kallio; Foreign Affairs, J. H. Procopé; Finance, T. H. Reinikka; Interior, A. V. Linturi; Defense, J. Niukkanen; Justice, Prof. E. Kaila; Education, A. Kukkonen; Agriculture, K. J. Ellilä; Communications, J. T. Lahdensuo; Commerce and Industries, P. V. Heikkinen; Social Affairs, H. Paavilainen.

HISTORY

ANTI-COMMUNIST MOVEMENT. A vigorous national movement to eradicate communism from Finland occupied the centre of the political stage during 1930, to the virtual exclusion of the prohibition and other important issues. Increasing communist activities during the winter of 1929-30 led to violent reprisals by conservative and bourgeois elements and to the inauguration early in 1930 of the Lapua, or anti-communist, movement among the peasants of the district surrounding the village of Lapua. The Lapuan agitation quickly spread to the whole of Finland, forcing the resignation of Prime Minister Kallio's Agrarian Cabinet on July 2 and the dissolution of the Diet July 16, and scoring an overwhelming victory in the elections to the new Diet held October 1 and 2, from which the communists were barred. The new Diet adopted legislation

legalizing the measures by which the communist movement had already been virtually eradicated. Meanwhile excesses of anti-communist groups threatened a break-down of Finland's democratic institutions and the Ministry took drastic steps to reestablish law and order.

The Kallio Cabinet, whose programme included a pledge of active resistance to communism, sought to conciliate the rising bourgeois anger by introducing drastic anti-communist bills at an extraordinary session of Parliament convened July 1. It was determined, however, to avoid a Fascist dictatorship. The measures did not satisfy the Lapuans and were equally obnoxious to the Communist and Social-Democratic representatives in Parliament, who considered them too severe. The latter joined with the extreme Right in defeating the Cabinet by a vote of 112 to 68.

The new Cabinet, formed July 5 by the veteran conservative statesman, P. E. Svinhufvud, represented a bourgeois coalition from which the Social-Democrats and Communists were excluded. The National Unionists obtained 4 of the 12 Cabinet posts, the Progressive 3, Agrarians 3, and Swede-Finns, 2. A great demonstration was held in the capital under Lapua leadership two days after the formation of the Cabinet to impress upon it the necessity for aggressive anti-communist measures. The Cabinet's programme failed of the required majority, due to the opposition of the Social-Democrats, and on July 16 the Diet was ordered dissolved. In the elections of October 1-2, the parties in favor of the Cabinet's bills polled about 712,000 votes to 396,500 for those opposing them, and won 144 of the 200 seats in the Diet. The passage of the bills was thus assured. These measures made it illegal for a communist to hold public office and authorized the Ministry to establish a virtual dictatorship, without reference to Parliament, whenever it considered such a step necessary for the protection of the state.

The political campaign was marked by the arrest of hundreds of communists, the suppression of bolshevist newspapers, and the kidnaping and beating of communist public officials and leaders. A number were expelled across the Russian border, while others fled to Sweden. Liberal and moderate spokesmen who criticized such measures were threatened with similar treatment. On October 14, former President Stahlberg and his wife were kidnaped by Fascist extremists, but escaped while being spirited away to the Russian border. The former President had vigorously attacked the unconstitutional methods of the Fascists. The arrest of Gen. Martti Wallenius, chief of the Army General Staff, followed on October 22. He was said to have admitted instigating the Stahlberg abduction and was suspected of conspiring to establish a Fascist dictatorship. The Lapu leader, Kosola, denied any complicity in the kidnaping. On December 18, Wallenius and Colonel Kuussaari, also of the general staff, were each sentenced to three years in prison and dismissed from the army for their part in the abduction.

FINNISH-RUSSIAN RELATIONS. The Soviet government in September dispatched several vigorous protests against the banishing of Finnish communists to Russia. The Finnish government replied that it was unable to prevent the forcible expulsions, but pointed out that they were due to the Communist activities sponsored by Russian organizations. The Finnish Foreign Office

refused to consider other Soviet protests written in Russian, which Finland declined to accept as a diplomatic language. The Soviet press declared in June that a Baltic alliance was in process of formation under Finnish leadership, which aimed to capture Soviet Karelia. Some color was given to this charge by the revelation that General Wallenius had consulted with anti-communist leaders in Poland, Lithuania, Estonia, and Latvia, previous to the failure of his alleged conspiracy to establish a dictatorship in Finland.

PROHIBITION. Efforts to amend the prohibition law, which had proved quite as thorny a problem as the prohibition experiment in the United States, failed for the most part during the spring session of Parliament and in the latter part of April the Agrarian (Government) party voted 159 to 44 to retain the prohibition plank in the party platform. This stand is explained by the fact that the party favors the rural, as against the city population. Sentiment in the centres of population was increasingly "wet," according to reports. In June, the Government appointed a commission to undertake an extensive investigation of the prohibition situation and to report during 1931. Convictions by the lower courts of violations of the prohibition laws in 1929 numbered 12,567, as against 10,116 in 1928; in Helsinki (Helsingfors), convictions for drunkenness and prohibition violations rose from 21,105 in 1928 to 22,907 in 1929. The Government's bill to legalize beverages with a 3 per cent alcoholic content was defeated in Parliament December 19, 1929 to 86.

OTHER EVENTS. A commercial treaty with Estonia was concluded during the year. On June 27, Iceland signed a pact of friendship and arbitration with Iceland, Norway, Sweden, and Denmark (see ICELAND).

FIRE INSURANCE. See INSURANCE.

FIRE PROTECTION. An increase in the fire loss of the United States for the year 1930 was an expected result of the business depression. Incendiary fires usually increase during periods of financial stringency, and other fires occur where maintenance and supervision of property is relaxed as a result of unsatisfactory business conditions. Fires officially classified as of incendiary origin are responsible for only about 1 per cent of the loss in fires of known origin, but many fire authorities believe that the influence of incendiarism, both direct and "unconscious," is much greater than indicated. It was generally agreed that the upward trend of fire losses during 1930 was largely due to business conditions. Another contributing factor, of particular importance in rural areas, was the drought.

The fire losses for the year, according to the monthly estimates of the National Board of Fire Underwriters, are as follows. The monthly losses for 1929, are given for comparison:

| | 1929 | 1930 |
|----------------------|---------------|---------------|
| January | \$ 44,713,835 | \$ 42,344,035 |
| February | 41,520,290 | 43,206,940 |
| March | 41,277,814 | 42,964,392 |
| April | 36,845,795 | 43,550,996 |
| May | 32,129,408 | 38,415,142 |
| June | 33,605,663 | 31,818,266 |
| July | 31,985,493 | 34,847,750 |
| August | 30,446,893 | 36,043,879 |
| September | 29,249,355 | 35,230,456 |
| October | 31,652,335 | 36,838,614 |
| November | 29,061,869 | 35,682,577 |
| December | 39,726,338 | 42,669,915 |
| Total 12 months | \$422,215,128 | \$463,612,762 |

The fire loss for 1930, while greater than that of the preceding year, was slightly lower than that of 1928, and well under the average for the previous ten years. The accompanying table of annual fire losses in the United States from 1910 to 1930 inclusive shows the trend over a period of years. The general conclusion was that the increased losses of 1930 represented a temporary condition and was not indicative of any permanent upward trend in losses:

| | | | |
|------------|---------------|------------|---------------|
| 1916 | \$258,377,952 | 1924 | \$549,062,124 |
| 1917 | 289,535,050 | 1925 | 559,418,184 |
| 1918 | 353,878,876 | 1926 | 561,980,751 |
| 1919 | 320,540,399 | 1927 | 472,933,969 |
| 1920 | 447,886,677 | 1928 | 464,607,102 |
| 1921 | 495,408,012 | 1929 | 422,215,128 |
| 1922 | 506,541,001 | 1930 | 463,612,762 |
| 1923 | 535,372,782 | | |

Students of the fire problem pointed out that fire losses should not be considered as absolute figures, but should be related to the total amount of property exposed to fire. On this basis the general trend of relative loss was very definitely downward. This may be explained by the increasing attention given to fire prevention and protection, the larger use of fire-resistive materials in building construction, the increased installation of automatic sprinklers, and the spreading idea that the public fire department is not only an agency for fire extinguishment, but should likewise be active in fire prevention work. The fire prevention bureau had become a regular division of the public fire department in most of the larger American cities, and during the year 1930 many smaller city fire departments added fire prevention bureaus for inspection work and related fire prevention activities.

LARGE LOSS FIRES IN 1930. The Nashua, N. H., fire of May 4, 1930, destroying more than three hundred buildings (200 of them dwellings), rendering 322 families homeless and causing a property loss of over \$2,000,000, was the only major conflagration of the year. The spread of this fire to conflagration proportion was due to sparks falling on dry wooden shingle roofs over a wide area. During the twelve-month period there were listed but five fires involving a loss of one million dollars or over as compared with fifteen fires the preceding year and twenty in 1928. It is difficult to generalize about the large fires of the year, but the greatest number have been in miscellaneous manufacturing property. Property at rail and water terminals, which as a whole is notoriously poorly protected against fire, contributed many of these large losses. Lumber mills, also generally poorly protected and hazardous due to their large storage of combustible products, were generous contributors to the list of large loss fires.

The number of fires of the general conflagration type were notably few. Nashua's conflagration of May 4, already mentioned, was the outstanding one. Group fires on August 5 at Gore, Virginia, and on November 16 at Waukegan, Ill., also might be included in the class of general conflagrations. In general the geographical distribution follows the concentrations of burnable values as they are generally regarded, but it was interesting to note the considerable number which occurred at points where the property was situated beyond the limits of a municipal water supply or organized fire department.

The causes of fires in the United States, compiled by the Actuarial Bureau of the National

endowment for 1929-30 was \$1,301,366, and the total income was \$285,826. The library, which was housed in the new building erected in 1930 through gifts from the General Education Board, the Rosenwald Fund, and the Carnegie Corporation, contained approximately 30,000 volumes. Thomas Elsa Jones, Ph.D. was president; A. A. Taylor, A.M., dean; and Jesse F. Beals, treasurer.

FLANDERS. See **BELGIUM** under *History*.

FLAX. The flaxseed production in 1930 of 14 countries reporting to the International Institute of Agriculture, Rome, was estimated at 47,414,000 bushels which was 28 per cent above the yield of 37,045,000 bushels in 1929, but nearly 8 per cent below the average annual production for the five years 1924-1928. The crops of some of the more important producing countries exclusive of the United States were estimated as follows: India, 14,960,000 bushels; Canada, 4,459,000 bushels; and French Morocco, 293,000 bushels. Lithuania reported a production of 1,606,000 bushels and Latvia of 755,000 bushels of flax and hemp seed. Argentina, ranking first in flaxseed production in South America and the southern hemisphere, reported a yield of 52,254,000 bushels for the crop year 1929-1930 as compared with an average of 70,309,000 bushels for the preceding five years, although the area sown was larger than the five-year average. The area sown for the crop of 1930-1931 was given as 7,403,000 acres.

The Department of Agriculture estimated the flaxseed crop of the United States in 1930 at 23,682,000 bushels compared with 17,049,000 bushels in 1929 and a five-year average of 23,800,000 bushels. The area sown, 4,389,000 acres, the largest on record and 2,152,000 acres above the average for the ten years 1919-28, resulted from a substitution of flax acreage for wheat in the spring wheat States and helped to increase the acreage harvested. Owing to a marked abandonment of flax acreage in North Dakota, South Dakota, and Montana due to drought only 3,946,000 acres were harvested, but this was still about 29 per cent above the area of 3,050,000 acres in 1929. The dry season of 1930 apparently had not been as injurious as dry weather the preceding year for the average yield per acre was 6 bushels while in 1929 it was only 5.6 bushels. The average farm price on December 1 of the year was \$1.398 per bushel as compared with \$2.842 the year before, so that on this basis the large crop of 1930 had a total value of but \$33,097,000 as compared with \$48,459,000, the value of the preceding crop. Of 11 States reporting flaxseed production the yields of the four States producing the bulk of the crop were given as follows: North Dakota, 10,041,000 bushels; Minnesota, 7,320,000 bushels; South Dakota, 3,484,000 bushels; and Montana, 1,776,000 bushels. The average yields in these States were 5.2, 10, 5.2 and 3.7 bushels per acre, respectively. During the fiscal year ended June 30, 1930, the United States exported 269,000 tons of linseed oil cake, 10,000 tons of linseed oil cake meal and 2,129,000 pounds of linseed oil and imported 72,618,000 pounds of linseed oil cake and oil cake meal, 5,416,000 pounds of linseed oil and 19,652,000 bushels of flaxseed.

Estimates of flax fibre production in 1930 reported to the International Institute of Agriculture by eight European countries indicated a decrease in yield of 21 per cent as compared with 1929 and of 26 per cent below the five-year average yield of 1924-1928. The reduction in yield was due in part to a smaller acreage but to a greater

extent to a poor season. Of the countries reporting, Belgium produced 25,100,000 pounds, the Netherlands 19,180,000 pounds and Czechoslovakia 16,202,000 pounds. Lithuania reported a crop of 68,255,000 pounds and Latvia of 42,836,000 pounds of flax and hemp fibre. For the Soviet Republics a yield of 942,920,000 pounds was recorded for 1929. During the fiscal year ended June 30, 1930, the United States, which does not produce flax fibre on a commercial basis, imported 7000 tons of unmanufactured flax, including about 3000 tons of hacked material.

FLAYDERMAN COLLECTION. See **ART SALES**.

FLEMISH AUTONOMY MOVEMENT. See **BELGIUM** under *History*.

FLEXNER, ABRAHAM. See **UNIVERSITIES AND COLLEGES**.

FLOODS. The remarkable series of floods, which have been recorded in recent years in the United States, gave way, during 1930 to a most severe drought. Nevertheless the south of France was visited by a disastrous flood and flood protection continued to occupy an important place in the engineering field. Probably the most important development was the revision of the great Mississippi Flood Plan.

MISSISSIPPI RIVER. As noted in the 1929 **YEAR BOOK** the decision of Judge Dawkins late in 1929 granted an injunction restraining the Government officers from building the necessary levees, etc. for the proposed Beuf Floodway, an essential part of the Mississippi Flood Plan, until provision had been made for compensating owners of land in the floodway. As a result of this action and of the many criticisms of the so-called Jadwin Plan, the Secretary of War announced early in the year that the adopted project could not be carried out without additional legislation or without fundamental changes. As was predicted in the last **YEAR BOOK** the necessity of purchasing flowage rights had changed the economic aspects of the problem and studies were under way which would lead to a revised plan which was later to be submitted for approval. Gen. Lytle Brown, U. S. A., the new Chief of Engineers, who would be responsible for the Mississippi works, contributed a description of the problem and plans to the February 6 issue of the *Eng. News-Record* (New York).

FLOODS IN THE UNITED STATES. Severe floods took place in January in the Wabash-White system of Indiana, and the St. Francis River of Arkansas. Losses in the former reached nearly \$7,000,000. In both cases, considerable suffering was experienced by refugees because of the severe cold which prevailed.

Moderate losses resulted during March from rises in the Alabama and Tombigbee systems.

The Tallahatchie River was in flood during January, February, and March; it fell below flood stage at Swan Lake, Miss., on April 6 after having remained in flood there for 82 days. The crest stage prevailed from January 27 to January 29, and was the highest of record at Swan Lake. Little damage was caused; but a continuation of flood conditions in the Tallahatchie Basin into June resulted in considerable damage to prospective crops.

The most severe floods during May were those in the Slreveport, La., river district along the Red, Sulphur, and Cypress Rivers; the total losses exceeded \$2,500,000. The general rains which caused these floods, while most concentrated in northeast-

ern Texas, were fairly continuous and occasionally excessive between May 3 and May 17-18 from central Texas and Oklahoma eastward to Mississippi; as a result of these rains, other floods, accompanied by losses exceeding \$1,000,000, occurred to the southwestward in the rivers of east and central Texas, to the northward in the Arkansas and White Rivers, and to the eastward in the Ouachita and Pearl Rivers.

Excessively heavy rains in the Des Moines and Skunk Valleys in Iowa on June 14 and June 15 caused a severe flood in the Skunk River, and slight flood conditions in the lower Des Moines and in the Mississippi as far south as Louisiana, Mo. The Skunk River was the highest ever known at Augusta, and the damage to growing crops was large.

In Iowa, notably the southeastern quarter, and Marathon County, Wis., between two and three million dollars damage was done to highways and bridges by violently destructive rises in small streams as a result of heavy and concentrated summer showers. A series of sudden local showers during the evening of July 10 caused the streams in the steep gullies and ravines on the face of the Wasatch Mountains between Centerville and Famington, Utah, and in the side gullies of Spanish Fork Canyon, Parleys Canyon, and Weber Canyon, to do \$100,000 damage in a few minutes by flood and earth wash. Numerous rapid and heavy local downpours during the first two weeks in August produced an extraordinary number of similar washing floods in the mountain section of Utah, accompanied by heavy damage in many localities.

The year 1930 was considered a very dry one, yet flood losses were quite high. This is explained by the fact that over one-half of the reported losses occurred in the Ohio Valley, all of which took place during the months of January and February; that is, before the severe drought of the summer and autumn began. Nearly all of the Ohio Valley flood losses were confined to the Wabash-White River Systems.

LOSSES BY FLOOD IN THE UNITED STATES DURING THE CALENDAR YEAR 1930

| Drainage | Reported losses ^a | Lives |
|------------------------------------|------------------------------|-------|
| Atlantic ..... | ..... | .. |
| Gulf (except Mississippi River) .. | \$ 1,901,940 | 4 |
| Mississippi (except Ohio River) .. | 4,604,565 | 5 |
| Ohio | 7,064,805 | .. |
| Great Lakes | 36,165 | .. |
| Pacific | 250,000 | 3 |
| Total | \$13,857,475 | 12 |

^a Probably about 75 per cent of actual.

FLOODS IN OTHER COUNTRIES. As a result of heavy and long-continued rains during the latter part of February and the beginning of March, disastrous floods occurred in southern France, with enormous property damage and the loss of several hundred lives. These floods reached their greatest intensity in the valley of the Garonne and in its tributaries, especially the Tarn, which originate in the southern Auvergne Mountains. The heavy rain was associated with a persistent southeast wind from the Mediterranean; on the low ground of the coast, and in the Rhone Valley, rainfalls of 2 or 3 inches in a day were reported from several stations on February 28 and March 1. The rivers flowing west from the Auvergne Mountains occupy narrow valleys, and the waters appear to

have arisen with such rapidity that the valley towns were caught almost unaware.

The disastrous Whitby floods of July 22-23 in England were the result of prolonged moderate rainfall due to an almost stationary cyclonic depression off the east coast of England.

FLOOD FLOWS. The economic problem involved in flood protection works is basically one of insurance. Is it less expensive to submit to periodic flood damages than it is to purchase insurance against flood risks by constructing flood protection works? Obviously the exact solution of this insurance problem involves a detailed knowledge of the character and frequency of flood risks. In a new volume, *Flood Flows* (New York, 1930), Allen Hazen (q.v.), the well-known American hydraulic and sanitary engineer whose sudden death on July 26 was severely felt by the engineering profession, gave the results of twenty years of study of this problem. Mr. Hazen analyzed flood flows by the mathematics of probabilities and showed how closely the ratios of great flood intensities to the average follow the probability law. By means of diagnosis it is possible to predict the frequency of flood flows of various intensities and a much needed step thus has been taken in reducing the economic problem of flood protection to a mathematical basis.

FLORIDA. POPULATION. According to the Fifteenth Census the population of the State on Apr. 1, 1930, was 1,468,211, having made an increase of 499,741 over the population of 1920. A State census taken in 1925 showed a total population of 1,263,549, compared with 968,470 by the Fourteenth United States Census of 1920, an increase of 295,079 in the five-year period. The capital is Tallahassee.

AGRICULTURE. The following table gives the acreage, production, and value of the principal crops in 1929 and 1930:

| Crop | Year | Acreage | Prod. Bu. | Value |
|----------------|------|---------|-------------------------|--------------|
| Oranges | 1930 | ..... | 14,500,000 ^a | \$27,550,000 |
| | 1929 | ..... | 8,800,000 ^a | 26,840,000 |
| Grapefruit | 1930 | ..... | 12,000,000 ^a | 21,600,000 |
| | 1929 | ..... | 8,200,000 ^a | 22,960,000 |
| Corn | 1930 | 625,000 | 7,500,000 | 6,750,000 |
| | 1929 | 625,000 | 8,438,000 | 7,172,000 |
| Potatoes | 1930 | 32,000 | 2,560,000 | 4,480,000 |
| | 1929 | 23,000 | 2,714,000 | 4,885,000 |
| Sweet potatoes | 1930 | 28,000 | 2,380,000 | 2,261,000 |
| | 1929 | 29,000 | 3,190,000 | 3,350,000 |

^a Boxes.

Farms in the State numbered 59,601 in 1930, as against 59,217 in 1925, and 54,005 in 1920.

MINERAL PRODUCTION. Producing much the greater part of the phosphate rock mined in the United States, Florida benefited in 1929 from an increase in the output of this industry, of which the year's production exceeded that for any earlier year subsequent to 1920, both as to quantity and as to value. Florida's production of phosphate rock in 1929 had not yet been reported, but that for 1928 was 2,883,446 long tons, and for 1927, 2,637,420; in value, \$9,424,022 for 1928 and \$8,646,162 for 1927. In these years it constituted fully three-fourths of the domestic totals. Stone, the second in importance of the mineral products of the State, was quarried in 1928 to the quantity of 3,381,470 short tons, a sharp reduction from the 7,437,580 tons of 1927; the value of the year's product fell conformably, to \$2,654,370 for 1928, from \$6,138,767 for 1927. The clay products aggregated \$392,048 for 1928

and \$462,190 for 1927. The quantity of raw clay dug greatly exceeded what was used in the manufacture of the State's own clay products. The production of raw clay thus totaled \$630,471 for 1928 and \$646,415 for 1927. The aggregate mineral production of the State was, for 1928, \$15,227,123; for 1927, \$18,095,961.

FINANCE. State expenditures in the year ended June 30, 1928, as reported by the U. S. Department of Commerce, were: for maintenance and operation of governmental departments, \$15,915,783 (of which \$2,598,152 was for local education); for interest on debt, \$558,435; for permanent improvements, \$13,049,742; total, \$29,523,960 (of which \$13,436,195 was for highways, \$2,181,936 being for maintenance and \$11,254,259 for construction). Revenues were \$26,616,939. Of these, property and special taxes formed 22.1 per cent; departmental earnings and remuneration to the State for officers' services, 7.7; sales of licenses, 56.4 (including taxes of \$9,233,881 on sales of gasoline). The State's funded direct debt outstanding June 30, 1928, was nil; but the State had a contingent debt liability of \$10,250,000 directly covered by special assessments, for everglades drainage. On property bearing an assessed valuation of \$727,821,318 were levied in the year State taxes of \$5,500,483.

TRANSPORTATION. The total number of miles of railroad line under operation on Jan. 1, 1930, was 5686.44. There were built, in 1930, 9.03 miles of additional first track.

EDUCATION. The financial condition of the public-school system of the State in 1930 called forth the efforts of the State Education Association, which worked through a special committee to give publicity to the facts and to promote corrective measures. There were enrolled in the public schools, in 1929, 345,571 pupils. Of these, 273,532 were in elementary and 72,039 in high-school grades. The year's expenditures for public-school education totaled \$18,766,441. Salaries of all teachers averaged \$118.20 a month.

CHARITIES AND CORRECTIONS. A group of State institutions for the care or custody of persons were administered in 1930 under the central control of the State Board of Commissioners of State Institutions. This board was an ex-officio body, of which the members were the Governor (serving as chairman), Attorney-General, Comptroller, Secretary of State, State Treasurer, State Superintendent of Public Instruction, and Commissioner of Agriculture. The institutions thus controlled were individually administered by superintendents. These institutions were: Florida State Hospital (for the insane), Chattahoochee; Florida Industrial School for Boys, Marianna; Florida Industrial School for Girls, Ocala; Florida State Farm (the State penitentiary), Raiford; Florida Farm Colony (for feeble-minded children), Gainesville.

POLITICAL AND OTHER EVENTS. While agricultural conditions made some gain during the year the State was severely handicapped by the credit difficulties of some of its municipalities. No less than 26 cities had gone into default of principal or interest on bonds before the middle of the year. The amounts due and unpaid aggregated, for principal, about \$3,500,000 and for interest, about \$1,700,000. The heaviest defaults were those of West Palm Beach, Sanford and Lake Worth. Miami, which had a minor issue of bonds maturing in August, confessed inability to redeem them and sought an extension from the bond-

holders. It heavily increased its tax rate, but reduced assessments of taxable property to \$167,519,892, from \$275,000,000 approximately. Several banks at Miami, including the Bank of Biscayne with deposits of more than \$15,000,000, closed on June 11.

The citrus fruit industry, on the other hand, made a good recovery from the inroads of the Mediterranean fruit fly, which had afflicted it in the year previous, and produced a harvest approximating \$60,000,000. The Florida Inland Navigation District transferred possession of the East Coast Canal, a waterway extending from near Jacksonville to Miami, to the Federal government. See **ENTOMOLOGY**, **ECONOMIC**.

Authorities at Miami unavailingly sought by legal means to exclude from their city an ex-convict, Al Capone, of Chicago, who on his release came to reside there in a house already in his possession. He was arrested but freed by writ of habeas corpus.

Save in a small part of the area that had been infected with the Mediterranean fruit fly in the year previous, the last of the restrictions maintained by the Federal government against the shipment of Florida fruits and vegetables were removed on October 15. It thus became possible to resume in most cases the free shipment of these products, in time to be of advantage for the heavy winter season. Writs were issued on October 14 by the State Supreme Court ordering the cities of West Palm Beach and Hastings to levy sufficient taxes to meet maturing bond obligations. Like action was taken by the same court on October 23 with regard to the obligations of Bay County.

ELECTION. The State did not hold elections for Senator or Governor on November 4, but elected a Democratic delegation of four United States Representatives and kept the Democratic party in power in the Legislature. Four constitutional amendments were ratified by popular vote. They provided for the levying of an inheritance tax in the State, thus rescinding the action taken by the constitutional amendment of some five years before; for exempting new industries from taxation for 15 years; for limiting the taxation of automobiles to license tags; and for requiring that freeholders approve proposed bond issues of subdivisions of the State.

OFFICERS. Governor, Doyle E. Carlton; Secretary of State, W. M. Igou (succeeded by R. A. Gray); Attorney-General, Fred. H. Davis; Comptroller, Ernest Amos; State Treasurer, W. V. Knott; State Superintendent of Public Instruction, W. S. Cawthon; Commissioner of Agriculture, Nathan Mayo.

JUDICIARY. Supreme Court: Chief Justice, Glenn Terrell; Associate Justices, W. H. Ellis, James B. Whitfield, Armstead Brown, Rivers Buford, L. W. Strum.

FLORIDA, UNIVERSITY OF. A State institution of higher education for men in Gainesville, Fla.; founded in 1905. In the autumn of 1930 the registration totaled 2252, distributed as follows: Arts and sciences, 511; commerce and journalism, 558; education, 281; engineering, 295; law, 194; agriculture, 215; pharmacy, 49; architecture and allied arts, 62; graduate, 104. The registration for the summer session of 1930 was 1483 men and women. The faculty numbered 160 (exclusive of student assistants and research workers). The cost of operating and maintenance was \$2,330,276; the annual endowment was \$315,488. The library

The 1930 business depression was largely responsible for the downward trend of food prices in the United States. As pointed out by L. H. Bean of the Bureau of Agricultural Economics, U. S. Department of Agriculture, in an address delivered before the Second International Conference of Agricultural Economists at Cornell University, Aug. 27, 1930, food prices reflect in large measure fluctuations in business activity and the buying power of consumers. The accompanying chart

(*The Agricultural Situation*, Vol. 14, No. 7, p. 3) gives a comparison between changes in annual factory payrolls and the average prices of such food products as meats, dairy products, and poultry from 1920 through July, 1930. The two curves follow each other quite closely. The apparent exception in 1922-23 is attributed to very heavy surpluses of food products and in 1928 to a shortage of beef cattle.

OTHER COUNTRIES. The general trend of retail food prices throughout the world may be seen from the accompanying table compiled from data reported by the Bureau of Labor Statistics (*Mo. Labor Rev.*, Vol. 31, No. 5, pp. 238, 239). The index numbers, which were constructed by the various national statistical offices, were based on the prices of a number of articles of food weighted according to different standards, but unless otherwise noted referable to the original pre-war basis of 100. Since few 1930 figures later than August were available, the comparison has been made of the

successful attempts to increase the vitamin D (antirachitic) content of cow's milk by feeding the cows cod-liver oil, found that the feeding of irradiated yeast increased the vitamin D content of milk in a very satisfactory manner without lowering the fat content of the milk as was the case with cod-liver oil. It is quite probable that this may also be the case with human milk and that nursing mothers may be able to protect their babies against rickets by eating irradiated yeast.

The iodine content of cow's milk can also be altered by feeding the cows some source of iodine. Krauss and Monroe at the Ohio Agricultural Experiment Station (*J. Biol. Chem.*, Vol. 89, p. 581) found that milk iodized by feeding cows small amounts of potassium iodide was of definite therapeutic value, since when fed to rats it produced smaller thyroid glands containing a greater percentage of iodine than normal milk. This suggested the feasibility of iodizing the general milk supply in localities where goitre was prevalent.

INDEX NUMBERS OF RETAIL FOOD PRICES IN THE UNITED STATES AND OTHER COUNTRIES
[1914 = 100]

| Year and month | United States | Canada | Belgium | Czechoslovakia | Finland | France* (Paris) |
|--------------------|---------------|--------|-------------|----------------|-------------------|--------------------|
| 1929, August | 157 | 157 | 879 | 900 | 1,131 | 123 |
| 1930, August | 141 | 144 | 872 | 857 | 995 | 127 |
| Year and month | Germany | Norway | Switzerland | United Kingdom | India (Bombay) | New Zealand |
| 1929, August | 155 | 161 | 156 | 153 | 146 | 146 |
| 1930, August | 145 | 151 | 152 | 144 | 133 | 143 ^b |

* In gold.

^b July.

corresponding prices for August, 1929 and 1930. As will be noted, slight decreases are shown for all countries except France.

FOOD COMPOSITION. It is becoming more and more evident that the composition of natural foods, either of vegetable or animal origin, depends upon many factors and that wide variations may be expected in the composition of the same food under different circumstances. This is particularly true of those constituents which are present in very small amounts such as some of the minerals and the various vitamins. Apples have always been considered to be rather low in the antiscorbutic vitamin C, but Bracewell, Hoyle, and Zilva (*Biochem. J.*, Vol. 24, p. 82) discovered one variety, the English cooking apple known as Bramley's Seedling, to be very rich in vitamin C, containing far more than any other variety tested by them or by previous investigators.

Tomatoes ripened on the vine were found by Clow and Marlatt (*J. Agr. Research*, Vol. 40, p. 767) to contain more vitamin C than greenhouse tomatoes ripened on the vine and than field tomatoes picked green and ripened in the air or with ethylene. Jones and Nelson (*Am. J. Pub. Health*, Vol. 20, p. 387) likewise showed that the naturally ripened tomatoes were higher in vitamin C. While ethylene treatment of green tomatoes did not destroy any of the vitamins already developed, it did not take the place of ordinary ripening in air for their further development.

It used to be said that milk was an ideal food, but with the discovery of the importance of certain minerals and vitamins, it has to be admitted that milk does not contain every food constituent in favorable proportions. Some of the deficiencies can be made up by the cow herself under proper feeding. Steenbock, Hart, and Hanning at the Wisconsin Agricultural Experiment Station (*J. Biol. Chem.*, Vol. 28, p. 197), after rather unsuc-

cessful attempts to increase the vitamin D (antirachitic) content of cow's milk by feeding the cows cod-liver oil, found that the feeding of irradiated yeast increased the vitamin D content of milk in a very satisfactory manner without lowering the fat content of the milk as was the case with cod-liver oil. It is quite probable that this may also be the case with human milk and that nursing mothers may be able to protect their babies against rickets by eating irradiated yeast.

Cows do not seem able, however, to increase the iron (*J. Biol. Chem.*, Vol. 67, p. 43) or copper (*J. Biol. Chem.*, Vol. 83, p. 27) content of their milk no matter how rich their rations may be in these essential constituents. Evaporated, condensed, or dried milk may be considerably richer in copper than raw milk, if copper pans are used for condensing the milk. See also VITAMINS.

FOOD SELECTION AND EXPENDITURE. A dietary survey of 607 families in seven cities and towns in Scotland by Orr and Clark (*Lancet*, 1930, II, p. 594) led to the conclusion that the diets on the whole were adequate as regards energy value, but low in protein and still lower in essential minerals. This study was occasioned by an earlier school lunch demonstration in the same community in which as favorable results were obtained in the use of separated milk as whole milk as a supplementary school lunch. The findings in the dietary study are in harmony with these, since skim milk would increase the protein and mineral content of the children's diet quite as well as would whole milk.

A study by Mathews of the food habits of Georgia rural people (*Georgia Agr. Expt. Sta. Bul.* 159) showed that the diets were probably adequate in calories, protein, and calcium, slightly deficient in phosphorus, and seriously deficient in iron. In food groups, the principal deficiencies were in lean meat, eggs, dairy products, fruits and vegetables, suggesting the need for increased

production on the farms of foods for home consumption. A similar study, but with more emphasis on expenditures, was reported by Talbott at the Idaho Agricultural Experiment Station (*Idaho Agr. Expt. Sta. Bul.* 165). Here differences in food selection in the winter and summer months were more apparent. Averaged for the year, the consumption of fruits and vegetables compared favorably with accepted standards, but in the winter dietaries the consumption of leafy green vegetables was very low and of potatoes very high. The consumption of whole milk was very low and of skim milk comparatively high. The average cost of the food consumed per man per day was 50 cents, with no appreciable differences between summer and winter dietaries.

A valuable study of the cost of adequate diets for farm and village families in New York State was reported by Williams and Lockwood (*New York Cornell Agr. Expt. Sta. Bul.* 502). The method followed was the analysis of day-by-day accounts for a four-week period of all the food consumed by 100 or more families who were economically independent and in good health, but of widely varied economic status. The records were spread through a period of about 20 months, thus covering all seasons. After comparison of the diets with previously adopted standards of adequacy, the food costs of those diets meeting the standards of adequacy were calculated and from these figures tables were prepared of adequate low-cost food budgets for all ages from a child a year old to an adult doing active work. The investigation showed that for village families with no home-produced foods the cost of an adequate diet need not exceed 50 cents per man per day under conditions existing at the time the data were collected (1926-1927), and that with wise planning and the use of home-produced milk, meat, eggs, fruits, and vegetables it is possible for the farm family to reduce the money expenditures for food far below this figure.

THE NUTRITION OF WOMEN DURING REPRODUCTION AND LACTATION. Coons and Blunt (*J. Biol. Chem.*, Vol. 86, p. 1) studied the nitrogen, calcium and phosphorus metabolism of nine women at intervals from the 11th to the 39th week of pregnancy. The nitrogen retention tended to vary with the intake, but in general was higher in midpregnancy than later. The calcium retention was also irregular, but with a marked tendency to rise toward the end of pregnancy. The phosphorus retention rose during the early part of pregnancy and then remained at a fairly constant level. Success in lactation was associated with satisfactory nitrogen retention and partial failure with low retention. Röntgenograms of the wrists and ankles of most of the babies on the eighth day after birth showed differences which closely paralleled the mothers' good or bad retention of calcium.

The subjects in the study of Coons and Blunt were homemakers of varying social and economic status. Superior milk producers of the Mother's Milk Bureau, Detroit, served as subjects in an extensive investigation by Macy and associates of calcium and phosphorus utilization during two successive lactation periods and the intervening pregnancy (*J. Biol. Chem.*, Vol. 86, p. 17), and of the fluctuations and total volume of milk produced during the two lactation periods (*Am. J. Diseases Children*, Vol. 39, p. 1186). The excessive drain on the system for calcium during successive lactation periods was shown by the fact that although the calcium balances were positive during the

latter part of the first of the two lactation periods studied they became negative at one time or another during the subsequent pregnancy and in the early and late periods of the following lactation in spite of the fact that food consumption data showed a high intake of calcium. The phosphorus balances were positive during the latter part of the first lactation and the greater part of the pregnancy, but also became negative during part of the second lactation.

These women were on self-chosen diets furnishing between 3700 and 4700 calories, 27.8 and 29.4 gm. of nitrogen, 2.8 and 4.4 gm. of calcium, and 2.9 and 4.3 gm. of phosphorus daily. Their milk production, while varying from day to day, gradually increased as lactation progressed up to a certain level and then remained fairly constant for several weeks. While the milk production was at its height and calcium and phosphorus balances were negative, the diet of each of the subjects was supplemented by 15 gm. of cod-liver oil and 10 gm. of yeast for a period of two months. This not only had a very favorable effect upon the retention of both calcium and phosphorus, but improved the general condition of the women. The women were enormous milk producers, one of them averaging 2602 cc. (or about 2.8 quarts) daily in the latter part of the first and 3134 cc. (3.3 quarts) in the second of the two lactation periods studied. Complete removal of the milk from the breasts at regular intervals, as is the practice of milk producers at this bureau, increased the flow of milk. Hoobler (*J. Am. Dietet. Assoc.*, Vol. 6, p. 10) considers the method of stripping the breasts after each nursing the best means of maintaining a milk supply or increasing a failing one. In his opinion the protein content of the diet of nursing mothers should be relatively high and the calorie intake about 3000. Although all the vitamins are considered to play some part in milk production, vitamins A, B, and E are thought to have a greater influence than C and D.

THE NUTRITION AND GROWTH OF CHILDREN. On the basis of metabolism experiments, minimum requirements of various food essentials for children have been proposed. From calcium and phosphorus balance experiments conducted on 18 children, Wang, Kern, and Kaucher (*Am. J. Diseases Children*, Vol. 39, p. 768) concluded that "the minimum and not the optimum calcium and phosphorus requirements of an 8-year-old child weighing 20 kg. and living on a mixed diet would be 0.64 gm. of calcium oxide and 1.58 gm. of phosphorus pentoxide per day."

Parsons (*Am. J. Diseases Children*, Vol. 39, p. 1221) concluded from protein metabolism experiments on three normal children of preschool age and two diabetic children 12 and 4 years of age under insulin treatment that a healthy child from 4 to 8 years of age can maintain a positive nitrogen balance on 0.5 gm. per pound or 1.1 gm. per kilogram body weight, and that with insulin a diabetic child requires twice this amount for normal development. Rose and associates (*J. Nutrition*, Vol. 3, p. 229) on the basis of an iron metabolism experiment conducted on a child two years and seven months of age recommended that children from two to three years of age receive at least 0.75 mg. of iron per 100 calories.

The use of height and weight standards as the sole method of determining the nutritional status of children continued to receive considerable criticism. The custom of measuring children with only outer garments removed was criticized by Whit-

acre and Sumner (*J. Home Econ.*, Vol. 22, p. 869) who found in the course of a study of the growth in height and weight of white, Mexican, and Negro school children in Texas wide variations in clothing weights even after outer clothing, shoes, and accessories had been removed. In their opinion accuracy cannot be attained in following the weight of school children from month to month unless "the child is weighed (1) in a known weight of clothing, (2) at approximately the same hour of the day each month, and (3) with his urinary bladder empty."

Frayser and Moser (*So. Carolina Agr. Expt. Sta. Bul.* 268) in reporting a story of the dietary habits and health of about 300 South Carolina school children 8, 9, and 10 years of age noted that 41 per cent of the children were ranked by the examining physician as in poor, 36 in fair, and 32 in good nutritive condition, while according to the Baldwin-Wood height-weight-age tables nearly half of those judged to be in poor nutritive condition would have come within 10 per cent of the satisfactory weight standards. In a much more extensive investigation by Ahman, Abbott, and Westover (*Florida Agr. Expt. Sta. Bul.* 216) of the nutritional status of over 3000 school children in five representative counties in Florida, no relationship could be established between the dietary scores and height and weight records. Children suffering from hookworm infestation tended to be overweight and from defective tonsils underweight. The report of this investigation emphasizes the fact that until such defects as hookworm infestation and defective tonsils are corrected, weight should not be used as the standard for nutrition.

School lunches either supplemental to the regular three home meals or as the midday meal of children unable to go home for lunch continued to receive attention. Morgan and Barry (*Am. J. Diseases Children*, Vol. 39, p. 935) demonstrated the value of increasing the vitamin B content of the diet of underweight school children by supplemental feeding at the noonday school lunch of rolls containing 50 per cent wheat germ to furnish additional vitamin B.

An extensive survey by Davies (*Mass. Agr. Expt. Sta. Bul.* 263) of the food service in Massachusetts rural elementary schools revealed the fact that out of 57,600 pupils 16,000 remained in the school buildings for their midday meal. In 71 per cent of the buildings, however, there was no food service of any kind, in 23 per cent some hot drink or soup was served during the winter months, in 3 per cent milk alone was served either as a midmorning lunch or at noon, and in 3 per cent a regular meal was served throughout the entire year. That provision for some hot food for school lunches is not beyond the possibility of schools with very limited resources was shown in the report of this study by description of some of the existing services. In discussing supplemental milk feeding, Davies suggested that the frequent objection to such service on the ground that it spoils the pupil's appetite for lunch can be explained through the fact that the usual time for serving milk is at midsession or recess, which is too near the noonday meal. Midmorning, halfway between breakfast and the noon meal, is in general about 9.30, and this is the time at which supplemental feeding should take place.

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FOOTBALL. Notre Dame won recognized pre-eminence among American college football teams of 1930, meeting the strongest teams in the East, the Middle West, and the Pacific Coast and ending the season undefeated and untied. Northwestern and Michigan were the outstanding teams of the Big Ten Conference; Army, Colgate, Dartmouth, and Fordham, of the East; Alabama and Tulane, of the Southern Conference; Washington State, of the Pacific Coast Conference; the University of Texas, of the Southwest Conference; and the University of Utah, of the Rocky Mountain Conference. Alabama also went through a hard schedule undefeated. Army and Navy played for the first time in three years, the game in New York City, December 13, being arranged for the benefit of the Salvation Army's unemployment relief fund. A team of picked Western players defeated an Eastern mixed eleven at San Francisco, December 27, by a score of 3 to 0.

The number of college, preparatory, and high-school students participating in football was greater than ever before. The number of spectators, however, showed a decline from the peak of 1929, particularly in the Middle West. Night college football, inaugurated in the Middle West in 1929, proved somewhat more popular in 1930. A total of 13 players were killed during the football season, of whom eight were on high-school teams, four on college elevens, and one on an independent team. The increasing emphasis upon and the tendency toward commercialization of football and other leading amateur sports increased the chorus of condemnation and criticism voiced in 1929 in a report of the Carnegie Foundation. Dr. Nicholas Murray Butler, president of Columbia University, at the end of the 1930 season advocated an intercollegiate athletic league for the elimination of sports abuses. Dr. William Mather Lewis, president of Lafayette College, joined Dr. Butler in deploring the "lack of moderation in the field of athletics, particularly football" at the opening of the National Collegiate Athletic Association convention in New York City, December 29. The American Football Coaches Association, meeting at the same time, adopted resolutions intended to meet in part the criticisms directed at the game.

Among the outstanding players of the year were: Centres, Ben Tieknor of Harvard, Siano of Fordham, Hein of Washington State; guards, Linehan of Yale, Metzger of Notre Dame, Leathers of Georgia, Humber of Army; tackles, Price of Army, Edwards of Washington State, Van Bibber of Purdue, Sington of Alabama; ends, Conley of Notre Dame, Smith of Georgia, King of Army, Ebbing of St. Mary's, and Fesler of Ohio State. Of the large list of brilliant backs, those particularly noteworthy were Bruder of Northwestern, Carideo and Schwartz of Notre Dame, Macaluso of Colgate, Pinckert of Southern California, Hewitt of Columbia, Suther of Alabama, Roberts of Georgia, Newman of Michigan, Rentner of Northwestern, Booth of Yale, Stecker of Army, Bennett of Princeton, and Wood of Harvard.

Scores of some of the important games follow:

Army, 6—Navy, 0; Notre Dame, 7—Army, 6; Stanford, 14—Dartmouth, 7; Notre Dame, 14—Northwestern, 0; Harvard, 13—Yale, 0; Navy, 6—Maryland, 0; Yale, 10—Princeton, 7; St. Mary's, 20—Fordham, 12; New York University, 2—Georgetown, 0; Brown, 6—Columbia, 0; Dartmouth, 19—Cornell, 13; Williams, 16—Amherst, 13; Michigan, 7—Minnesota, 0; Pennsylvania, 34—Georgia Tech, 7; Alabama, 12—Vanderbilt, 7; Notre Dame, 27—Southern California, 0; Navy, 26—Pennsylvania (University), 0; Colgate, 7—New York University, 6; Washington State, 13—Villanova, 0; Holy Cross, 7—Boston College, 0; Georgia, 7—New York University, 6; Fordham, 13—Detroit, 7; Michigan, 6—Harvard, 8; Army, 13—Illinois, 0; Pittsburgh, 7—Carnegie Tech, 6; Ohio State, 27—Navy, 0; Columbia, 10—Cornell, 7; New York University, 20—Carnegie Tech, 7; Dartmouth, 0—Yale, 0; Princeton, 0—Chicago, 0; William and Mary, 13—Harvard, 13; Army, 7—Yale, 7; St. Mary's, 7—Oregon, 6; Washington State, 16—California, 0.

The Green Bay Packers won the championship of the National Professional Football League for the second successive year. Professional football enjoyed its most successful season from the viewpoint of attendance, 40,000 spectators attending the crucial game of the season in New York City.

FORAGE CROPS. See ALFALFA; HAY.

FORBES, STEPHEN ALFRED. An American entomologist and educator, died in Urbana, Ill., Mar. 13, 1930. He was born in Silver Creek, Ill., May 29, 1844. He served during the Civil War with the 7th Illinois Volunteer Cavalry and rapidly won promotion to the rank of captain. At the close of the war he studied medicine for some time at the Rush Medical College, then decided to become a naturalist. In 1872 he became curator of the museum of the Illinois State Natural History Society, and in 1875 was appointed instructor in zoölogy in the Illinois State Normal University, where he remained until 1878. The museum was converted by act of the State Legislature in 1877 into the Illinois State Laboratory of Natural History, and he was made director. Five years later he was appointed State entomologist. In 1884 he became professor of zoölogy and in 1909 professor of entomology at the University of Illinois, holding the latter chair until his retirement in 1921. He also served as dean of the college of science at this institution from 1888 to 1905. In 1927 the Illinois State Laboratory of Natural History and the State entomologist's office were converted, under his direction, into the Natural History Survey of Illinois.

In addition, Professor Forbes conducted expeditions and made special studies for the U. S. Fish Commission in Yellowstone Park, the Flathead region of Montana, Lakes Superior and Michigan, and certain lakes in Wisconsin, gaining recognition as the foremost American authority on aquatic biology. During the Chicago Exposition in 1893 he organized the International Congress of Zoölogists, and was president of the American Association of Economic Entomologists in 1893 and 1908, of the Entomological Society of America in 1912, and of the Ecological Society of America in 1921. The Ph.D. degree was conferred on him by Indiana University in 1884 and the LL.D. degree by the University of Illinois in 1905. The first-class medal of the Société d'Acclimatation de France was presented to him in 1886 for his scientific publications. His works include: *Biennial Reports as State Entomologist, 1883-1916*; *Studies of the Food of Birds, Fishes, and Insects*; *Contagious Diseases of Insects*; *Papers on the Ecological Distribution of Illinois Birds and Fishes, and on the Entomostraca of North America*; and *Final Report on the Fishes of Illinois and Studies on the Biology of the Ill-*

inois River (with R. E. Richardson). He also edited the bulletins of the Illinois State Laboratory of Natural History and of the Natural History Survey of Illinois.

FORBES COMMISSION. See HATTI under *History*.

FORD, GEORGE BURDETT. An American architect and city planning specialist, died in New York City, Aug. 13, 1930. He was born in Clinton, Mass., June 24, 1879, and was graduated from Harvard University in 1899 and from the Massachusetts Institute of Technology in 1900 (S.B.) and 1901 (M.S.). On completing the course at the École des Beaux-Arts in Paris in 1907, he became associated with George B. Post and Sons, architects, with whom he continued his practice for the next 10 years. In 1910 he was appointed delegate from the United States to the International Housing Congress in Vienna, and on his return became consulting engineer to the commission on city planning and the commission on building districts and restrictions of the Board of Estimate and Apportionment of New York City. In 1916 he was a member of the American Industrial Commission to France. On the entrance of the United States into the World War he organized the reconstruction bureau of the American Red Cross and served as a deputy commissioner of that organization in France from 1917 to 1919. He was also a member of the housing committee of the Council on National Defense and city planning consultant to the U. S. War Department. During 1919-20 he was consultant to the French government in the reconstruction of Rheims, Soissons, and other cities destroyed in the War, and was made a chevalier of the Legion of Honor in recognition of this service.

In 1923 Mr. Ford was consultant to the committee of the Russell Sage Foundation engaged in making a study of the Regional Plan of New York and Its Environs, and later served in the same capacity to the Regional Planning Federation of the Philadelphia Tri-State District. As vice president of the Technical Advisory Corporation, he acted as adviser to city planning commissions in more than 25 American cities and as zoning consultant to 94 cities. In 1929 he acted as consultant to the Philippine government in replanning the city of Manila and environs, and in 1930 was appointed director of the Regional Plan Association in New York City. He was town planning lecturer at Columbia University during 1914-16, to the U. S. Army Educational Corps in France in 1919, and at Harvard University in 1929. In addition, he was president of the Federated Societies on Planning and Parks, past president of the American City Planning Institute, and director of the Planning Foundation of America. His works include: *City Planning Progress* (1917); *Out of the Ruins* (1919); and *Urbanisme en pratique* (1919).

FORDHAM UNIVERSITY. A Roman Catholic institution for higher education, under the Society of Jesus, at Fordham, New York City; founded as St. John's College in 1841. It is the largest Roman Catholic educational institution in the United States. The enrollment for 1930-31 totaled 10,121 students, including 1392 in the teachers' college and 658 in the graduate school, and a distribution among the other colleges as follows: Law, 1208; St. John's College, 1364; downtown college, 787; business administration, 316; pharmacy, 511; social service, 852; Irish

studies, 141; extension, 808; preparatory school, 543. The registration for the summer session of 1930 was 1541. There were 384 faculty members. The endowment fund amounted to \$381,500. There were 110,000 volumes in the library. President, the Rev. Aloysius J. Hogan, S.J., Ph.D., who was formally inducted Nov. 21, 1930, succeeding the Rev. William J. Duane.

FOREIGN EXCHANGE. See FINANCIAL REVIEW.

FORESTRY. From a commercial viewpoint, forestry suffered along with other prominent industries during 1930 with decreased sales of lumber and lumber products at prices generally below those of the preceding year. Yet from the constructive standpoint of education, development of far-seeing policies, and improved public attitude there was considerable progress. There is no longer any question in the popular mind of the importance of forestry in the public welfare programme, especially in the agricultural programme where it is recognized that unprofitable farming lands should go back into well-kept forests. A writer in the November *Journal of Forestry* estimated that there remained in the United States 125 of the original 822 millions of acres of natural forests. Apparently too much of the cleared land was rushed into agriculture with the result that some of the so-called marginal lands must now revert into forests to the benefit of every one, the farmer, the forester, and the ultimate consumer.

THE LUMBER SITUATION. Tremendous increases in the imports of Russian lumber and pulpwood caused much worry to American lumber interests during the year. The Russian government in an effort to raise adequate funds for mechanizing and industrializing that nation embarked on a programme of converting some of Russia's vast natural resources into ready money. In the *Journal of Forestry*, December, 1930, the statement was made that seven prominent eastern United States pulp companies had contracted to import 280,000 cords of Russian pulpwood during 1930, in sharp contrast with imports totaling barely 3000 cords in 1929. From the viewpoint of forest conservation, the receipt of such vast quantities of foreign lumber might appear desirable as it meant that much less American timber need be cut, but from an economic standpoint such radical changes in a major industry such as lumber production was certain to cause disruption in normal procedure and bring widespread distress to thousands of workers and their families. An attempt to thwart Russian lumber importations on the grounds that such materials are produced by convict labor failed because of inadequate supporting evidence. See RUSSIA under *History*.

CANADIAN FORESTRY. According to the National Development Bureau of the Canadian Department of the Interior, over 32 per cent of the land area of Canada was in forests. The volume of standing timber was estimated at 224,304 million cubic feet, capable of yielding 424,637 million board feet of lumber, and 1,121,993,000 cords of pulpwood. The tremendous contribution of the Canadian forests to the Dominion's welfare is shown in a production of sawn lumber, pulpwood, shingles and other forest products in the year 1928 of over 139 million dollars in value. The United States was said in this report to be one of Canada's best customers for lumber products, especially newsprint material, the production of which in 1928 was estimated at 2,849,687 tons valued at over \$184,000,000. See CANADA under *Forests*.

THE UNITED STATES NATIONAL FORESTS. Adhering to a policy of gradually increasing the area of the nationally-owned forests, 340,297 acres were added to the net area during the fiscal year ended June 30, 1930, making a grand total of 160,090,817 acres in the National Forests. In order adequately to manage these vast holdings, the entire country was subdivided into nine forest regions, each in charge of a responsible executive. Cash receipts from sale of timber, grazing fees, lease of water-power sites, etc., reached a total of \$6,751,553. Expenditures, on the other hand, approximated \$27,000,000 but included many permanent improvements such as highways and trails to render the forests available to the people and also to assist in expediting fire control, handling of timber, etc. If it were possible to evaluate the recreational returns of the National Forests, to the American people, there is no question but that the books would balance more favorably. A total of 18,196 acres were replanted with nursery stock, making slow progress in the restoration of the some 2,000,000 acres included in the National Forests that need replanting.

FOREST PROTECTION. According to the report of the Forester to the Secretary of Agriculture, 1930, in spite of the drought, was on the whole a moderate season in respect to forest fires, standing out in sharp contrast to the preceding year in which vast forest areas were burned and 16 Forest Service and 6 other workers lost their lives. The severe drought in the eastern United States was indirectly responsible for an unusual number of fires. Lightning, rarely a factor in the East, started many fires in the Arkansas forest area. The construction of highways and trails is gradually breaking down the greatest obstacle in fire control, namely, inaccessibility. The effectiveness of control measure was shown by the Forest Service to be correlated very closely with the time elapsing between outbreak of the fire and start of control measures.

Bark beetles continued to ravage mature stands of timber in the Northwest States, epidemics which necessitated drastic control treatment, namely, the felling of and peeling of infested trees, occurring in Idaho, Wyoming, Montana, Oregon, and Colorado. An outbreak of spruce bud worm occurred in the Shoshone National Forest in Wyoming.

The White pine blister rust, deadly to all five needled pines, spread rapidly in Idaho and Oregon, endangering the valuable stands of western white pine in these and nearby States. This destructive disease spends part of its life cycle on the gooseberry and currant plants, a fact which makes its control possible but nevertheless difficult because of the number and wide distribution of these alternate hosts.

Chestnut blight, which in a very few years had practically eliminated this fine species from North American forests, occupied the attention of investigators. Department of Agriculture plant explorers searched the remote regions of China and Japan for resistant species of this tree, which has always had much importance as a source of tanning extract as well as lumber and nuts. Thousands of viable nuts and many living twigs were sent to the United States and were being grown in the hope of discovering a satisfactory substitute for the susceptible American species.

FORESTRY RESEARCH. Continuing the policy of organizing its research work on a systematic regional basis, the U. S. Forest Service established

two new experiment stations in 1930, the South-western Forest and Range Station at Tucson, Arizona, and the Intermountain Forest and Range Station at Ogden, Utah. In both cases several scattered and rather independent units were brought together under one head with the purpose of a more effective attack on problems. Certain outstanding research results were presented in the 1930 report of the Forester of the U. S. Department of Agriculture. At the Pacific Northwest Forest Experiment Station it was found that forest tree seed may be carried one-half mile in a high wind, but that in general 500 feet is a maximum distance for seed to travel from the parent tree, thus necessitating the leaving of rather frequent seed trees at time of cutting the forest.

At the Lake States Forest Experiment Station there were found wide differences in the vigor of young nursery trees in relation to the region from which the seed was obtained. Work in the pineries of the South indicated the unprofitableness of tapping pines less than 9 inches in diameter. Studies on the deep silt soils of Wisconsin showed that forests are highly effective in limiting loss of soil from erosion, even more so than grass. Studies of the structure and chemistry of various woods were carried on at the Forest Products Laboratory, Madison, Wisconsin, with a view to developing scientific methods of kiln drying, preservation, and pulping and the best methods of utilization. As a result of these studies, various species formerly considered of inferior value were found to have a distinct and useful place in the lumber and lumber products industry.

PERSONAL. Dr. C. F. Korstian, of the U. S. Forest Service, was appointed head of forestry activities at Duke University, Durham, N. C., where it was proposed to establish a school of forestry with experimental and demonstration forests. Dr. H. P. Baker was elected dean of the New York State College of Forestry at Syracuse University, Syracuse, N. Y., to succeed the late Franklin F. Moon who died in 1929. Will C. Barnes, well-known magazine writer on range and forest subjects retired from the Federal Forest Service to devote his entire time to writing. Stephen T. Mather (q.v.), constructive and far-visioned director of the National Parks Service died Jan. 22, 1930, leaving an everlasting monument to his memory in the wonderful system of parks built up during his administration.

BIBLIOGRAPHY. Forestry publications of the year were largely in the nature of short popular articles appearing as bulletins or in periodical form. Some of the books of the year follow: J. E. Kirkwood, *Northern Rocky Mountain Trees and Shrubs* (Stanford University Press, 1930); W. Fry, *Big Trees* (Stanford University Press, 1930); C. Wagner, *Lehrbuch des Forstschutzes* (Berlin, 1930); W. E. Hiley, *The Economics of Forestry* (Oxford, England, 1930); *The First Thirty Years of the Yale School of Forestry* (New Haven, Conn.); *The Forest Service*, Brookings Institution Monograph (Washington, D.C., 1930).

FORMOSA or TAIWAN. An island about 75 miles off the southern coast of China, ceded by China to Japan on June 2, 1895. The area is 13,155 square miles, excluding the adjacent Hokoto (Pescadores) islands, with an area of 48 square miles, and other small islands. The population in 1930 was 4,594,161, of whom (in 1927) about 202,990 were Japanese, 130,400 were aborigines, and 37,953 were foreigners. Taihoku, the capital, had 205,613 inhabitants in 1926. Other leading towns

were Tainan, 87,930; Keelung, 68,049; and Kagi, 47,894. In 1926-27, there were 132 primary schools for Japanese, with 27,433 pupils, and 550 schools for natives, with 219,182 pupils, in addition to various secondary schools and the University of Formosa, opened in 1928.

Rice, tea, sugar, and various fruits are the chief agricultural products, but the island produces in commercial quantities nearly every tropical and subtropical product. It supplies all of the world's Oolong tea and nearly all of the natural camphor. Indigo, hemp, sweet potatoes, cereals, and peanuts are other crops. Production of the chief crops was: Rice, 34,811,618 bushels (1928); tea, 9,098,000 pounds (1928); raw sugar, 811,312 tons (1928-29). An irrigation and drainage project for the reclamation of 562 square miles of land was completed in 1930 at a cost of \$26,919,000. Much of Formosa is heavily forested with camphor and other valuable trees. The total value of mineral production during 1928 was 16,513,301 yen (1 yen exchanged at \$0.464 in 1928). Gold, copper, silver, sulphur, petroleum, and coal are the principal minerals worked. The total catch of the fisheries (1928) was valued at 16,000,000 yen. Manufacturing is confined mainly to the making or refining of flour, sugar, tobacco products, oil, iron-work, glass, bricks, and soap. The manufacture and sale of opium, alcohol, salt, camphor, and tobacco products are Government monopolies.

Trade is mainly with Japan proper, exports to Japan in 1928 totaling 214,521,597 yen and imports 132,318,204 yen; in the same year exports to foreign countries totaled 33,895,688 yen and imports 58,335,729 yen. China, the United States, the Dutch East Indies, and Great Britain were the principal customers and also the leading sources of imports after Japan. The total trade increased from 332,168,355 yen in 1919 to 439,071,218 yen in 1928. For the fiscal year ended Mar. 31, 1929, actual revenues totaled 110,430,266 yen, excluding 37,093,545 yen representing the surplus carried over from the preceding year, and total expenditures were 109,109,280 yen. The working budget for 1929-30 balanced at 118,720,279 yen. Except for private lines serving the sugar plantations, the railways of the island are Government owned and operated. In 1928-29, there were 537 miles of Government lines, which carried 20,668,289 passengers, and 4,948,734 tons of freight, the revenues totaling 19,697,355 yen. Private lines totaled 1339 miles at the end of 1928, and tracks for hand-pushed cars, 758 miles. Of approximately 9394 miles of highways and roads in 1929, only about 2500 miles were fit for motor traffic.

The civil government of the island is administered by a Japanese governor-general, supported by a force of Japanese police. To guard the settled areas against inroads of the still unsubdued aborigines in the northern mountains, a frontier zone of over 360 miles has been established, of which about 230 miles are protected by charged barbed wire. One of the most serious native outbreaks in the history of the Japanese occupation occurred in October, 1930, when fierce Altaiyol tribesmen of Central Formosa attacked a Japanese colony at Musha, killing 86 and wounding 308. A strong Japanese punitive force later captured and burned several aborigine villages, but the topography of the country rendered the subjugation of the tribesmen virtually impossible. Governor-General in 1930, Eizo Ishizuka.

FOSSILS. See ANTHROPOLOGY; EXPLORATION; GEOLOGY; and ZOÖLOGY.

FOUCAULT, fōō'kō', Mgr. ALPHONSE GABRIEL. A French Roman Catholic prelate, died in Paris, May 27, 1930. He was born in Senonches, Mar. 24, 1843, and saw service during the Franco-German War as an ambulance driver. After taking orders in 1870 he was successively professor at the Institut Notre-Dame in Chartres and arch-priest of Nogent-le-Rotrou. In 1893 he was consecrated bishop of Saint-Dié, and at the close of the World War was cited for remaining in the city during the German bombardment. On the occasion of the fiftieth anniversary of his ordination in 1926, he consecrated a church to St. Jeanne d'Arc in Domremy, her birthplace, in the diocese of Saint-Dié.

FOUNDATIONS. The tendency in modern work to avoid pneumatic methods in foundation construction wherever possible was even more marked in 1930 than previously. As a matter of fact, there was not a single important pneumatic building foundation under construction in New York City as the year came to a close—a most unusual condition for this skyscraper centre. Among the newer methods which had come into prominence was the steel tube pile. Sectional steel pipe is driven by pile driver, usually to rock, the interior earth and silt is blown out by compressed air, and the tube is filled with concrete, thus providing essentially a nest of small piers to rock instead of the solid pier construction so widely used in former years.

In the bridge field there was to be noted not only the "sand-island" plan of the Suisun Bay construction, but also the novel method used in sinking piers 80 feet in depth through the New Jersey meadow muck for the Pennsylvania-Hackensack crossing by an ingenious scheme which reduced the air process to a minimum.

A modification of the cofferdam-caisson method was also developed in the construction of the huge City Service Building at Pine and Pearl Streets in New York. As originally planned, and as used so successfully in such great works as the Federal Reserve Bank in New York, the line of caissons, which form a cofferdam completely around the site to be excavated, have been supported, as excavation proceeded, by a perfect forest of heavy timber braces set in tiers or levels. At the Pine Street work it was found possible to support the double ring of sheet-pile caissons by inclined braces or shores, thus reducing greatly the amount of timber required and keeping the construction at all times remarkably free from obstruction due to timbering.

Legislation, due to the severe regulations applying to compressed air work and the consequent high cost of pneumatic methods, had thus forced the development of new and ingenious foundation methods.

HACKENSACK RIVER CROSSING. Eight piers of the approach structure leading to the new Pennsylvania Railroad passenger bridge over the Hackensack River, between Jersey City and Kearny, are supported on what may be described as huge pedestal piles. Some 80 feet of muck had to be penetrated to bring the bottoms of the 48- and 54-inch piles or columns to the hardpan below. A special boring machine, consisting of a three- or four-blade propeller-like auger mounted on a vertical shaft, was used, together with water jets, to churn up the muck down to the hardpan into a semi-liquid mass, about one inch larger in

diameter than the pile. In the vertical bore thus formed, filled with liquid mud and hence not requiring bracing, corrugated steel pipes were driven. These pipes were then dredged out with special well buckets and clamshells, and compressed air apparatus was installed. Working under air pressure two or three "sand-hogs" widened out the bottom of each tube so as to give a bearing area on the hardpan 11 or 12 feet in diameter. A frame of reinforcing steel was placed in each tube and the entire section was then filled with concrete. Six of the piers rest on eight of these supports, each 48 inches in diameter, and two of the piers required ten 54-inch supports.

DEADMAN ISLAND DAM. A unique form of cofferdam construction, somewhat similar to that used in 1910 in removing the wreck of the battleship *Maine* from Havana harbor, was used in constructing the foundations of this Ohio River dam. The work is located at Shields, Pa., 13½ miles below Pittsburgh, and is an important part of the 9-foot Ohio River canalization plan which President Hoover officially opened in 1929. The dam is of the ogee section, overflow type about 1600 feet long and 38 feet high. Seventy-eight cofferdam units, each consisting of a circle of steel sheet piling 40 feet high and 40 feet in diameter, driven to rock and filled with gravel and sand, were used to unwater the site and permit the foundation to be placed and the dam built.

REINFORCING MAUMEE RIVER BRIDGE PIERS. The original bridge of the Toledo Terminal Railway was a single-track structure designed for an E 40 loading, but built with piers of sufficient size to take a double-track bridge. When it was proposed to build a new double-track bridge for an E 70 loading, almost twice the original, it was clear that the foundations of the original piers would not suffice. This led to a unique foundation and underpinning problem. The original piers were on timber grillages 4 feet thick located 8 to 23 feet below river level and resting on timber piles. Steel sheet pile cofferdams were built around the piers, the silt under the grillages and around the piles was removed (about 8 feet in depth), new piles were driven, and the entire space filled solidly with concrete. Excavation at one pier showed that the pier had been moved, due to a steamer colliding with it, so that it overhung the piles by 10 feet and the piles also had all been tilted over 10 degrees.

BRAZOS RIVER, TEXAS. Two piers for the new highway bridge over the Brazos River near Chapel Hill, Tex., involved a novel form of caisson construction. Reinforced concrete caissons 17 by 44 feet in size were roofed over to form a working chamber as it was expected that air pressure would be needed to complete their sinking. Special holes were left in this roof to which large vertical steel tubes were welded. The caissons were brought to rest on a thin layer of sandstone overlying clay and were pinned down and reinforced in bearing by driving piles through the above-mentioned tubes.

BRISBANE RIVER BRIDGE, AUSTRALIA. Every year in recent years foundation work somewhere has required using pneumatic pressure of the limiting amount—about 50 pounds per square inch above atmosphere. In 1930 this distinction rested with the builders of the Brisbane Bridge in Australia. The piers of this bridge rest on circular caissons, 28 feet in diameter, carried 96 to 115 feet below water level to rock. Pressures of 35

to 50 pounds were required for this work, and, as is usual in well-ordered modern construction, no difficulty was experienced with caisson disease. See BRIDGES.

FOUNDATIONS, EDUCATIONAL. See EDUCATION IN UNITED STATES; UNIVERSITIES AND COLLEGES; BROOKINGS INSTITUTION; CARNEGIE FOUNDATION FOR THE ADVANCEMENT OF TEACHING; ROCKEFELLER FOUNDATION; RUSSELL SAGE FOUNDATION.

FOWLS, FOWL DISEASES, etc. See LIVE-STOCK; VETERINARY MEDICINE.

FRANCE. A republic of western Europe, whose land frontiers are bounded by Belgium, Luxembourg, Germany, Switzerland, and Italy on the north and east and by Spain on the south. Capital, Paris.

AREA AND POPULATION. The acquisition of Alsace-Lorraine as a result of the World War increased the area of France from 207,054 to 212,659 square miles (see ALSACE-LORRAINE). The population in 1929 was estimated at 41,130,000, as compared with 40,743,897 at the census of 1926 and 39,209,518 at the census of 1921. Slightly more than half of the population was rural in 1926. In the same year there were 2,505,047 foreigners in the country (1,550,459 in 1921). For the first time since the World War, the French death rate in 1929 exceeded the birth rate. Births totaled 728,540 and deaths 741,104, the excess of deaths over births being 12,564, as compared with 745,315 births, 675,110 deaths, and a surplus of 70,202 births in 1928. The number of marriages fell to 333,441 in 1929 from 339,014 in the preceding year, while the number of divorces increased by 531. Cities with a population of more than 200,000 in 1926 included: Paris, 2,871,429; Marseilles, 652,196; Lyons, 570,840; Bordeaux, 256,026; and Lille, 201,921. Between 1925 and 1929, contract workers entering numbered 385,808 more than those leaving France.

EDUCATION. Elementary education is free and compulsory between the ages of 6 and 13. The school system is centralized and divided into primary, secondary, and superior classes, all under the administrative direction of the Superior Council of 52 members, which acts in collaboration with a Consultative Committee and the Minister of Education. In 1927-28 there were 3677 infants' schools, with 361,690 pupils (of which 3094 schools, with 345,911 pupils, were public), and 80,146 primary schools, with 3,911,354 pupils (of which 68,257 schools, with 3,139,024 pupils, were public). Higher elementary schools (November, 1927) totaled 512, with 78,641 pupils. Enrollment in the 565 secondary schools in November, 1928, was 171,186, including 53,503 girls. The 17 universities had a total enrollment of 64,531 on July 31, 1928, of which 17,502 were registered in law, 13,853 in medicine, 14,203 in sciences, 13,912 in letters, 4793 in pharmacy, and 268 in theology. Professional and technical instruction is provided in various other institutions.

AGRICULTURE. Despite the development of industry, agriculture remains the bulwark of French prosperity and economic stability. At the census of 1928, 54,755,528 acres were devoted to crops, or about 41 per cent of the total rural area; there were 28,193,889 acres of permanent meadow and pasture, 2,328,450 acres of orchards and vineyards, 25,830,407 acres of woodland, and 11,281,033 acres of waste land. The farm land is more widely distributed among peasant proprietors than in any country in Europe, there being

about 5,500,000 farm owners, with an average farm area of 24 acres. Although 50 per cent of the population are engaged in agricultural pursuits, the normal farm output does not meet domestic consumption needs for cereals, colonial products, alcoholic beverages, and fresh fruit. A considerable surplus of wine, dairy products, preserved and fresh fruits, and vegetables, is exported.

As shown in the accompanying table from the *Commerce Year Book* for 1930, crops in 1929 were abnormally large, resulting in a drastic price decline which caused the intervention of the Government in an effort to protect French farming interests.

FRENCH CROPS: AREA AND PRODUCTION

| Crop | Area ^a | | Production ^b | |
|-------------------------------|-------------------|--------|-------------------------|------------------------|
| | 1928 | 1929 | 1928 | 1929 |
| Wheat | 12,957 | 12,750 | 281,283 | 319,861 |
| Rye | 1,900 | 1,936 | 34,080 | 39,484 |
| Barley | 1,756 | 1,853 | 50,858 | 59,025 |
| Oats | 8,657 | 8,665 | 340,254 | 395,755 |
| Corn | 834 | 852 | 12,115 | 19,646 |
| Potatoes | 3,639 | 3,644 | 413,872 | 610,601 |
| Sugar beets | 621 | 607 | 5,009 ^c | 5,361 ^c |
| Beet sugar ^d ..... | ..... | ..... | 893 ^c | 892 ^c |
| Grapevines | 3,927 | 3,949 | 1,543,161 ^e | 1,661,672 ^e |
| Olives ^f ..... | ..... | ..... | 114,590 ^f | 107,520 ^f |
| Olive oil ^g ..... | ..... | ..... | 2,318 ^g | 2,897 ^g |
| Hay | 7,267 | 7,245 | 10,973 ^h | 10,032 ^h |
| Fodder beets | 1,903 | 1,932 | 19,776 ^h | 21,704 ^h |
| Green forage | 1,764 | 1,789 | 10,002 ^h | 9,818 ^h |

^a Thousands of acres.

^b Thousands of units—bushels except as indicated.

^c Unit, metric ton.

^d Seasons ended following year.

^e Unit, gallon of wine.

^f Unit, pound.

^g Unit, gallon.

In 1930, crop yields, with the exception of sugar beets, declined sharply due to adverse weather conditions. The wheat crop was one of the poorest on record in both quantity and quality, totaling 230,843,000 bushels, as against 319,270,000 bushels in 1929, according to preliminary figures of the Ministry of Agriculture. The apple crop was 40 per cent under the 1929 production of 1,259,490 metric quintals of table apples and 28,985,070 metric quintals of cider apples and pears. Estimates for refined sugar production in 1930-31 showed an increase to more than 1,000,000 metric tons.

Livestock in the country in 1929 included 15,005,080 cattle, 10,415,010 sheep, 6,016,940 swine, 2,936,020 horses, 1,372,200 goats, 249,700 asses, and 166,280 mules. The poultry and rabbit industry's annual production was estimated at 8,000,000,000 francs.

MINING. Coal and lignite production in 1929 increased about 5 per cent over 1928, coke, 8.5 per cent; briquets, about 14 per cent; steel ingots and castings, 3 per cent; pig-iron, 3.5 per cent. Mineral and metal production, in metric tons, in 1929 with comparative figures for 1928 in parentheses, was as follows: Coal and lignite, 54,922,000 (52,428,000); coke, 4,781,000 (4,404,000); briquets, 4,635,000 (4,068,000); iron ore, 51,028,000 (49,332,000); iron pyrites, 194,000 (202,000); potash, 493,000 (410,000) bauxite, 643,000 (599,000); pig iron, 10,445,000 (10,096,000); steel (ingots and castings), 9,664,000 (9,384,000); iron and steel (finished products), 6,762,000 (5,800,000). The greater output in virtually all lines of the industry was due to increased industrial activity during the year.

MANUFACTURES. Industrial activity was main-

tained at a high level in 1929, with most factories still fully occupied in replenishing stocks, which had been allowed to run low during the period of uncertainty previous to the stabilization of the franc in June, 1928. Capital issues for the year totaled 15,050,000,000 francs, as compared with 10,657,000,000 francs in 1928 and 7,425,000,000 francs in 1927. Larger capital issues in 1929 were necessitated by the stabilization of the franc in 1928 at one-fifth its former value.

During the months of March, April, May, and June, 1930, French industry reached the highest level of production and prosperity ever attained. Production in nine of the chief industries was 44 per cent higher than the average mean figure for production in 1913, the last normal pre-war year. The textile industry was the only one which did not share in the general industrial prosperity; its output was 18 per cent below that for 1913. The peak months of 1930 were marked by a serious labor shortage, there being 20,000 unfilled jobs available. In June, 1930, a slight recession became noticeable, which gathered momentum during the remainder of the year as the world-wide economic depression made itself felt in France. Foreign trade reached an abnormally low ebb in September and the national programme of industrial expansion was curtailed.

Statistics of manufacturing production in 1928 and 1929 are shown in the accompanying table.

FRENCH MANUFACTURING PRODUCTION

| Product | 1928 | 1929 |
|--|--------------|-----------------|
| Silk | 1,000 lbs. | 15,609 12,487 |
| Wool (conditioned at Roubaix- Turcoing) | do... | 236,271 220,425 |
| Wool (conditioned at Mazamet) | do... | 58,704 57,196 |
| Cotton consumption " | do... | 692,240 776,343 |
| Cotton cloth | million yds. | 1,387 1,423 |
| Artificial silk | metric-tons | 17,000 17,237 |
| Boots and shoes (estimated) | 1,000 pairs | 75,000 80,000 |
| Alcohol | 1,000 gals. | 56,869 66,615 |
| Vessels launched | gross tons | 81,416 81,607 |

COMMERCE. An unusually heavy adverse balance of 8,212,276,000 francs (\$321,921,000) was incurred as a result of foreign trade operations in 1929, the imports totaling 58,284,624,000 francs (\$2,284,757,000) and exports, 50,072,348,000 francs (\$1,962,836,000). In 1928 imports were valued at 53,435,552,000 francs (\$2,094,674,000) and exports at 51,374,729,000 francs (\$2,013,889,000). Imports showed a 9 per cent increase in 1929 over the preceding year, while exports fell off by more than 2.5 per cent.

Raw materials, manufactured articles, and foodstuffs, in the order named, showed the greatest increases among classes of imports. The export decline was principally in the category of manufactured goods, with raw materials, and foodstuffs following in order. Decreasing exports, however, were offset to a considerable extent by larger domestic sales resulting from the country's expanding purchasing power and the high level of domestic industrial activity.

France's trade with her colonies proved a saving factor, without which the adverse balance would have reached 10,642,094,000 francs; exports to the colonies totaled 9,440,385,000 francs and imports from the colonies, 7,010,567,000, the balance in favor of the mother country being 2,429,818,000 francs. French purchases from the United States—the principal source of supply—increased, on the other hand, to 7,177,840,000 francs, or 976,735,000 francs more than in 1928, while exports to the United States declined

slightly to 3,322,349,000 francs. The balance of trade in 1929 favored the United States by 3,855,491,000 francs, as compared with 2,863,643,000 francs in the previous year. Expenditures of American tourists in France in 1929 were estimated to have decreased by \$40,000,000, a further factor in the concern evidenced in France at the enactment of the Hawley-Smoot tariff in the United States in June, 1930 (see below under *History*). In 1929 the United States furnished 12.3 per cent of the total French imports (11.6 per cent in 1928), Germany, 11.4 per cent (9.3); United Kingdom, 10 per cent (10.3); Belgium-Luxemburg, 6.7 per cent (7.1); Argentina, 4.1 (3.8); Netherlands, 2.8 (3.1); Italy, 2.6 (2.9). Of the total exports, the United Kingdom took the largest share, 15.1 per cent (15.9 per cent in 1928); Belgium-Luxemburg, 14.4 (14.1); Germany, 9.5 (11.1); Switzerland, 6.7 (6.6); United States, 6.6 (6.5); Italy, 4.4 (4.2); Spain, 3.2 (3.4).

In 1930, French exports declined to 42,830,000,000 francs and imports to 52,344,000,000 francs, a total trade decrease of 13,185,000,000 francs. The adverse trade balance increased to 9,514,000,000 francs.

An important invisible item affecting the balance of trade was the tourist expenditures in France, officially estimated at \$400,000,000 in 1929 (\$360,000,000 in 1928), as compared with expenditures by French tourists in foreign countries of \$60,000,000 in 1929. Total American expenditures in France (1929) were estimated at \$130,000,000.

FINANCE. In a period when economic depression and governmental deficits were practically world wide, France in 1929 and 1930 presented the spectacle of an overflowing Treasury and rapidly increasing national wealth. The phenomenal increase of the gold reserve of the Bank of France, from 31,977,000,000 francs (about \$1,250,000,000) on Jan. 1, 1929, to more than 50,000,000,000 francs (about \$2,000,000,000) at the end of October, 1930, attracted wide attention and some alarm in other leading financial centres. With the commencement of the French industrial recession in July and August the gold influx gave evidences of slackening and a period of decreasing national revenues, and eventually of gold exports, was generally anticipated.

The Government's financial operations in 1929 resulted in an actual surplus of 13,195,000,000 francs. Total receipts were placed at 56,561,000,000 francs and total expenditures at 45,366,000,000 francs, according to preliminary figures.

Taking into consideration French financial and commercial transactions, both government and private, with other countries, the French economist, Pierre Meynial, estimated that France made a net profit of about 13,150,000,000 francs (approximately \$515,480,000) in 1929. Of this sum, he estimated that 8,500,000,000 francs were transferred into gold and that the remainder (4,650,000,000 francs) represented French investments in foreign securities during the year.

The budget for 1930, belatedly adopted by the two Houses on Apr. 16, 1930, provided for revenues estimated at 50,465,000,000 francs and expenditures of 50,398,088,000 francs, the estimated surplus being 66,912,000 francs. This compared with budget estimates for 1929 of 45,430,717,000 francs and 45,366,130,000 francs for revenues and expenditures, respectively. During the first six months of 1930, actual revenues exceeded

the estimates by about 1,020,000,000 francs (\$40,000,000). On Nov. 15, 1930, the Minister of Finance announced that there was a surplus equivalent to \$435,000,000 in the Treasury.

For the first time since the revaluation of the franc in 1928, the revised 1931 budget estimates submitted to the Chamber of Deputies Oct. 10, 1930, were lower than those for the preceding year. Revenues were calculated at 50,251,748,329 francs and expenditures at 50,145,286,389 francs, leaving an estimated surplus of 106,461,940 francs. Nearly one-half of the total estimated expenditures, or 23,850,647,917 francs, were allotted to the service of the debt and war pensions, and 22 per cent of the total, or 10,921,078,475 francs, were set aside for national defense. Other appropriations were: General administration, 6,478,667,475 francs (13 per cent); social expenditure and education, 5,329,002,139 francs (11 per cent); and national development schemes, 3,089,325,760 francs (6.2 per cent). To balance the budget without increase of taxation, the Government drew upon the sinking fund (Caisse d'Amortissement) for 1,800,000,000 francs to meet redeemable debts ordinarily cared for in the budget.

The national debt on Jan. 1, 1929, stood at 459,000,000,000 francs (about \$17,992,800,000), of which 288,665,676,389 francs represented the internal debt. By Oct. 31, 1929, the internal debt had decreased to 268,145,000,000 francs and in October, 1930, the total French debt had fallen to about \$15,461,000,000. About the same time the national debt of Great Britain was \$36,348,180,000; of the United States, \$15,921,000,000; of Germany, approximately \$12,131,873,000 (including reparation payments estimated at \$10,000,000,000); and of Italy, \$9,697,000,000.

SHIPPING. Vessels in the foreign trade entering French ports in 1929 numbered 32,071, of 58,091,343 tons, and vessels clearing, 25,961, of 49,192,613 tons. Both entrances and clearings showed gains over the figures for 1928. Including vessels in the coastwise trade, entrances in 1929 totaled 62,943, of 70,302,000 net tons, and clearances numbered 62,956, of 70,162,000 net tons. Ship passengers entering France numbered 1,952,000 and those leaving 2,016,000. Marseilles ranked first in the tonnage entering and clearing and Rouen first in the total merchandise handled. Port improvements to cost \$19,800,000 were started at Boulogne-sur-Mer in 1930, the work to be completed by 1939. Between 1925 and 1929, the annual net tonnage entering and clearing this port rose from 6,693,000 to 11,860,000 and the annual transatlantic passenger movement rose from 16,572, to 32,141. The French merchant fleet in 1930 stood at its pre-war size of 3,400,000 tons. In 1914 this fleet gave France second rank among the maritime nations, but in 1930 it gave her only fifth place.

INTERNAL COMMUNICATIONS. There were seven railway systems operating in France, with a total mileage in 1928 of 25,947 miles, of which 5629 miles were operated by the state. About 750 miles were electrified (Sept. 1, 1929). Total receipts of all railways in 1929 amounted to 15,463,267,000 francs (14,748,691,000 francs in 1928). The budgets of the various French railroads for improvements and new construction (exclusive of purchases of rolling stock) in 1929 aggregated 1,153,212,000 francs (about \$44,975,300). Highways open to traffic in 1928 included 24,426 miles of national roads, 7572 miles of departmental

roads, and 350,030 miles of local roads (total, 382,028 miles). There were about 6800 miles of navigable waterways. The civil aviation service in 1929 carried 25,256 passengers, 329,000 pounds of mail, and 3,534,000 pounds of express. The number of planes in use was 346.

ARMY. The French Army is divided into two forces, the metropolitan, comprising the active army, reserves, and territorial army, and the colonial forces; both are under the War Ministry. The active metropolitan army for 1929-30 numbered 317,076, including troops in occupation of German territory and colonial troops quartered in France, but excluding the air force of 36,800 men. Enlistment for the metropolitan army is on a compulsory basis, but liberal exemptions are allowed. The term of service was reduced from one and one-half years to one year, effective in 1930. The colonial army in 1929-30 totaled 150,910, making the total peace establishment of the French Army, 467,986, exclusive of the gendarmerie and air force. In 1928 the total peace force was 672,122, including an air-force establishment of 32,866. See **MILITARY PROGRESS**.

NAVY. For an account of naval conditions, see **NAVAL PROGRESS**; also see *Franco-Italian Rivalry* below.

GOVERNMENT. The French Constitution vests executive power in the President of the Republic and the Ministry, and legislative power in the Chamber of Deputies and the Senate. The legislative branch has steadily encroached upon the prerogatives of the executive, however, and the President wields little influence in executive matters, which are decided by members of the Ministry directly responsible to Parliament. The President is elected for seven years by an absolute majority of votes in the Senate and Chamber of Deputies, and selects his cabinet ordinarily from among the members of both bodies. The Senate is made up of 314 members not less than 40 years of age and elected by an electoral college for nine years, one-third retiring every three years; the Chamber of Deputies is made up of 612 members elected by direct popular manhood suffrage for four years. The composition of the Chamber elected Apr. 22-29, 1928, was as follows: Communists, 16; Democrats, 22; Independent Radicals, 64; Left Republican Democrats, 34; Socialists, 104; Radicals and Radical Socialists, 110; Republican Socialists and French Socialists, 46; Republicans of the Left, 94; Democratic Republican Union, 110; Conservatives, 12. President in 1930, Gaston Doumergue, elected June 13, 1924. For the composition of the Tardieu Ministry appointed Mar. 2, 1930, see below under *History*.

HISTORY

DOMESTIC POLITICS. Politically, the year 1930 witnessed a continuation of the governmental instability inaugurated in 1929 with the fall of the Poincaré National Union Ministry. Increasing bitterness between the parties of the Right and the Left over questions of national defense, clericalism, and secular education accentuated the difficulties arising from the almost even division between the two main groups in the House of Deputies. With the 10 Communist deputies always voting with the Opposition, no Cabinet could be formed that was not in continual danger of defeat.

The Tardieu Ministry, formed Nov. 2, 1929, principally from the Centre and Right parties, lived only until Feb. 17, 1930, when it was over-

thrown (286 against 281) through the defection of the Radical Socialists led by M. Camille Chautemps. The latter in turn formed a Ministry composed exclusively of Radical Socialists and Radicals, which was defeated (292 against 277) in its first appearance on February 24. Tardieu was again called upon and on March 2 formed a new Ministry in which the presence of M. Briand represented virtually the sole concession to the Left. On March 5 he emerged victorious (316 against 263) in his first test vote. In the meantime negotiations at the London Naval Conference (see NAVAL PROGRESS) and the discussion of the already belated budget bill in the French Parliament had been held up for two weeks by the Cabinet crisis.

Tardieu's precarious position was strengthened somewhat by the final adoption of the Young Plan in January at The Hague, with conditions satisfactory to the French delegation (see REPARATIONS), and by valuable concessions won during the early days of the London Naval Conference. Indeed, the Ministry's foreign policy was more acceptable to the Left than to the Premier's largely conservative majority. His sponsorship of the national insurance law, promulgated Apr. 5, 1928, but not enforced for two years because of certain defects, also evoked distinctly more enthusiasm among members of the Left than those of the Right.

But the paradoxical spectacle of a largely conservative Government carrying out a liberal programme, often in the face of partisan opposition from the Left, was not long to last. On the question of what disposition to make of the large Treasury surplus a dispute arose which swept the members of the Right and Left into their natural alignment, with the Cabinet leading the Right. The Government's policy, stubbornly maintained by Finance Minister Chéron, was one of speeding the amortization of the public debt and of refusing the Radical-Socialist demand for thorough tax reduction, while maintaining large Treasury cash balances in the central banks. On this main issue the Ministry was overthrown February 17 during the vote on a minor provision in the budget bill. Factors which contributed to its defeat were the rising cost of living, the absence of M. Tardieu, who was ill at the time, and the latter's incautious alienation of the Radical Socialists by failing to invite them to a special meeting at which he had presented a detailed report of his work to his supporters of the Right.

As the person primarily responsible for the fall of the Cabinet, M. Chautemps then undertook the formation of a ministry. To obtain a majority he offered M. Tardieu every inducement to enter his Cabinet. Tardieu refused, insuring the new Ministry's defeat at its first test vote.

Bitterness between Right and Left had been intensified during the Cabinet crisis and when M. Tardieu again was called upon to form a Ministry he met with the uncompromising refusal of the Radical Socialists to participate. J. L. Dumesnil, a Radical Socialist who accepted the Marine portfolio, was immediately expelled from his party. The new Tardieu Ministry, formed March 2, was largely one of the Right and Centre. Of the Tardieu Cabinet, the significant omissions in the second were Henri Chéron, the Finance Minister; M. Leygues, Minister of Marine; and M. Loucheur, Minister of Labor. Besides M. Tardieu as Prime Minister and Minister of Interior, the new Cabinet was composed as follows: Foreign Affairs, Aris-

tide Briand; Justice, Raoul Péret; War, André Maginot; Marine, J. L. Dumesnil; Finance, Paul Reynaud; Budget, M. Germain-Martin; Public Instruction, Pierre Marraud; Colonies, François Pietri; Commerce, Pierre-Etienne Flandin; Agriculture, Fernand David; Posts and Telegraphs, André Mallarmé; Air, M. Laurent-Eynac; Pensions, Champetier de Ribes; Public Works, Georges Pernot; Merchant Marine, Louis Rollin; Labor, Pierre Laval; Public Health, Desiré Ferry.

Principal points in the programme announced by M. Tardieu were the continuation of his naval policy, execution of the Young Plan, adoption of social insurance, political amnesty laws, and the early passage of the 1930 budget law. The course of the second Tardieu Ministry, however, proved no less stormy than that of the first. It was repeatedly defeated on minor issues in which the question of a vote of confidence was not involved. On March 13, the Left secured the passage, against the wishes of the Premier, of a measure providing free tuition for day pupils in all state secondary schools. Former Premier Herriot acclaimed the measure as the first step toward a single public-school system on the American plan.

The Cabinet was successful, however, in securing ratification of the Young Plan in the Chamber by 527 to 38 on March 29 and in the Senate by 284 to 8 on April 5. The budget law (see above under Finance) was passed April 16, months behind schedule, and with the adoption of the social insurance, farm relief, and tax reduction bills previous to the adjournment of Parliament April 26, the Ministry fulfilled the major items of its immediate programme.

The Parliamentary recess from April 26 to June 3 was marked by President Doumergue's visit to Algiers to commemorate the 100th anniversary of the establishment of French rule in Algeria (see ALGERIA), the issuance on May 17 of M. Briand's memorandum on his project for European federation (see UNITED STATES OF EUROPE) and the order for the evacuation of the third zone of the Rhineland by June 30. Early in the new session, in which former Premier Poincaré again took his seat in the Senate, Opposition attacks on the Government's fiscal policy and its programme for the pacification of Indo-China (see FRENCH INDO-CHINA) were easily repulsed, but the Government escaped defeat by only five votes on July 8 when the charge of favoring clericalism again arose to plague it. The Chamber on June 12 ratified by a vote of 561 to 13 the Government's adherence to the optional clause of the World Court statute (see WORLD COURT). Despite Opposition protests, Premier Tardieu adjourned Parliament by decree on July 11 for a three months' vacation, a move which in the opinion of some observers was necessary to save his Ministry from defeat.

The Fascist triumph in the German elections of September 14, the revisionist campaign launched by German conservatives, and the anti-French demonstrations accompanying the evacuation of the Rhineland revived the issue of national security and with it a vigorous movement for the elimination of Foreign Minister Briand from the Cabinet. The nationalists, who had all along attacked M. Briand's policy of peace as visionary and weak, found powerful support for their arguments in developments in Germany and Italy. M. Poincaré and the more responsible leaders

of the Radical party, such as Herriot and Painlevé, declared that the new situation created by the German elections called for increased firmness in French foreign policy. The nationalist agitation found expression in the creation on October 21 and 22 of a "committee of vigilance" and of a new political party for the purpose of throwing Briand's policies into the discard. Their leaders declared it their fixed intention not to permit revision of the Versailles peace treaties. When the Cabinet on October 3 reaffirmed its confidence in M. Briand, it was certain that French foreign policy and the 1931 budget would be the two outstanding issues to come before the Winter session of Parliament, which opened November 3.

FALL OF TARDIEU. The gradual disintegration of Tardieu's majority culminated in the fall of his Ministry on December 4, following an adverse vote of 147 to 139 in the Senate on the Cabinet's general policy. The Radical Socialist party convention in October had voted "emphatically to refuse any alliance with the clerical, nationalistic, and conservative parties of the Right" and the Radical Socialists had the largest group in the Senate. The Opposition attempt to link Cabinet members with the Oustric financial speculations forced the resignation of Minister of Justice Peret on November 14. On the same day the Chamber voted to appoint a commission to investigate the alleged "intermixture of politics and finance." Oustric's speculations had ended in a spectacular crash, which ruined half a dozen banks and swept away savings of small investors totaling about 1,500,000,000 francs. The Cabinet's position was further weakened by the resignation of two Under-Secretaries, Falcoz and Eugène Lautier, who had been customers of the bank. On November 28, the Ministry mustered a majority of only 14 in the Chamber on a vote of confidence. The subsequent adverse vote in the Senate was thus not unexpected.

President Doumergue turned successively to former Premier Poincaré, who refused to form a new Cabinet on the ground of ill health, and to Senators Louis Barthou and Pierre Laval, who were unable to secure the support of the Left Republicans and Radical Socialists. The eight-day cabinet crisis was ended December 13, when Senator Theodore Steeg, former Resident General of Morocco, was successful in forming a new Ministry of the Centre and Left, with the Radical Socialists as the most powerful factor. His success in drawing away sufficient moderate elements from M. Tardieu's majority of the Centre and Right to form a new majority Government enraged the Nationalists and insured a revival of bitter partisanship in Parliament. The new Cabinet announced December 13 included: Premier and Minister of Colonies, Theodore Steeg; Interior, Georges Leygues; Justice, Henry Chéron; Foreign Affairs, Aristide Briand; Finance, Louis Germain-Martin; Budget, Maurice Palmade; War, Louis Barthou; Marine, Albert Sarraut; Education, Camille Chautemps; Public Works, Edouard Daladier; Commerce, Louis Loucheur; Agriculture, Victor Boret; Labor, Dr. Edouard Grinda; Pensions, Robert Thoumyre; Air, Paul Painlevé; Merchant Marine, Charles Danielou; Posts and Telegraph, Georges Bonnet; Public Health, Correz Queuille.

In its first appearance before the Chamber on December 18, the Steeg Ministry survived a fierce attack by the followers of Tardieu by the narrow

margin of seven votes. On orders of Tardieu's Left Republican party, one Minister, Thoumyre, and four Under-Secretaries representing the party in the Ministry withdrew, but the expected defeat of the Cabinet did not follow. Its triumph was due to the undivided support of the Socialists. Since Socialist support could not long be expected, a short and extremely troublesome life was predicted for M. Steeg's Government. The Left parties, however, were elated at their victory, the first since they had entered Poincaré's Government of national union in 1926. The Steeg Ministry's platform, as announced in Parliament, called for a vigorous but impartial investigation of the Oustric scandals, adhesion to Briand's foreign policy, the maintenance of national defense and of internal peace, and improvement of the national economy. The color of the Cabinet forecast the termination of the trend toward closer relations with the Vatican apparent under Poincaré and Tardieu. It was believed that the inclusion of Camille Chautemps as Minister of Education would mean the enforcement of the laic laws, which imposed severe restrictions upon Roman Catholic educational institutions. On December 19, Premier Steeg closed the session of the Chamber until the middle of January, 1931. The vacant post of Minister of Pensions was filled on December 23 by Maurice Dormann.

FRANCO-ITALIAN RIVALRY. The serious differences between France and Italy were emphasized early in the year by their inability to agree upon a naval limitation programme at the London Naval Conference (see NAVAL PROGRESS). Although the conference, by healing the Anglo-American naval rivalry, gave new impetus to efforts toward a solution of Franco-Italian problems, it served also to embitter the already strained relations between the two Latin powers.

French and Italian interests had clashed in and near the Mediterranean for more than 50 years, particularly after the advent of the Fascist régime. The main points of friction were Italy's territorial ambitions in North Africa, the Fascist agitation for the annexation of Nice, Savoy, and Corsica, the struggle between the two governments for the loyalty of 2,000,000 Italian immigrants in France and 100,000 in Tunis, and the Italian resentment at the French system of alliances, designed to maintain the *status quo* in Europe, which Italy was determined to change. Other sore points were the refuge granted anti-Fascist expatriates in France and the clash between the French and the Fascist philosophies of government.

The specific points of open controversy in 1930, in addition to the naval rivalry, concerned the rights of Italian citizens in Tunis, the location of the Libyan frontier in the Tibesti and Borku regions of the Sahara, and the possession of Djibouti, the Red Sea port of French Somaliland, which Italy demanded under the Treaty of London (1915) as compensation for her war services to the Allies. In Tunis, where the Italian population outnumbered the French, the bitterness aroused by French efforts to denationalize the Italian community was furthered in 1930 by the bombing of the Italian consulate in the city of Tunis by anti-Fascists. The consul accused the French government of conniving at the escape of the bombers.

Negotiations for the settlement of these disputes, initiated in 1929, were interrupted by the London Naval Conference. While unable to agree

upon naval limitation, France and Italy in the five-power pact signed at London pledged themselves to attempt a settlement of the outstanding issues between them. Within a week after the naval conference, however, the Italian Cabinet on April 30 announced plans for the construction of 42,900 tons of new warships, in addition to 32,000 tons launched a few days earlier. Shortly afterward, Premier Mussolini, during a tour of northern Italy, delivered a series of unusually bellicose speeches in which he declared that Italy was ready for all comers. His remarks were deeply resented in France and called forth the indirect reply from Premier Tardieu on June 1 that France's international position was such as to free her from the necessity either to boast or to fear.

A fresh attempt at reconciliation, initiated by conversations among the Foreign Ministers of France, Italy, and Great Britain at Geneva May 13 and 14, proved fruitless, although France on July 10 and Italy on July 14 agreed to suspend naval construction for six months pending the outcome of the negotiations. Strengthening of French defenses and French army maneuvers along the Italian border, concentration of French naval forces at the Toulon base, and visits of inspection by military and naval chiefs to military posts in southern France and north Africa were accompanied by similar activities on the Italian side of the border. The additional defense credits approved by the French Chamber of Deputies in June were met by a 500,000,000 lire (\$26,200,000) increase in the Italian defense budget for 1930-31. The prospect of war was considered so grave that the intervention of the League of Nations to conciliate the dispute was seriously considered.

The Franco-Italian negotiations were continued during August and September with the coöperation of the British Foreign Office, but on September 22 it was announced that they had broken down again. With the approach of the international armament conference, opened at Geneva November 3, efforts to end the Franco-Italian naval impasse were resumed, this time by Hugh S. Gibson, the United States delegate to the conference, who acted with the apparent collaboration of London and Tokyo. These efforts were spurred by the new tension introduced into the European atmosphere by Premier Mussolini's speech on the eve of eighth anniversary of the Fascist march on Rome (October 28), in which he placed Italy formally at the head of the nations seeking revision of the treaties of Versailles and Trianon (see ITALY under *History*). No agreement on the naval problem was reached by the end of the year.

NATIONAL DEFENSE. French nervousness at the belligerency expressed in Italy and Germany was naturally reflected in the "security" budget for 1931, which totaled 12,200,000,000 francs (about \$488,000,000), or 725,000,000 francs (about \$29,000,000) above appropriations for the army, navy, and air services in 1930. See **MILITARY PROGRESS.**

SAAR NEGOTIATIONS. The negotiations for the return of the Saar to Germany, inaugurated in 1929 (see in 1929 YEAR BOOK, FRANCE under *History*), were suspended indefinitely by France early in July, apparently as a result of the anti-separatist demonstrations which marked the French evacuation of the third zone of the Rhineland on June 30. It was indicated also that the

concessions offered by Germany for the early evacuation of the Saar had been greatly reduced and that the new terms were unacceptable to France.

INDUSTRIAL UNREST. Despite the favorable economic situation in France, as compared to conditions in other industrial countries, strikes became almost epidemic throughout France in July and August. A major cause was the amended national insurance law, which became effective July 1, and which was opposed by the Communists and other labor elements, as well as by many manufacturers. The law covered sickness, incapacity, maternity, old age, and death, and was obligatory upon all wage earners of either sex with an annual income of less than 1500 francs (1800 francs for residents of cities of over 200,000 inhabitants). The assessment amounted to approximately 8 per cent of the wages of industrial workers and about 2 per cent for farm workers, half to be paid by the employer and half by the worker. In Lille and other industrial centres of the North, over 100,000 workers went on strike for wage increases to meet the insurance charges. A rise in the price of bread and wine further aggravated the situation. The difficulty was finally conciliated to the satisfaction of the majority of the strikers by the Minister of Labor.

OTHER EVENTS. Protests at alleged tariff discriminations against American goods sold in France and French exports to the United States were voiced by affected interests on both sides of the Atlantic. The French rates on foreign cars and parts were increased by the Tariff Commission of the Chamber on April 8, despite protests of American automobile manufacturers, but were not so high as to exclude American machines. The enactment of the Hawley-Smoot tariff by the United States Congress led the Chamber's Tariff Commission to recommend on June 19 the revocation of the most-favored-nation treatment accorded the United States, on the ground that reciprocal concessions were not obtainable. In a statement issued by the Minister of Commerce June 21, however, the Government rejected proposed tariff reprisals against the United States and announced that it would first seek to secure a reduction of rates through friendly representations to the American Tariff Commission.

Floods in the South and Southwest of France in March, 1930, cost 200 lives, destroyed about 2703 houses, and devastated about 350,000 acres. Unrest in Indo-China, attributed to Communist propaganda, and the alleged "dumping" of Russian products in France led to repeated demands for the severance of diplomatic relations with Soviet Russia. The French Colonial Council was called together in October, 1930, for the first time in three years to consider constitutional reforms for Indo-China. A landslide on November 13 carried away part of Fourviee hill at Lyons, killing some 40 residents, firemen, and policemen.

On September 1 the Government ordered the expulsion from France of William Randolph Hearst, American newspaper publisher, because of the part played by Hearst in the publication of the secret Anglo-French cruiser agreement in 1928. The pact was subsequently disavowed by both Governments. See ITALY, GREAT BRITAIN, GERMANY, and GREECE under *History*.

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in *Nationality*, New Haven (1930); William F. Ogburn and William Jaffé, *The Economic Development of Post-War France*, New York (1929).

FRANCKE, FRÄNK'E, KUNO. A German-American scholar and author, died in Cambridge, Mass., June 25, 1930. He was born in Kiel, Germany, Sept. 27, 1855, and was graduated from the University of Munich with the Ph.D. degree in 1878. He was appointed instructor in German at Harvard University in 1884, assistant professor in 1887, assistant professor of German literature in 1892, and professor of the history of German culture in 1896. He also acted as curator of the Germanic Museum at Harvard from 1902 to 1917, developing it into one of the finest museums depicting a national culture in the United States. He resigned as professor emeritus and honorary curator of the museum in 1917. The University of Wisconsin conferred on him the LL.D. degree in 1904 and Harvard the Litt.D. degree in 1912. He was a Fellow of the American Academy of Arts and Sciences, the American Philosophical Society, and the Mediæval Academy of America, and served as president of the Modern Language Association of America in 1917. He was also a Chevalier of the Royal Prussian Order of the Red Eagle and of the Order of the Crown. His works include: *Zur Geschichte der Schulpoesie des zwölften Jahrhunderts* (1878); *De Hymno in Cererem Homericum* (1880); *Libelli de Lite Imperatorum et Pontificum* (1892); *Social Forces in German Literature* (1896); *Glimpses of Modern German Culture* (1898); *History of German Literature* (1901); *Handbook of the Germanic Museum* (1906); *German Ideals of To-day* (1907); *Die Kulturwerte der deutschen Literatur im Mittelalter* (1910); *A German-American's Confession of Faith* (1915); *The German Spirit* (1916); *Personality in German Literature before Luther* (1916); *Die Kulturwerte der deutschen Literatur von der Reformation bis zur Aufklärung* (1923); *Die Kulturwerke der deutschen Literatur in Ihrer Geschichtlichen Entwicklung* (1923); *Deutsches Schicksal* (1923); *Kant and Art* (1925); and *German After-War Problems* (1927).

FRANKLIN. See NORTHWEST TERRITORIES.

FRANKLIN, CHRISTINE LADD. See LADD-FRANKLIN, CHRISTINE.

FRANKLIN, WILLIAM SUDDARDS. An American physicist and educator, died in Wilmington, N. C., June 6, 1930. He was born in Geary City, Kan., Oct. 27, 1863. After his graduation from the University of Kansas in 1887, he was assistant professor of physics there until 1890. He then studied at the University of Berlin and at Harvard University, and in 1892 became professor of physics and electrical engineering at Iowa State College. In 1897 he was called to Lehigh University in a similar capacity, and in 1903 was appointed professor of physics. He resigned in 1915 to accept the chair of physics at the Massachusetts Institute of Technology. The M.S. degree was conferred on him by the University of Kansas in 1888 and the D.Sc. degree by Cornell University in 1901. His works include: *Electric Waves: An Advanced Treatise on Alternating-Current Theory* (1909); *Electric Lighting and Miscellaneous Applications of Electricity* (1912); *Bill's School and Mine: A Collection of Essays on Education* (1913); and *A Treatise on the Elements of Electrical Engineering* (1917). He was co-author of *The Elements of Alternating Currents* (1899); *Elements of Physics* (1904); *Elements of Elec-*

trical Engineering (1906); *Dynamo Laboratory Manual* (1906); *The Elements of Mechanics* (1907); *Dynamos and Motors* (1909); *Advanced Theory of Electricity and Magnetism* (1915); *General Physics* (1916); *Lessons in Heat* (1920); *Transmission Line Theory and Some Related Topics* (1926); *Engineering Mechanics* (1929); and *Fundamentals of Electrical Engineering* (1929).

FREE BAPTISTS. See BAPTISTS, FREE.

FREEMAN, MRS. MARY ELEANOR WILKINS. An American author, died in Metuchen, N. J., Mar. 13, 1930. Mary Eleanor Wilkins was born in Randolph, Mass., Jan. 7, 1862, and was educated at Mount Holyoke Seminary. For many years, she was secretary to Dr. Oliver Wendell Holmes. In 1902 she was married to Dr. Charles M. Freeman of Metuchen, N. J., where she lived the remainder of her life. A contributor of both verse and prose to magazines, Mrs. Freeman was best known for her short stories depicting life in rural New England. In that limited field, she had few equals in accuracy of observation and succinctness of expression. Her works include *A Humble Romance and Other Stories* (1887); *A New England Nun and Other Stories* (1891); *Young Lucretia and Other Stories* (1892); *Jane Field*, a novel (1892); *Giles Corey, Yeoman*, a play (1893); *Pembroke*, a novel (1894); *Madelon*, a novel (1896); *Jerome, a Poor Man* (1897); *Silence and Other Stories* (1898); *The Love of Parson Lord and Other Stories* (1900); *The Portion of Labor* (1901); *The Wind in the Rose Bush* (1903); *The Givers* (1904); *The Debtor* (1905); *The Fair Lavinia and Others* (1907); *Winning Lady and Others* (1909); *Butterfly House* (1912); *The Copy-Cat and Other Stories* (1914); *Edgewater People* (1918); *The Best Short Stories* (1914); *Edgewater People* (1918); *The Best Short Stories of Mary E. Wilkins*, selected and published with an introduction by Henry Wysham Lanier (1927).

FRENCH CONGO. See FRENCH EQUATORIAL AFRICA.

FRENCH EQUATORIAL AFRICA. A French possession in Africa on the Atlantic coast between the territories of the Belgian Congo and British Cameroon. Area, 912,049 square miles; population, according to the census of 1926, 3,127,707, of whom 1932 were Europeans. The possession comprises the four colonies of Gabon, Middle Congo, Ubangi-Shari, and Chad. Brazzaville, with 4000 inhabitants, is the capital. In 1929 there were 52 native schools, with 3490 pupils, and 74 private missionary schools, with a total of 7029 pupils.

Equatorial Africa is very rich in natural resources, for the most part undeveloped. Tropical forests extend 300,000 square miles to the Gabon coast and contain valuable timber. Palm oil and wild caoutchouc are the principal commercial products. Coffee, cacao, and cotton are raised to some extent. Copper, zinc, and lead are to be found and considerable quantities of ivory are exported. In 1928 imports were valued at 227,656,279 francs and exports at 151,318,963 francs (172,319,683 francs and 136,747,844 francs, respectively, in 1927). The general budget for the four colonies balanced at 54,500,000 francs in 1929 and 1930. A new railway connecting Brazzaville with the Atlantic at Pointe-Noire was nearing completion in 1930. A governor-general has general supervision, but each colony is locally governed by a lieutenant-governor, aided by

an administrative council. Governor-General in 1930, Rafael Antonetti, appointed in July, 1924.

FRENCH GUIANA, *gô-â-nâ*. A French colony and penal settlement on the northeast coast of South America. Area, about 34,740 square miles; population at the census of 1926, 47,341. Cayenne, a seaport, with 13,936 inhabitants in 1926, is the capital. The population figures do not include the number in the penal settlement of Maroni, in which there were 6000 prisoners on Jan. 1, 1928, the floating population of miners, French officials, or native tribes. The extensive forests are rich in timber of commercial importance. Only about 7900 acres are devoted to agriculture, the chief crops being sugar, rice, maize, coffee, and cacao. The chief occupation is placer mining for gold. Other minerals produced are silver, iron, and phosphates. The total imports in 1928 were valued at 55,528,300 francs and exports at 29,799,434 francs. The principal articles of export were gold, rosewood essence, various timbers, phosphates, cacao, balata, and hides. In the 1928 budget, receipts totaled 55,528,300 francs and expenditures 29,799,434 francs. The colony is under a governor who is aided by a privy council and by a council-general elected by French citizens in Guiana, and is represented in the French Parliament by one deputy. Governor in 1930, M. Maillet.

FRENCH GUINEA. A French colony on the west coast of Africa between Portuguese Guinea and the colony of Sierra Leone. Area, 92,640 square miles; population, estimated in 1928, 2,185,697, including 2093 Europeans, of whom 945 were French. Capital, Conakry. The chief products are palm oil, palm nuts, gum, rubber, millet, rice, tropical fruits, and coffee. Some gold is found. The imports in 1928 were valued at 106,115,000 francs and the exports at 72,174,000. The chief exports were rubber, cattle, groundnuts, hides, bananas, wax, wool, and palm kernels. The budget for 1928 amounted to 36,030,679 francs. A railway runs from Conakry on the coast to the Niger at Kourassa and thence to Kankan, a total of 412 miles. The colony is under the Governor-General of French West Africa. See **FRENCH WEST AFRICA**.

FRENCH INDIA. The name given to the group of five French dependencies in India, of which the chief is Pondichéry. Area, about 196 square miles; estimated population, Jan. 1, 1929, 290,460 (Pondichéry, 188,064; Karikal, 58,228; Chandernagor, 27,393; Mahé, 11,959; Yanaon, 4816). French residents totaled 1034. In 1928 the Government maintained 59 primary schools and 3 colleges, with 316 teachers and 10,465 pupils. The local revenue and expenditure budget for 1929 totaled 2,757,550 rupees. Paddy (rice), sugar, cotton, manioc, cacao, coffee, and groundnuts are the chief crops. Imports through the four leading ports in 1928 amounted to 10,186,909 rupees, and exports to 27,424,713 rupees (1 rupee equaled about \$0.3646 in 1928). In the same year vessels entering the four ports totaled 303. There were 43 miles of railway. The dependencies are under a governor whose headquarters are at Pondichéry, and an elective general council; they send one deputy and one Senator to the French Parliament. Governor in 1930, R. de Guise (appointed in 1928).

FRENCH INDO-CHINA. A French possession in southeastern Asia, comprising the colony of Cochín-China; the protectorates of Annam, Cambodia, Tongking (Tonkin), and Laos; and

Kwang-Chow-Wan, which was leased from China. Capital, Hanoi.

The area is about 285,000 square miles and the population in 1926 totaled 20,700,000, including 33,000 Europeans, divided as follows: Cochín-China, 4,120,000; Cambodia, 2,535,000; Annam, 5,580,000; Tongking, 7,405,000; Laos, 444,000; and Kwang-Chow-Wan, 205,000. The populations of the chief cities in 1926 were: Saigon, 143,000; Hanoi, 130,000; Pnom-Penh, 82,000; and Hué, 41,000. Agriculture, mining, and fisheries are the chief industries, the territory tributary to Saigon being one of the great rice growing regions of the world. The rice crop in 1930 was estimated at 1,600,000 tons. Cinnamon, sugar, and tea are other farm products, while the minerals exploited are coal, phosphates, zinc, antimony, tin, wolfram, graphite, and lead. For production of the individual colonies, see articles on each.

Exports in 1929 totaled 3,579,112,000 francs and imports 3,238,931,000 francs. Exports consisted chiefly of rice, rubber, fish, coal, pepper, cattle and hides, corn, zinc, and tin ore, while the leading imports were cotton and silk tissues, metal goods, kerosene, and motor cars. Due to the drop in the value of silver and excessive rice speculation in 1929, business in 1930 was badly depressed. Imports from the United States in 1929 totaled \$2,525,000; exports to that country were valued at only \$29,000.

There is a general budget for Indo-China and a separate budget for each of the colonies. The general budget for 1929 balanced at 91,500,000 piasters, including ordinary and extraordinary accounts (1 piaster was stabilized at \$0.3912 in March, 1930). The public debt in 1929 was about 425,969,000 francs. In 1928, a total of 2669 vessels of 4,607,000 tons entered the ports of Indo-China. Railways in operation in 1929 had 1485 miles of line, of which two-thirds were Government owned. Highways (1928) extended about 19,400 miles, of which 5694 miles were colonial, or main, roads. Indo-China is under a governor-general and a superior council which acts through a permanent commission. At the head of each colony is a resident superior, except in Cochín-China, which is governed directly from France. Governor-General in 1930, Pierre M. A. Pasquier, appointed in 1928.

HISTORY. The growth of the nationalist movement in French Indo-China and the activities of Communist agents were evidenced during the year by recurrent disorders, which in June led to an extended debate in the French Parliament upon the Government's colonial policies. The Minister of Colonies on June 13 placed the responsibility for the disorders on Bolshevik agitators and announced that the Government would punish all those who fell into its hands. A recruiting officer was murdered in Tongking early in the year and 85 natives were tried on charges of conspiracy before a specially constituted court. On February 10, about 200 mutinous native troops, accompanied by 60 civilians, attacked the fortified camp of Yen Bay in the Red River delta, killing 12 Europeans, including five French officers, and wounding 11. Units of the colonial infantry and of the Foreign Legion quelled the disaffection among native troops and bombed the villages of the civilians implicated. Other serious riots were reported at Caolahn August 24, and at Vinh Hatinh near Saigon September 11, during which troops fired on the crowd of demonstrators. See **FRANCE** under *History*; **COMMUNISM**.

FRENCH IVORY COAST. See **IVORY COAST.**
FRENCH LANGUAGE. See **PHILOLOGY,**

MODERN.

FRENCH LITERATURE. While there was no outstanding feature to report for the year 1930, still, one might call attention perhaps to a disposition on the part of many to "discuss ideas" in literature—which, for a long time, had been tabooed. Of course dissatisfaction with prevailing standards dominated. Henri Poulaille, in *Nouvel âge littéraire* considers that "L'écriture d'un Proust, d'un Mauriac, d'un Maurois, d'un Dekobra ne suit plus le rythme de la vie," and he proposes a "littérature prolétarienne"; and Henry Champly, in *Mil neuf cent trente ou l'Antiromantisme* thought that 1930 announced a "cyclone qui roulera cinquante générations." Since this was the last of the three years of Romanticism centenary celebrations, Romanticism was almost all the time involved. Opposed to the last named writer, there was Louis Reynaud, who, in his last book, *La crise de notre littérature, Des romantiques à Proust*, was of the opinion that nothing is of any avail since Romanticism, a theory vigorously disposed of by Benj. Crémieux (*Nouvelles littéraires*, June 28). Jean Cassou in his *Les nuits de Musset*, endeavors to show in a broad criticism that Romanticism was expressive, not so much of one phase of human passion, as of everlasting aspirations.

Interest in Romanticism was shown, too, by the creation of the Société Chateaubriand (founder Dr. LeSavoureux, Vallée aux Loups, par Chate-nay-Valabry, Seine), and by the publication of a new review, *Occident*, with the sub-title *Cahiers Staëliens* (Paris, 30 Boul. St. Michel). A general tendency to lay more stress again on discussion of ideas was found in the little volume by Philippe van Tieghem, *Les tendances nouvelles de l'Histoire littéraire*. Finally A. Thibaudet offered a *Physiologie de la critique*.

The readiness to return to topics relating to the Great War gained momentum. This was shown by a collection, "Combattants européens," a series of books on the war by war witnesses from all countries, published under the direction of José Germain, president of the Association des Ecrivains anciens combattants; by another similar collection, but of French authors only (e.g. A. Thérive, L. Thomas, Constantin Meyer, M. Genevoix, H. Malherbe, etc.) under the general title *Témoignages des combattants français*; and by the great success of André Bridoux's *Souvenirs du temps des morts* which strikes a note not heard for a long time, viz.: that this had been a great age in which humanity had shown itself under a magnificent light.

The discussions brought about by numerous books by French writers discovering America have been echoed enough in the United States, so that we need not dwell on them; suffice it to recall for further reference that the most eagerly discussed were *New-York* by Paul Morand, and the novel *Champions du monde*, by the same, and Duhamel's regrettable *Scènes de la Vie future*. It ought to be said that the fact that Europe was roused to arms by the protective tariffs caused any criticism of America to be taken up with more than normal eagerness. René Puaux's *Découverte de l'Amérique* deserves mention also.

POETRY. Discussions on the essence of poetry persisted, and strange to say with an appearance of reconciliation between the opponents: Abbé Bremond himself seemed to extend the olive branch

in his last essay, *Racine et Valéry*, the very title of which suggests the blending of the mystical element of sound with keen intellectual content. The most remarkable attempt to study in a systematic manner the relations of sound and thought was found in Pius Servien's *Lyrique et structures sonores*, and *Rythmes comme introduction physique à l'esthétique*, pronounced by Valéry "la tentative la plus intéressante et la plus hardie que l'on ait faite pour capturer l'hydre poétique." (Servien looked for the fundamental element of rhythm in spontaneous prose and not at all in what he called the "arithmetical line" of a Boileau.) Illustrations of concrete attempts to produce the new poetry include Gabriel Boissy, *Stances du mortel sourire*, where the appearance of metrical lines is absent; Rose Malhamé, in a little volume dedicated *Au Dieu inconnu*, i.e. to music, and to "l'infini que les mots ne peuvent contenir," and this other Valerian product, *A la fontaine de Narcisse*, by Mad. Merens-Melmer.

On the borderland of poetry, but lacking both in form and content, were the collections of the former dadaists, Paul Eluard in *A toute épreuve*, and Ribemont-Dessaignes, *Frontières humaines*; and *Poèmes d'amour* by Claire et Ivan Goll with the note of masochism (strange association of savage cruelty and love sensations). Ultra modern again is Th. Briant in *Premier vers de poèmes*.

Jules Supervielle was steadily coming to the front as a poet; his *Le Forçat innocent* sings once more, but with original images, the sufferings, of thinking humanity: his dream is to be turned into "un peu de pierre ou de roche" as a refuge against the tortures of the mind. Somewhat the same note is found in René-Louis Piachaud, in *L'indifférent*; but this Swiss poet earned laurels specially by his poem *L'évocation du fleuve Rhône*, which was used for the great festivities given in Geneva—as, before, in other cities along the great river—in honor of the god Rhône.

Other poets of excellence and who published during the year, were Alfred Mortier, *Le souffleur de bulles*; Pierre Gueguen, *Jeux cosmiques* (nature, with an ironic note); Jean Lebeau, the poet of the Cevennes mountains, *Couleur de vigne et d'olivier*; Tristan Derème, *Poème des Colombes*, and *Caprice*; Aug. Garnier, *Chemin vers la mer*; P. Jalabert, *Coupe d'ambrosie*; G. Lavaud, *Poétique du ciel*, etc. Many poets experienced the fascination of the Middle Ages and of the Renaissance: André Berry, *Chantefable de Murielle et d'Alain*, and *Florilège des Troubadours*; Ch. de Saint-Cyr, *L'autre livre d'Iseult*; L. Vêrane, *Livre des passe-temps*—in the Ronsard vein.

Much praise was given to a new translation in French of Vergil's *Eglogues*, by Xavier de Magalio (to replace the old Delille translation).

The Prix Claire-Vireneque (for spiritual poetry) went to Camille Melloy (*Parfum des Buis*); the Grand Prix de poésie Fabien Artigue, to Mary Henry-Ronie (*Le monde est à toi*); the Prix Sully-Prudhomme to Louis Poullain (*La source claire*).

THEATRE. More interesting plays were presented than in 1929. Pagnol, however, kept the lead in popularity with *Topaze* still running, and with *Marius*, the Marseilles comedy, a continuation of which, *Fanny*, was announced for 1931. Early in the year Henri Clerc scored with *Le beau métier* (Odéon), an exaltation of the modest, conscientious magistrate refusing to be corrupted, or tempted by higher rank, or driven by an ambitious wife. A little later Stève Pasteur made a hit with *L'Acheteuse*, admirably played by Simone, a sub-

ject somewhat related to that of *Le sexe faible* by Bourdet: a woman, having lost her fiancé in the war, is determined to know love. Another success of the spring was Jacques Deval's *Etienne* (Th. St. Georges), a rather sombre family drama, with the son, who is harshly treated by his father, vindicating his mother as the adolescent hero. A great deal of interest was shown at Easter time in the late Haraucourt's *La Passion* given at the Théâtre Français. In the autumn, three successful plays were offered which deal with foreign history; namely Alfred Mortier's *Le divin Arétin* (in whom there is nothing divine in the usual sense of the word); Alfred Savoir, *La petite Catherine*, very much liked although considerably untrue to history, and putting on the stage the Great Catherine in her early years at court when she won her throne by womanly diplomacy; and Pierre Frondaie's *Le fils de Don Quichotte*, in which the son of the famous knight meets the daughter of Sancho Panza and they run the love adventure.

The year ended with several interesting plays: F. Nozières, *Cette vieille canaille* (Michel), a youngster beaten at the game of courtship by a man considerably older but with experience; *La brouille*, by Charles Vildrac (Th. Français), a family drama of the kind of *Etienne*, much admired for the powerful presentation of the first act; J. Romain's *Jean Musse ou L'Ecole de l'hypocrisie*, which is a protest against the underground motives of human actions which are terrible fetters to free men, such as political pull, religious cant, chains of public opinion of all kinds; a sort of Molière's *Misanthrope* aiming at present-day conditions; an adaptation by the most clever Maurice Donnay, of Aristophanes' comedy, *L'Assemblée des femmes*—in which women claim the right to love, and when they obtain it they find old wrecks, lame ducks, crooks claiming their rights . . . which renders them more thoughtful. Helsey et Botrot voiced a moving appeal for the cause of Zionism in *Terre d'Israël*.

Other plays are worth mentioning, of which for lack of space it is not possible to give anything but names; such as: Romain Coolus and the late André Rivoire, *Pardon Madame*; R. Ginoux, *Professeur d'anglais*; J. Deval, *Barricou*; H. Bibesco, *Mon héritier*; Acremant, *Le soir des noces*; H. Duvernois, *Cœur*; the historical play, *Les trois Henri* (H. de Guise, H. III, and H. IV), by André Lang (Th. Français); *Bobard*, by Jean Sarment (a mediocre, of the family of Duhamel's *Salavin*); *Langrevin père et fils*, by Tristan Bernard. Jacques Chabanne's *Voyage sentimental*—his past love history—was the chief play at a new playhouse "Théâtre 1931" (Place Denfert). There are some disagreeable sex plays, like *Le péché*, by Orna, and *La chair*, by Ch. Méré; some war plays, like M. Rostand's *L'Homme que j'ai tué*; with an aviation play, *L'as*, by Alise Poidloue.

A success of curiosity attached to Cocteau's *La voix humaine*, a telephone monologue which was splendidly rendered by Mme. Bovy of the Théâtre Français. Curiosity was also a very important element in *Donogoo*, the film version of Jules Romains arranged for the Théâtre Pigalle (mentioned in the article in the 1929 YEAR BOOK and which did not succeed so far in making a success of its remarkable scenic resources). The play is certainly ingenious, very satirical, but the opinions of critics vary much as regards the merit

of the play. This is true also of *Boen*, by the same author given in December at the Odéon. Perhaps this would be the place to mention a play by George Neveux, *Juliette ou la clef des songes* (Th. de l'Avenue) in which all the characters act in a state of dream. Another curiosity yet is a play written and acted by a blind man, Casier, called *Le Triomphe de la Voonté*.

Among the reprises of the year let us recall only *Hernani* of which a centennial performance was given on February 25, at the Théâtre Français. Villiers de L'Isle Adam's *Révolte*, two plays by Sacha Guitry, *Jalousie*, and *Pèlerin Ecossais*, etc. Shakespeare has been offered at several theatres, and Machiavelli's farce *La Mandragore* has been distinctly successful. Gogol's *Revisor*, a great Russian farce, received much applause as produced in Russian by Meyerhold of Moscow Theatre.

The two-volume play by Claudel, *Le soulier de Satin*, which is placed chiefly in Spain, and which is a very antimodern—and catholic drama—had not been represented up to the end of the year. Neither had the play awarded the Brieux prize (for a play of moralizing tendency), *Ariel et Caliban*, by a young student, Baudouin. Jacques Copeau, with his "compagnie des quinze" was going to occupy his old theatre, the "Vieux Colombier" offering his "commedia dell'arte." The "Compagnons de Notre Dame" produced two new plays, *Le mariage de St. Joseph*, by H. Brochet, and *Peau d'âne*, by H. Ghéon. Finally, the "Surréalistes" were planning a theatre of their own, utilizing the stage of the Tour Eiffel not used for years.

THE NOVEL. The peasant novel seemed to have suffered a setback, as besides Jean Giono's *Regains*, and his other little volume, *Présentation de Pan*, in which he tells us how he came to write his *Colline* and *Un de Beaumugnes*, there is only one name to mention: Fr. Lefevre, author of *Samson, fils de Samson* offers as much a novel about superstition, witchcraft, etc. as about peasants. René Behaine added a seventh volume, *Au prix du bonheur*, to his *Histoire d'une société* (see previous YEAR BOOKS), while a new serial novel was hailed by the press. It was to be called *La vie de Philippe Denis*; the author is Claude Aveline, and the two first volumes were published, *Mme. Maillart*, and *La fin de Mme. Maillart* (Philippe Denis is shown at the dawn of his amorous life). Pierre Frondaie in his *Béatrice devant le désir*, shows a girl loved by a man of mature years, but who herself loves a younger man; J. H. Rosmy, in *Le fauve et sa proie*, a girl whose life is rendered miserable by the attacks of a sadistic Chinaman; H. Bordeaux in *Tuilette*, a girl facing valiantly modern problems of life.

The posthumous novel of Paul Drouot, *Euridice deux fois perdue*, was highly praised by the best critics; the author was killed in the World War; he expresses in his book in a stirring way one of those deep passions that take hold of the whole human being and besides which nothing exists. A string of novels depicting passions in the underworld came from the pens of well known men of letters: P. Mac Orlan, *Nuits aux bouges*; F. Carco, *La rue* (one of the author's best); Jean Delteil, *Don Juan*; Gaston Chérau, *La volupté du mal*; Blaise Cendrars, *Confession de Dan Yack*; Marcel Aymé, *La rue sans nom*; Ph. Soupault, *Le grand homme*,—but they are greeted by a decidedly cool attitude on the part of various critics who think that this domain has been sufficiently drained, and that, after all, the lives of those beings of mere

instincts are far from showing the variety and interest of the more sophisticated humans.

The topic "à la mode," if one may so speak, was the study of the causes that divide lovers, as contrasted with the old-fashioned novel which studied the attraction towards the third corner of the triangle. Marc Chadourne, the successful author in 1929 of *Vasco* (an exotic novel) won the "Prix Femina" with *Cécile de la folie* in which one sees facing each other a man with little will of his own and a woman who associates much virility with much temperament. Jacques Chardonne (author of *L'Épithalame*) in *Eva ou le Journal interrompu* treats an almost similar theme, a man subdued entirely by a wife whom he thinks he loves. Jean Prévost, in *Les Frères Bouquiquant*, places a story of brotherly hate and jealousy in the working class milieu; this was one of the best sellers of the year. Marcel Achard (the Goncourt laureate of 1929 with *L'Ordre*) published *Où le cœur se partage*. Much applause greeted the first novel of the actress, Madame Simone, called *Désordre*; again we read about a "ménage mal assorti," an intellectual married to a sort of Mme. Bovary,—and again it is the woman who makes a martyr of the man. Since we mention Madame Simone, let us place here the work of four other distinguished women, Marie LeFranc, *Heller, fils des bois*, a novel of the Canadian backwoods remaining far behind the originality of *Grand Louis L'Innocent* (1927); Céline Lothe (author of the *La petite fille aux mains sales*, and one of the group of so-called "populist" writers), *Cœur triste chez les sans-repos*, who proves a talented disciple of Carco; Madame Galzy, whose moving story of a school teacher, *Initiatrice aux mains vides*, was awarded the "Prix Brentano" and very well translated by Leclercq under the title of *Burnt Offering* (Brentano, New York); and finally Germaine Beaumont whose tragic story *Piège* won for her the coveted "Prix Renaudot" for 1930. As to Marie Laparcerie, in her Freudian and Lesbian *Isabelle et Béatrix*, and Raymonde Achard in *Les deux baisers*, they both think it necessary to remind us that women are very much less modest than men when they want to be.

A special place must be made here for a new comer, Irène Nemirovsky, who achieved immediate fame with her harsh picture of the old Jewish miser *David Golder*; this success induced her to publish at once a shorter novel written before *David Golder*, called *Le Bal*, in which also is seen her fierce style in exposing the souls of desperate or cruel humans. Three other novels with Jews as leading characters are Blanche Jacob's *Un "Schadchen,"* i.e. matrimonial agent for the Jews; G. Laeretelle's *Le retour de Silberman*; and Albert Cohen's *Solal*, who is a sort of Fortunio in Jewish attire—written with the pen of a James Joyce.

In our days of cosmopolitanism, exotic novels are always timely. It was one of these that was honored in 1930 by the Goncourt Academy; they crowned Henri Fauconnier's *Malaisie* (which came out serially in the *Nouvelle Revue Française*). Another exotic product which many favored for the Prix Goncourt, was André Malraux's (author of last year's *Conquérants*) *Voie royale*, a second volume to his series *Puissances du désert*. It tells the experience of two French adventurers who wanted to get away from civilization and went to the desert of China merely to find not only the shocking hostility of nature to man trying to free himself, but the cruelty of the

inhabitants of this part of the world. Pierre Benoit, in his *Soleil de minuit*, again takes us to China, and tells of the fate of a French engineer, victim of a Russian princess who drags him down to the level of her own turpitude; the fatal woman has ever been Benoit's best card to find many readers. Shall we also call Paul Morand's *Champions du monde* an exotic novel? The "champions du monde" are represented by eight young Americans, all somewhat different; and it was something for an European now to realize that there are at least as many as eight varieties of Americans. An attempt at psychology of the German soul was made by Georges Iman; in his *Le tourmenteur* he pictures a German finding his delight in treating in the meanest manner a poor woman who fell in love with him; it is a very disagreeable picture indeed. Quite the contrary do we find in Francis de Miomandre's charming story *Baroque*, taking place in Germany too and which is written in his inimitable witty style. Maurice Bedel's *Philippe*, is in the form of a novel a severe indictment of Fascism.

Let us mention two novels of sport life, André Cazanave's *Le Stade aux cent portes*, and Henri Chabrol's *La Chair est forte* (the hero, R. Sovigny, is for a while fascinated away from his magnificent athletic career by the woman Ghiska, but regains his own when she drops out of his life), and one novel whose hero is a chimpanzee, Julot, called *Comédie animale*, by J. Demaison.

Finally some historical novels attracted attention: Louis Artus, *Au soir de Port Royal* (the theme of Marcelle Tinayre's *Maison du péché*—of a man Antoine Michaux whose Jansenist austerity is not a guarantee against worldly love); Armond Praviel, *Angélique et Sylvie* (story of the assassination of the young marquise d'Entrecasteaux by her husband, "président-à-mortier" in Provence, 18th century); Ch. Vautel and R. Escholier, *L'empereur aux yeux bleus* (Napoleon III); Claude Anet, *Meyerling* (translated in English); Em. Henriot, *Occasions perdues* (in which one finds a portrait of Barrès); Binet-Valmer, *Foire d'Empoigne* (which is said to be a satire on world politics in the hands of international bankers of to-day).

SHORT STORIES. Some of the best volumes are: P. Bourget, *Vengeance de la vie* and *Agnès Delas*; H. Duvernois, *Le journal d'un pauvre homme*; J. Kessel, *Rage au ventre* (Russian revolutionist, and 9 other stories); Jean-Louis Vaudoyer, *Nuits à l'Hôtel Beau-Monts*; H. Wurmser, *Le courrier de la solitude* (in the Estain style); J. J. Brousson, *Les Nuits "Sans culottes"* (four terrifying stories of the Revolution).

VARIOUS ITEMS. Paul Valéry published *Variétés II*, in the usual Valerian cryptic style; and Comtesse de Noailles gives the title *Exactitudes* to various essays in her own lyric style. One of the most striking and original philosophical essays in pure literary style is Montherlant's *Pour une vierge noire* (Le Cadran). Mme. Colette tells remembrances of her mother in *Sido*; while Léon Daudet offers his *Rive gauche* (souvenirs of Paris, *Rive droite* having been issued in 1929); but by far the most stirring book of Souvenirs is Clémenceau's *Grandes et misères d'une Vie*.

From the volumes of biographies of the year, we mention only H. Bordeaux, *L'abbé Fouque* (the friend of children); A. Maurois' *Byron*, and another *Byron*, by Boutet de Monvel; G. de Pourtalès, *Vie de Liszt*; R. Michaud, *Vie inspirée*

d'Emerson; Albéric Cahuet, *Moussia et ses amies* (Marie Baskirtscheff); Victor Margueritte, *Le général Margueritte*; then for former ages: Funk-Brentano *Lucrèce Borgia* (a rehabilitation); Aug. Bailley, *Néron, ou l'agonie d'un monde* (very fine); Camille Aymard, *Précurseurs* (meaning "précurseurs" of the Roman empire, Catilina, Pompée, Cicéron, etc.); and the most suggestive volumes by Victor Bérard, *La résurrection d'Homère, L'Épopée, Le Drama épique*. Travel literature is once more abundant and mostly excellent: Mabillet de Poncheville, *Le chemin de Sainte-Jacques*; L. Bertrand, *Les nuits d'Alger* (in which the famous Academician tells how well he understood, in his travels in Algeria, the great lovers of the great poets, Pyrrhus, Néron, Hermione, Roxane); Duhamel, *Chant du Nord*, meaning Finland (his *Scènes de la vie future* have been recalled before); Luc Durtain, *Dieu blanc, Hommes jaunes* (China and Indo-China); Fauconnier, *Malaisie* (Prix Goncourt); M. DeKobra, *Les tigres parfumés* (India); Miriam Harry, *Terre d'Adonis* (Syria); Barbusse, *Russie*; A. Bonnard (the author of *Chine* some years ago), *Océan et Brésil*. Here ought to be placed Albert Londres' remarkable descriptions of the Jewish people in *Le Juif errant*, a continuation of *Dante n'a rien vu* (1929).

WAR LITERATURE. A special paragraph ought to give the titles of the numerous books dealing with the war, which include: André Bridoux, *Souvenirs du temps des morts*; René Quinton, *Maximes sur la guerre*; Constantin Weyer, *P. C. de compagnie, dédié à Joseph Jolinon* (see YEAR BOOK 1929), *réponse de l'officier français à tous les livres de guerre français et étrangers* (Rieder); Paul de Rosaz, *Rien à signaler*; André Pouclaut, *Le héros* (in the Barbussian style); Louis Guilloux, *Dossier confidentiel*; Jacques Boulenger, *En escadrille*; Marcel Sauvage, *Le premier homme que j'ai tué*. Maurice Genevoix has a new volume *Les Éparges*; A. Erlande publishes with restitution of the passages cut by the censor during the war his tremendous book *La légion étrangère, or C'est nous la légion*. Besides the Remarque book other German books have been much read, e.g. E. Glaeser, *Classe 22*—a very unpalatable mixture of war experiences and pornographic-sexual details which seemed to be in fashion in some war books.

HISTORY OF LITERATURE AND CRITICISM. In medieval literature one of the works that was considered as renewing our ideas was A. Faral's *La légende arthurienne*, 3 volumes (Prix Saintour). The XVIth century has been much studied of late; but let us mention only: the excellent 3-volume edition of *Montaigne* by Villey; two volumes on J. du Bellay, John Vianey, *Les Regrets de Du Bellay* (Coll. Grands événements litt.); and F. Ambrière, *J. Du Bellay* (Didot). L. Sainéan has a volume *Problèmes litt. du XVI^e siècle* (Boccard). In the XVIIth century, René Bray, has *Fables de LaFontaine* (coll. Grands événements litt.). In the XVIIIth cent: P. Richard, *Vie de Vauvenargues*; Latzarus, *Beaumarchais*; A. Maurel, *La marquise du Châtelet, amie de Voltaire* (very "piquant"); J. G. Prodhome, *Voltaire raconté par ceux qui l'ont vu* (takes only to 1754; and could be much more complete); M. Moffat, *Rousseau et la querelle du Théâtre au XVIII^e siècle*; Mourat et Louvet, *Le Café Procope* (subject thin but book large). Passing to the XIXth century we must make a selection: A. Monglond, *Pre-romantisme français* (to be in 4 vols.); Dr. LeSavoureux, *Chateaubriand* (coll. Maîtres de la litt.); J. H.

Rosny, *Vie amoureuse de Balzac*; R. Bouvier, *Balzac, homme d'affaires*; L. Guimbaud, *La mère de V. Hugo* (much new in it); M. Rouget, *La vie grenobloise du père de Stendhal*; R. Jourda, *État présent des études stendhaliennes*; Th. Gautier *souvenirs romantiques, annotés par V. Boschot*; Georges Lote, *En Préface d'Hernani* (in connection with the Centenary of *Hernani*); Denis Saurat, *La religion de V. Hugo* (by far the most important contribution of Hugo literature during the year); Pierre Trahard, the last of the 4 vols. on *Mérimé*; R. Harmand, *Michelet*; Lucas-Lebreton, *La vie amoureuse de Lamartine*; Faure-Biguet, *Gobineau* (Roman des grandes existences); Marie-Louise Pailleron, descendant of Buloz, founder of the *Revue des Deux mondes* and who was awarded in June the "Grand Prix de littérature," by the Academy, reëdited her well known *François Buloz et ses amis, La vie littéraire sous Louis-Philippe*, and published a new work *François Buloz, et ses amis, La Revue des Deux Mondes et la Comédie Française*; and also a smaller book *Pauline de Beaumont, l'hirondelle de Chateaubriand*; Alice Borens, *Théâtre d'Octave Feuillet*; Léon Deffoux, *Chronique de l'Académie Goncourt*; M. Souriau, *Historie du Parnasse*; Alex. Arnoud, *Tristan Corbière*. For the XXth cent: Pierre Quint, *Le Comte de Lautréamont et Dieu* (Cahiers du sud); Léon Daudet, *Ch. Maurras et son temps*; and of special interest here Professor René Taupin's excellent *L'influence du Symbolisme français sur la poésie américaine de 1910-20*. Here should be quoted a volume of impressionistic criticism by A. Mauriac, *Molière, Rousseau, Flaubert, Jean-Richard Bloch* has a book *Destinées du Théâtre*, Edm. Sée, *Le mouvement dramatique*, and P. Giniesty, *Souvenirs de journalisme au théâtre*. André Breton publishes *Second manifeste de surréalisme* (Kra). Two volumes of *Mélanges Baldensperger* were published by friends and admirers of the learned scholar of the Sorbonne, and a number of Lanson's *Études littéraires* have been republished in book form by his friends.

Finally we draw attention to two new volumes of Brunot's *Histoire de la langue française* (XVIIIth cent); and to a compendium *Histoire de la langue française* (Bibl. scient.) by A. Dauzat. Abel Hermant, at a meeting of the Institute, October 25, announced that the *Grammaire de l'Académie* (see 1929 YEAR BOOK) had been completed.

Space does not permit a detailed report of the long lists of literary prizes given in France. The most important have been mentioned in the course of this article. Perhaps we ought to mention an exceptional prize of 15,000 francs to Georges Duhamel, awarded by the French Academy.

The year 1930 saw the end of the commemoration of the centenary of French Romanticism begun in 1827, special attention having been devoted to the date of February 25, when one hundred years before, the famous "Bataille d'Hernani" had taken place. Elaborate Mistral celebrations were held in Paris and in the South of France for the centenary of the great poet's birth. That year 1830 was also the year of Stendhal's *Rouge et noir*, of Balzac's *Gobseck*, of Sainte-Beuve's *Consolations*, of Musset's *Contes d'Espagne*, etc. There was attention paid to the three hundredth anniversary of the death of Agrippa d'Aubigné, to the fiftieth anniversary of the *Soirées de Médan*, etc.

NECROLOGY. Two scholars in the field of medieval literature, Léon Clédat, and Joseph Anglade;

the poet Auguste Dorchain; André Rivoire; the critic Pierre Lasserre (author of *Le Roman-tisme*); and most important of all Georges de Porto-Riche, member of the French Academy.

Newly elected to the Academy were Charles Le Goffic (taking the seat of François Curel) and André Chaumeix (replacing Clémenceau—who had always refused to take his seat, but had, himself, replaced Faguet). See ACADEMY, FRENCH. Two million francs were raised by admirers of Sarah Bernhardt for a monument to be erected in Paris. See also PHILOLOGY, MODERN, under *Romance*.

FRENCH SOMALI (sô-mâ'lê) COAST, or FRENCH SOMALILAND. A French colony in Africa on the Gulf of Aden between Italian Eritrea and British Somaliland. Estimated area, 5790 square miles; estimated population in 1928, 85,778, including about 550 Europeans. The port of Djibouti is the seat of government. Its population in 1928 was estimated at 9414, of whom 540 were European (317 French). The coast fisheries, salt mines, and inland trade are the chief sources of livelihood. The imports in 1927 amounted to 480,642,000 francs and the exports to 513,383,000 francs, of which 350,220,000 francs represented reexports. The chief exports are ivory, coffee, hides, and skins. A large share of the exports of Ethiopia pass through Djibouti, which is connected by a railway 485 miles long with Addis Ababa. The local budget for 1928 balanced at 13,002,000 francs. The colony is under a governor assisted by an administrative council. Governor in 1930, M. Chapon-Baissac (appointed in 1924).

FRENCH SUDAN. A French colony forming part of French West Africa (see FRENCH WEST AFRICA). Area, estimated at 360,331 square miles; population, estimated at 2,632,618 in 1927. The capital is Bamako, with 17,184 inhabitants. Other important towns and their populations are Kayes, 11,438; Sikasso, 12,286; Segou, 8220; and Timbuktu, 6118. The crops include groundnuts, millet, corn, cotton, rice, sesame, rubber, and kariti; also many cattle are raised. The total imports in 1928 amounted to 113,685,000 francs and the total exports to 5,217,000 francs. The budget for 1929 balanced at 64,564,300 francs. There is a railway connection with the coast over a line of 760 miles in length. The Government is under the Governor-General of French West Africa.

FRENCH WEST AFRICA. An African colonial possession of France, comprising the Atlantic coast colonies of Mauretania, Senegal, French Guinea, and the Ivory Coast, Dahomey on the Gulf of Guinea, and the interior colonies of French Sudan, Upper Volta, the Territory of the Niger, and Dakar and Dependencies. It includes the river basin of the Senegal, nearly all the upper and middle Niger Basin, the basin of a large number of rivers emptying into the Gulf of Guinea, and the southern part of the Sahara region. Area, 1,247,191 square miles; population in 1926, 13,541,611, as compared with a total area of all the French protectorates and mandated territories of 3,958,626 square miles and a total population of 55,631,184.

The colonies in 1926 had the following populations: Senegal, 1,318,287; Guinea, 2,095,988; Ivory Coast, 1,724,545; Dahomey, 979,609; French Sudan, 2,634,982; Upper Volta, 3,240,147; Mauretania, 289,184; Niger, 1,218,717; Dakar and Dependencies, 40,152. The total European population was 15,399, of whom 11,099 were French. The natives in general live by farming

and stock raising. In 1927-28 there were 281 preparatory schools, with 16,087 pupils and 147 elementary schools, with 13,704 pupils.

In 1928 the total imports of French West Africa were valued at 1,513,843,757 francs and the exports at 1,241,115,812 francs. The individual totals for imports and exports are given in separate articles for the respective colonies. Peanuts constituted about 50 per cent of the combined exports of Senegal, Ivory Coast, Dahomey, French Guinea, and French Sudan in 1928. Cacao beans were the chief item of export from the Ivory Coast. Other exports were hardwoods, palm kernels, palm oil, gum, hides, cotton lint, and crude rubber (from French Guinea). The imports included cotton piece goods, foodstuffs, automobiles, machinery, petroleum products, and some tobacco. Of the total trade in 1928, France supplied 770,414,173 francs of imports and took 702,484,917 francs of the exports. The combined general and local budgets for 1930 balanced at 828,807,210 francs.

Railways in operation in 1928 totaled 1957 miles and 296 miles were under construction; telegraph lines extended 14,386 miles. In the same year vessels entering and clearing the ports numbered 22,838 of 21,126,459 tons. A governor-general, assisted by a council, administers the whole of French West Africa from Dakar (population, 40,057). Each colony is under a lieutenant-governor subordinate to the governor-general. Governor-General in 1930, J. Carde, appointed Feb. 20, 1923.

FRICK AFFAIR. See GERMANY under *History*.

FRIDTJOF NANSEN LAND (FRANZ JOSEF LAND). See POLAR RESEARCH.

FRIENDLY ISLANDS. See TONGA.

FRIENDS, RELIGIOUS SOCIETY OF. A mystical religious sect which originated in England in the middle of the seventeenth century. The founder of the society was George Fox, who visited America in 1672. The first Yearly Meeting in the United States was held in Newport, R. I., in 1661 and has been continued under the name of New England Yearly Meeting. Others established within the next 40 years were the Baltimore, Philadelphia, New York, and North Carolina Yearly Meetings; they are composed of quarterly and monthly meetings having one or more congregations. In the nineteenth century other meetings were formed as migration moved westward.

FIVE YEARS' MEETING. In 1902 the largest body of the Religious Society of Friends, known as the Orthodox Group, organized the Five Years' Meeting. This organization meets as a delegate body every five years and in 1930 consisted of 12 yearly meetings, with a membership of approximately 81,000. Its headquarters are in Richmond, Ind. The work of the various departments, such as missions, peace, prohibition and public morals, religious education, is under the direction of executive committees and secretaries of boards. The Five Years' Meeting also maintains seven colleges for higher education: Earlham in Richmond, Ind.; Pen in Oskaloosa, Iowa; Guilford in Guilford, N. C.; Wilmington in Wilmington, Ohio; Whittier in Whittier, Calif.; Nebraska Central in Central City, Nebr.; and Friends University in Wichita, Kans. Haverford College in Haverford, Pa., is maintained by the Philadelphia Yearly Meeting and Pacific College in Newberg, Ore., by the Oregon Yearly Meeting. The latter body, however, and the Ohio Yearly Meeting are not a part of the

Five Years' Meeting. In 1930 the membership of the Oregon Yearly Meeting was 3088 and of the Ohio Yearly Meeting, 5411. *The American Friend*, a weekly religious journal, is published at headquarters, as is also literature for the Bible schools of the Five Years' Meeting.

LIBERAL BRANCH. This branch was formed in 1827 as the result of a separation which centered around the doctrinal issues of the day and with which the name of Elias Hicks is associated. The Liberal Branch includes seven Yearly Meetings federated in the Friends' General Conference which meets in even numbered years and conducts work in religious education, social service, and advancement of Friends' principles. The society emphasizes the freedom of the individual to follow the voice of God in his own soul rather than any individual or church authority. The membership in 1930 was 16,580, and there were 134 meetings. Publications include the weekly periodical, *Friends' Intelligence*, and a monthly magazine for children, *Scattered Seeds*. The society conducts several secondary schools, and Swarthmore College in Swarthmore, Pa., was founded by it.

FRUIT AND FRUIT CROPS. See HORTICULTURE.

FRUIT INSECTS. See ENTOMOLOGY, ECONOMIC.

FUCHS, fuchs, ERNST. An Austrian ophthalmologist, died in Vienna Nov. 21, 1930, where he was born in 1851. On completing his education in Vienna he held a professorship at the University of Liège (1881-86) and was then appointed to the chair of ophthalmology at the University of Vienna. He received in 1929 the Leslie Dana gold medal awarded by the National Society for the Prevention of Blindness (American) for "the most outstanding achievement in the prevention of blindness and the conservation of vision." His principal publications, most of which were translated into English and French, include: *Das Sarcom des Uvealtractus* (1892); *Die Ursachen und die Verhütung der Blindheit* (1885); and *Lehrbuch der Augenheilkunde* (1889; 11th ed., 1907; English trans. by Alexander Duane under the title *Text-book of Ophthalmology*, 8th ed., 1924).

FUEL. See COAL; PETROLEUM; NATURAL GAS; BOILERS; INTERNAL COMBUSTION ENGINES.

FULOPIITE. See MINERALOGY.

FUR AND HUNTING EXPOSITION AT LEIPZIG. See EXPOSITIONS.

FUR INDUSTRY. See CANADA.

FURNACES. See BOILERS.

FURNESS, HORACE HOWARD, JR. An American Shakespearean editor, died Apr. 15, 1930, in Philadelphia, Pa., where he was born Jan. 24, 1865. Graduated from Harvard University in 1888, he was an instructor in physics at the Episcopal Academy in Philadelphia from 1891 to 1901. After 1901 he was associated with his father, Horace Howard Furness, in publishing the scholarly and highly esteemed Variorum edition of Shakespeare's plays and, on the latter's death in 1912, succeeded him as editor. The plays edited by Mr. Furness include *Macbeth* (revised edition of the Variorum edition, 1903); *Richard III* (1908); *Julius Caesar* (1913); *King John* (1919); *Coriolanus* (1928).

GABUN. See FRENCH EQUATORIAL AFRICA.

GALAPAGOS ISLANDS. See ECUADOR.

GALL BLADDER DISEASE. See SURGERY, PROGRESS OF.

GALLI-CURCI, AMELITA. See MUSIC under Artists.

GAMBIA. A British protectorate and colony in West Africa at the mouth of the Gambia River. Area of Gambia proper, four square miles; population about 10,000. Area of protectorate, 4130 square miles; population in 1921, about 200,000. The capital is Bathurst, on the Island of St. Mary (population, 9227 in 1921). In 1928 there were eight elementary government-aided schools with 2000 pupils enrolled. The chief imports were wearing apparel and foodstuffs and the chief exports, groundnuts, hides, and palm kernels. Including specie, the 1928 imports amounted to £1,235,663 and exports to £1,178,409. In the same year revenues totaled £255,385 and expenditures, £250,596. On Jan. 1, 1929, the public debt stood at £62,541. Steamers and launches furnish the only internal transport. In 1928 the tonnage of vessels in the foreign trade entering and leaving the ports was 1,290,398. The colony is administered by a governor, an executive council, and a nominated legislative council containing an unofficial element. Governor in 1930, Herbert R. Palmer, appointed February, 1930.

GAHNDHI, MOHANDAS KARAMCHAND. See INDIA under History.

GARBAGE AND REFUSE DISPOSAL.

Under its new department of sanitation New York City was carrying forward with increased expedition a programme of garbage and refuse disposal by incineration of the mixed refuse that would completely supplant what remains of dumping the material at sea. Across the continent San Francisco was still working on its disposal problem, which was complicated by the long-standing practice of collection and disposal by private scavengers, under a system of charges to householders established by ordinance. The scavengers operated an old incinerator owned by the city, the closing of which by injunction under a nuisance lawsuit had been hanging over the city for months. The latest plans were to have a new incinerator built and operated by private expense, eventually to become the property of the city. Data on garbage collection and disposal for many cities of over 4500 population, gathered late in 1929 and published in *The Municipal Index*, 1930, show that of the three leading methods of garbage disposal in vogue feeding to hogs was far in the lead while incineration and disposal on land were nearly tied. A dozen cities reported disposal by reduction, or by converting the garbage into grease and fertilizer base. Of 667 cities reporting, 110 had no organized system of collection. Detailed figures for the 557 cities, including population, area, methods of collection and disposal and other items are tabulated in the *Index* but no summaries were given.

A canvas of both garbage and refuse disposal practice in some 1200 places of less than 4000, briefly summarized in *Public Works* for December, 1930, indicated that about half of the places in this class leave householders to get rid of the wastes indicated as they see fit. Disposal by "dumping," with no definition of the word, was reported by 363 places, while 7 dump in pits, 10 into rivers, 10 use the material for filling and 18 bury it. Feeding to hogs comes next, with 48 places reporting that method and 20 others apparently making use of it. Incinerators were reported by 26 places, and 64 report burning in the open, evidently on land dumps. It was probable that only a small part of the population was

served in many of the communities whose methods went into the summary. Centralized disposal of the refuse of the cities of London and Westminster, England, and of the 27 boroughs comprising the county of London, instead of having the work done separately, as now, was advised in a report made by the Ministry of Health Committee on London Cleansing, abstracted in the *London Surveyor* of July 11, 1930. Each city would collect its own mixed refuse (garbage, miscellaneous wastes and ashes) but final disposal, including haulage from the several municipalities to the point or points of disposal, would be done by the county.

GARDENS. See HORTICULTURE.

GARMENT TRADES. See STRIKES AND LOCKOUTS.

GAS, ILLUMINATING AND FUEL. According to the annual statistics of the manufactured gas industry in the United States, compiled by the American Gas Association, the total production of gas in the United States for 1929 was 352,059,700 thousand cubic feet, of which Water Gas totaled 223,910,500 M.C.F.; Retort Coal Gas, 45,516,000 M.C.F.; Oil Gas, 33,819,200 M.C.F.;

per cent. In this connection it is interesting to indicate the distribution of consumers to whom the gas was distributed. This is indicated in the accompanying table.

According to a preliminary tabulation of data collected in the U. S. Census of Manufactures taken in 1930, the total value of products made in 1929 by establishments in the United States engaged primarily in the manufacture of gas for heating and illuminating purposes amounted to \$507,318,729, a decrease of 1.8 per cent as compared with \$516,705,170 reported for 1927, the last preceding census year. The 1929 production for sale was made up as follows: 405,240,540 M cubic feet of gas, valued at \$433,691,561; 3,430,782 short tons of coke, \$20,815,108; 162,445,627 gallons of tar, \$8,105,682; 36,181,246 pounds of ammonia (NH₃ content), \$2,169,285; all other by-products (including screenings and breeze, crude light oil and derivatives, drip and holder oil, and naphthalene), \$3,281,865; receipts for service charges and rents and sales of lamps and appliances, \$32,201,243; miscellaneous receipts, \$1,053,985.

U.S. CENSUS SUMMARY FOR THE MANUFACTURED GAS INDUSTRY: 1929 AND 1927

| | 1929 | 1927 | Per cent of increase or decrease (—) |
|---|---------------|---------------|--------------------------------------|
| Number of establishments | 715 | 828 | — 13.6 |
| Wage earners (average for the year) * | 42,853 | 48,497 | — 11.6 |
| Wages ^b | \$ 59,723,708 | \$ 68,356,448 | — 12.6 |
| Cost of materials, fuel, and purchased electric current ^b .. | 185,984,354 | 211,785,523 | — 12.2 |
| Products, total value ^b | 507,318,729 | 516,705,170 | — 1.8 |
| Gas sold, value | 433,691,561 | 446,244,677 | — 2.8 |
| By-products, value | 40,371,940 | 38,854,865 | 3.9 |
| Miscellaneous products and receipts | 33,255,228 | 31,605,628 | 5.2 |
| Value added by manufacture ^c | 321,334,375 | 304,919,647 | 5.4 |

* Not including salaried employees. The average number of wage earners is based on the numbers reported for the several months of the year. This average somewhat exceeds the number that would have been required for the work performed if all had been continuously employed throughout the year, because of the fact that manufacturers report the numbers employed on or about the 15th day of each month, as shown by the pay rolls, usually taking no account of the possibility that some or all of the wage earners may have been on part time or for some other reason may not actually have worked the entire month. Thus in some cases the number reported for a given month exceeds the average for that month.

^b Manufacturers' profits cannot be calculated from the census figures because no data are collected for certain expense items, such as interest on investment, rent, depreciation, taxes, insurance, and advertising.

^c Value of products less cost of materials, fuel, and purchased electric current.

and Coke Oven Gas, 48,814,000 M.C.F. As the total figures for 1928 aggregated 362,889,300 M.C.F., there was a decrease of 3 per cent, this being particularly evident in the case of water gas, where there was a decline of 159,958,700 M.C.F. In addition to the gas produced by gas companies in the United States, there was purchased, for distribution to consumers, a total of 226,244,700 M.C.F., of which 118,159,400 M.C.F. was coke oven gas, and 108,085,300 M.C.F. was natural gas. In other words, the manufactured gas industry distributed to consumers in 1929 a total of 578,304,400 M.C.F., as against 537,193,300 M.C.F. in 1928, or an increase of 7.7

MANUFACTURED GAS INDUSTRY IN THE UNITED STATES—SALE OF GAS TO CONSUMERS [American Gas Association]

| Gas sales (M. C. F.) | 1929 | 1928 |
|--|-------------|-------------|
| Domestic | 335,800,000 | 325,700,000 |
| House heating | 23,100,000 | 17,800,000 |
| Industrial and commercial | 163,100,000 | 147,600,000 |
| Miscellaneous | 2,100,000 | 3,900,000 |
| Total sales | 524,100,000 | 495,000,000 |
| Total consumers | 12,139,000 | 11,848,000 |
| Gas sales per consumer (M. C. F.) | 43.17 | 41.77 |
| Gross revenue from sales of gas to consumers ... | 528,900,000 | 511,400,000 |
| Average price of gas per M. C. F. | 1.00 | 1.03 |

For the year 1930 the Statistical Department of the American Gas Association reported a slight decrease in gas utility sales as indicated by the comparative operating reports of manufactured and natural gas utilities. Reports from companies representing over 90 per cent of the manufactured gas industry indicated sales of 353,832,087 thousand cubic feet during 1930, as compared with 354,268,765 thousand cubic feet during the year previous, a decline of one tenth of 1 per cent. The revenues of these companies totaled \$376,885,239 for the year, as compared with \$376,682,611 during 1929. The declining trend in water gas production continued during 1930, production averaging nearly 5 per cent under the previous year. The quantities of coke oven gas produced and purchased, however, increased 4.4 per cent.

During the year most of the gas companies in the United States maintained their schedules of construction, and, as far as possible, sought to anticipate them. The result was that public utilities and the gas industry particularly were able to employ, even in a time of depression, more people than was the case in the previous year. At the same time the territory served by the gas industry was extended materially, and the useful purposes for which gas might be adapted for fuel increased considerably. This was due in

a measure to the increased activity in research at the Cleveland Laboratory of the American Gas Association and the valuable cooperation of various technical schools.

GAS, NATURAL. The natural-gas industry of the United States in 1929 more than maintained the steady growth which had characterized it for a number of years. During that year, according to G. R. Hopkins, economic analyst of the U. S. Bureau of Mines, a total of 1,917,693,000,000 cubic feet of gas was produced and marketed. This represents a gain of 22 per cent over the 1928 production as compared with an increase of 8 per cent for 1928 over 1927, and with an average annual increase of 10 per cent for the previous 10 years. This unusual growth resulted primarily from the completion of a number of new distributing systems entering several States and reaching many towns and cities not previously served with gas. From the standpoint of domestic consumers, or meters in domestic service, there was an increase of 772,000, or 18 per cent in 1929. Deliveries of natural gas to Canada and Mexico increased from 160,000,000 cubic feet to 242,000,000 cubic feet, which, when deducted from the total 1929 production, gave 1,917,451,000,000 cubic feet as the total consumption for the year. This consumption was divided between 359,853,000,000 cubic feet, or 19 per cent, for domestic purposes, and 1,557,598,000,000 cubic feet, or 81 per cent for all industrial purposes. The industrial consumption included the following items; 705,083,000,000 cubic feet, or 45 per cent, used for field purposes, that is, as a fuel for boilers and engines in oil and gas field operations, and for operating natural gasoline plants; 261,107,000,000 cubic feet, or 17 per cent, burned in the manufacture of carbon black; 112,707,000,000 cubic feet, or 7 per cent, burned as fuel by public-utility power plants; 103,729,000,000 cubic feet, or 7 per cent, burned as fuel at petroleum refineries and 374,972,000,000 cubic feet, or 24 per cent, used for general industrial purposes.

Texas, by virtue of a 54 per cent gain in output, became, for the first time, the leading natural-gas producing State with 464,928,000,000 cubic feet. This resulted primarily from a material increase in production in the Panhandle area. Oklahoma with 357,893,000,000 cubic feet, was second, with California, with 342,214,000,000 cubic feet third. Louisiana, 261,138,000,000 cubic feet, and West Virginia, 167,333,000,000, which rank fourth and fifth respectively, reported increases in output in 1929.

There were 5,116,000 domestic consumers on December 31, 1929, as compared with 4,344,000 at the beginning of the year. California showed a 61 per cent gain in number of consumers and displaced Ohio as the first-ranking State in this respect. A large part of the gain in consumers in California was due to the completion of the San Francisco line the latter part of the year. Nearly all of the States showed an increase in number of consumers over 1928 and no State reported a decrease. California and Ohio ranked well ahead of the other States in number of consumers and their totals, 1,239,000 and 1,214,000 respectively, are nearly double that of Pennsylvania, the third-ranking State. The total consumption of natural gas for domestic purposes in 1929 amounted to 359,853,000,000 cubic feet as compared with 320,877,000,000 cubic feet in 1928, an increase of 12 per cent. The average consumption per domestic consumer, which has been de-

clining steadily in recent years, fell off materially in 1929 when it amounted to only 70,300 cubic feet as compared with 73,900 cubic feet in 1928.

The gas burned for domestic consumption in the United States in 1929 was valued at a total of \$223,172,000 or an average of 62.0 cents per thousand cubic feet, the same as the average reported for 1928. This was the first time since 1908 that the average annual price had not increased over the preceding year. In only one State, Michigan, was the average value above \$1 per thousand cubic feet in 1929. Domestic consumers in West Virginia paid the lowest price for gas—34.6 cents per thousand cubic feet.

The consumption of natural gas for field purposes easily retained first rank among the various classes of consumption. During 1929 a total of 705,083,000,000 cubic feet was utilized in the operation of natural gasoline plants and burned under boilers or used as fuel for gas engines incident to the drilling and pumping of wells. The increase in field consumption in 1929 checked quite closely with the increase in number of wells completed and with gains made in natural-gasoline production. Oklahoma and California were the leading users of gas for field purposes in 1929. Texas, the leading State from the standpoint of completions in 1929, was third, an explanation of which might be a more widespread use of oil for fuel in that State.

The use of natural gas in the manufacture of carbon black ranked next to field use in importance in industrial use. This accounted for a consumption of 261,107,000,000 cubic feet in 1929, an increase over 1928 of 49 per cent. Texas became the leading carbon-black producing State in 1929.

A further decline in the use of natural gas as refinery fuel was noted in 1929 when the total consumed was 103,729,000,000 cubic feet as compared with 114,950,000,000 cubic feet in 1928. Although in some cases the price situation may have been a factor, the chief reason underlying the decreased use of natural gas by refineries was an increase in the supply of other fuels, notably, fuel oil and refinery gas. Fuel oil was very low in price in 1929 and some of it, particularly residual fuel oil from cracking stills, could not be disposed of except as fuel under boilers and stills. Furthermore, increased cracking and more efficient refining methods led to a material gain in the recovery of still gas and to a similar increase in its use as refinery fuel.

The United States Geological Survey reported the consumption of natural gas as a fuel in the generation of electric power by public-utility plants in 1929 as 112,707,000,000 cubic feet, an increase over 1928 of 35,381,000,000 cubic feet, or 46 per cent. Texas continued to rank first from the standpoint of natural gas used in the generation of electricity.

The average price paid for natural gas at the wells in 1929 was 8.2 cents per thousand cubic feet as compared with 8.9 cents in 1928. This decline reflected the material increase that occurred in the use of low-priced gas in carbon black manufactured in the Texas Panhandle. At points of consumption, the average price of natural gas in 1929 was 21.6 cents per thousand cubic feet as compared with 23.2 cents in 1928 and 22.0 cents in 1927. This decrease, after 2 years of successive increases, reflected the decline in value in Texas.

Interstate transportation of natural gas grew rapidly in importance in 1929 following the com-

pletion of several large lines traversing a number of States. The total transported between States in 1929, that is, from the State of origin to the State of final distribution, amounted to 325,021,000,000 cubic feet. This is equivalent to 17 per cent of the total production and represents an increase over 1928 of 35 per cent. The movement of gas from West Virginia to consuming centres in Ohio continued to be the largest single item, although other interstate movements, for example, those from Texas to Oklahoma and from Louisiana to Texas, showed larger increases in 1929.

In 1930 natural gas companies representing more than 85 per cent of the public utility distribution of natural gas reported sales for the year in excess of 572 billion cubic feet, a decrease of 1.4 per cent from the year 1929, according to the American Gas Association. The revenues of these companies aggregated \$258,209,100 during 1930, compared with \$264,296,075 during the preceding year. For comparison with other fuels, the production of bituminous coal during 1930 declined by nearly 14 per cent from the preceding year, anthracite coal production dropped more than 5 per cent, crude petroleum output was down 11 per cent, coke production down nearly 15 per cent, while the production of electric power declined by 1.8 per cent. In response to the generally depressed condition of trade and business, natural gas sales for industrial purposes declined by nearly 8 per cent, but the major portion of this loss was offset by the industry's programme of expansion into new territory.

While final figures covering the entire production and consumption of natural gas during 1930 had not become available, preliminary estimates indicated that production aggregated more than 1940 billion cubic feet, an increase of 1.1 per cent over the year 1929. A significant feature of natural gas utilization was indicated by the fact that while the total production of electric power during 1930 declined by 1.8 per cent from the previous year, the use of natural gas for the generation of electric current revealed a marked increase. Consumption of all other fuels by the electric industry decreased considerably during the year, and the production of hydroelectric energy dropped 5.3 per cent, but the use of natural gas by electric utilities during 1930 increased 6.7 per cent over the previous year.

GAS AND OIL ENGINES. See INTERNAL COMBUSTION ENGINES.

GASOLINE. See PETROLEUM; CHEMISTRY, INDUSTRIAL.

GEBEL DISTRICT. See CYRENAICA.

GENERATORS. See DYNAMO ELECTRIC MACHINERY.

GENETICS. See BOTANY; ZOÖLOGY.

GEOGRAPHICAL SOCIETY, AMERICAN. The oldest geographical society in the United States, founded in 1852, "to collect and disseminate geographical information by discussion, lectures, and publications; to establish in the chief city of the United States a place where may be obtained accurate information concerning every part of the globe; and to encourage such exploring expeditions as seem likely to result in valuable discoveries in geography and related sciences." Within recent years the society has taken an active part in the encouragement of exploration, the scientific work of Sir Hubert Wilkins in the Arctic and Antarctic and of Rear Admiral Richard E. Byrd in the Antarctic having been carried out under its auspices.

The society's periodical is the *Geographical Review*, a quarterly, in which appear original articles and notes dealing with exploration and geographical research and reviews of the more significant geographical books. The maps, books, and pamphlets issued by the society fall into six series: *Research Series*, comprising specialized monographs; *Special Publications*, having a more general appeal; *Library Series*, devoted primarily to the collections of the society; *Outing Series*, including trampers' guides entitled *The Palisades Interstate Park* and *New York Walk Book*; a map of Hispanic America published in conformity with the International Millionth Map of the World and accompanied by geographical monographs (this map will consist of 100 sheets, of which more than 30 have been completed); and *Oriental Explorations and Studies*, comprising six volumes on the explorations of Prof. Alois Musil in northern Arabia.

The society maintains a geographical library and sponsors six regular lectures annually by distinguished explorers or geographers. Contributions to the development of geographical science and exploration are recognized in the society's election to honorary and corresponding memberships and in the bestowal of medals. The David Livingstone Centenary Medal for scientific achievement in the field of geography of the southern hemisphere was awarded during 1930 to José M. Sobral, director-general of the Dirección de Minas, Geología, e Hidrología, Ministerio de Agricultura, Buenos Aires, Argentina, whose bureau has for many years been conducting geographical and geological studies; and to Laurence M. Gould of the University of Michigan, for his explorations in the Antarctic as geologist and geographer of the Byrd Expedition, 1928-30.

The Charles P. Daly Medal was awarded in 1929 and 1930 to Filippo de Filippi, secretary-general of the International Geographical Union, in recognition of his explorations in central Asia; to Émile Félix Gautier of the University of Algiers, for geographical investigations in northern Africa and the Sahara; to Joseph Burr Tyrrell, president of the Canadian Geographical Society, for scientific explorations in Canada; to Nelson Horatio Darton of the U. S. Geological Survey, for studies in the physical geography of the western United States; and to Laue Koch of Copenhagen, Denmark, for explorations in northern and eastern Greenland. Awards of the Cullum Geographical Medal for 1929 and 1930 were as follows: To Hugh Robert Mill, the British meteorologist, for researches in geophysics; to Jean Brunhes, late professor of geography at the Collège de France, whose *La géographie humaine* is one of the outstanding geographical books of our time; to Alfred Hettner, professor of geography at the University of Heidelberg, for work in regional geography; to Jules de Schokalsky, professor of oceanography at the Leningrad State University, for research in oceanography, hydrography, and cartography; and to Curtis Fletcher Marbut, chief of the division of soil surveys of the U. S. Department of Agriculture, for geographical studies of soils. The president of the society was John H. Finley, LL.D., and director, Isaiah Bowman, Ph.D. Headquarters are at Broadway and 156th Street, New York City.

GEOGRAPHIC SOCIETY, NATIONAL. An organization for "the increase and diffusion of geographical knowledge," founded in Washington, D. C., in 1888. During 1930 it had a number of

expeditions in the field. One of these was led by Dr. Robert F. Griggs, who visited Kodiak Island in the Alaska Peninsula to study the processes of revegetation that have taken place since the great eruption of Mt. Katmai in 1912. When Dr. Frederick V. Coville, chairman of the research committee of the society, recommended the sending out of the several expeditions under the leadership of Dr. Griggs, which resulted in the first study of the crater of Mt. Katmai, the discovery of the Valley of Ten Thousand Smokes, and the establishment of the Mt. Katmai National Monument, he wrote: "A study of the means by which vegetation establishes itself under the adverse conditions presented by such a raw mineral soil (a blanket of pumice exclusively of mineral origin and differing fundamentally from older soils in having no humus) will throw much light on the history of the earth and its preparation by plants for the habitation of animals and man." Dr. Griggs' findings on his 1930 expedition fulfilled the prediction of Doctor Coville that here would be found an area undoubtedly representative of vast areas that have existed in past ages of the geological history of the earth, where one could determine what species of plants are the effective pioneers in the process of revegetation and how they accomplish it. Doctor Griggs brought back to Washington some cultures of liverworts so as to study what this plant actually does to the ash and how it gets its nitrogen compounds.

The society placed in the field a Brazilian-Venezuelan expedition, under the leadership of Dr. Ernest G. Holt, to make a study of geographic conditions in the little-known area lying athwart the Brazil-Venezuela boundary and to collect specimens of rare fauna and flora. This expedition was to work in conjunction with the joint official engineering party of the Brazilian and Venezuelan governments, engaged in the demarcation of the international boundary. Doctor Holt previously led an expedition to Venezuela for the study of migratory birds which spend their summers in the United States and their winters in Venezuela. The fauna and flora collected for the society on this expedition, as on the former one, will be presented to the Smithsonian Institution.

Returning to Washington in the spring of 1930, Dr. Joseph F. Rock brought to a successful conclusion the work of the society's 1927-30 Asiatic expedition. Doctor Rock brought back a notable collection of plant and animal specimens and native wares. He explored a large area in the territories of and surrounding the semi-independent Lama kingdom of Muli, in the Chinese province of Szechwan, including the great Konkaling snow peaks and Mt. Minya Konka, which had heretofore constituted a puzzling geographic riddle. The expedition followed the gorges of the Yatung River and found them at one place more than two miles deep.

To make an aerial survey of the east coast air routes to South America an expedition, whose personnel included Frederick Simpich, Jacob Gayer, and Capt. Albert Stevens, flew from Washington to Santiago, Chile, via Buenos Aires, making many stops en route. The expedition studied and photographed the deltas of the Orinoco and the Amazon. It secured a remarkable motion picture of a waterspout in action taken from all sides, and made pictures also of Mt. Pelee's crater from the air.

Dr. Maynard O. Williams, Melville Chater, Hans Hildenbrand, Wilhelm Tobien, Gustav Heur-

lin, Bernard Wakeman, and Arthur Pillsbury were in the field in Europe, Africa, Asia, and the South Sea Islands, making ethnographic surveys with color cameras and getting accurate studies of life and conditions in the areas covered, in the closing year of the second decade of the twentieth century.

Participation in a trans-Asiatic expedition across Asia, to be led by Georges-Marie Haardt, was announced by the president of the society. The French Government was to sponsor the expedition, and its French patron was André Citroën. It was to make its way in the spring of 1931 with eight caterpillar cars across Asia from the Mediterranean coast of Syria to Peiping (Peking), China, keeping to the north of the Himalayas. Returning it was to pass through Indo-China, Siam, Burma, India, Baluchistan, Persia, and Arabia. A scientific staff, covering a dozen fields of research, was to accompany the expedition. Dr. Maynard O. Williams was to represent the National Geographic Society on this expedition.

The special gold medal of honor of the society was awarded to Rear Admiral Richard E. Byrd for the first flight to the South Pole and for his discoveries in the Antarctic continent. President Hoover made the presentation on June 20, 1930. The society had awarded Byrd a grant of \$25,000 when he faced a crisis in his preparations and another like grant on the eve of his departure from Little America bound for the Pole. Another grant was added after his return to the United States.

The work of the society in 1930, in the realization of its chartered object of diffusing geographic knowledge, continued along the lines of previous years. Bulletins giving the geographic background of current events were issued to more than 550 larger daily newspapers and also to 1200 smaller dailies and weeklies. More than 40,000 school teachers used the weekly bulletins issued as an aid in the preparation of their geographical courses. During the year work was continued on a series of maps of various parts of the world. Those published during 1930 included Florida and Louisiana. Maps of the Antarctic regions, giving the results of all the recent expeditions there, and a map of the State of Illinois were in preparation. The chief activity of the society during the year continued to be the publication of the *National Geographic Magazine*, which is distributed to the 1,275,000 members of the society.

The officers of the society for the year 1930 were: President and editor, Gilbert Grosvenor; vice-president and associate editor, John Oliver La Gorce; secretary, O. P. Austin; associate secretary, George W. Hutchison; treasurer, John Joy Edson; assistant treasurer, Herbert A. Poole; chairman, committee on research, Frederick V. Coville; assistant editors, J. R. Hildebrand, Ralph A. Graves, and Frederick Simpich; chief, illustrations division, Franklin L. Fisher; chief, research division, William Joseph Showalter; assistant chief, illustrations division, Melville Bell Grosvenor; chief cartographer, Albert H. Bumstead; chief, foreign editorial staff, Maynard Owen Williams; chief, photographic laboratory, Charles Martin. Headquarters are in Washington, D. C.

GEOGRAPHY, GEOGRAPHICAL EXPLORATION. See EXPLORATION; POLAR RESEARCH; ANTHROPOLOGY.

GEOLOGY. It is impossible to single out any one branch of geology for particular emphasis in our record for the year. The science continues to

grow from the side of micropaleontologic research to trace oil-bearing formations and structures, and detailed microscopic study of rocks and ores on the one hand, to field reconnaissance and the mapping of large areas on the other. New theories and generalizations develop to keep pace with the increasing detailed knowledge of the structure and history of the earth. This is best exemplified, perhaps, in the growing attention paid to the immediate and the ultimate causes of mountain building and the major structural features of the globe. Conclusions accepted for years are no longer considered final while the variety of postulated causes reflects active research and speculation.

The inability of geologists to keep up with the development of all branches of the science and the increasing difficulty of making certain that they are masters of the literature pertaining to their own particular field have led to the establishment of committees to sift this mass of information and to bring men together for collective effort. The Division of Geology and Geography of the National Research Council (q.v.) is one agent that is performing this task. The reports of its technical committees are either summaries of the year's progress in some particular subject, or else the results of intensive coöperative study of problems concerning which there is wide difference of opinion. The *Annotated Bibliography of Economic Geology* represents their effort, combined with that from other sources, to furnish brief summaries of the world's literature in economic geology.

The following summary is limited to an account of a few of the subjects discussed at various scientific meetings throughout the past year and brief abstracts of some of the publications taken from among many important ones. It is hoped in this way to direct the reader's attention to the more complete sources of information.

SOCIETIES: *The Geological Society of America* held its forty-second annual meeting at Washington, D. C. on Dec. 26 to 28, 1929, and commemorated at the same time the fiftieth anniversary of the founding of the U. S. Geological Survey. The address of the retiring president of the Society, delivered by Prof. Heinrich Ries of Cornell University, was on "Some Problems of the Non-Metallic Minerals." Professor Ries stated that the origin and many of the other problems involved in the study of the non-metals had been very generally neglected. Lack of economic value cannot account for this neglect since even exclusive of the mineral fuels the non-metals which comprise clay, building stones, salt, gypsum, sulphur, graphite, asbestos, and many other mineral substances, equal the value of the metallic minerals, ores of iron, copper, gold, silver, lead, etc. If the fuels coal, petroleum, and natural gas are included then the yearly production of the non-metals has four times the value of that of the metals.

Professor Ries ascribed this general neglect to the greater attractiveness of the metallic minerals to students, and the greater demand for men in the metal mining industry than in the others. He pointed out that where it could be proved that knowledge of the origin of such materials had value in dollars and cents, as in the case of petroleum and gas, large sums of money could be immediately procured to prosecute any amount of research. He then proceeded to discuss the genetic problems connected with certain ones of the non-metallic minerals in a more detailed manner.

The Paleontological Society of America held its twenty-first annual meeting at the same time and place. Some of the topics discussed are mentioned below.

The Mineralogical Society of America also held its tenth annual meeting on these same dates. Prof. A. L. Parsons of Toronto, retiring president, addressed the joint session of the societies on "Iridescent Color in Peristerite." He stated that the iridescence is due to the light refracted and reflected from the closed spaced planes of atoms in the minerals combining in various ways with the light reflected from the mineral surface. The phenomena involved are governed by the same laws as X-ray reflections from the interior of crystals and give the same iridescent effect as does a film of oil on water. See MINERALOGY.

A paper by Prof. Charles Schuchert of Yale University presented to the Geological Society of America discussed the "Stratigraphy and Three-Fold Orogeny of the Northern Appalachians." He said in part:

Greater Acadia, or the area of the New England States and the Maritime Provinces of eastern Canada, constitutes a structural crustal unit quite distinct from any other in North America, in that its major folds, inherited from Proterozoic times, were refolded in late Ordovician (Taconic) and Devonian (Acadian) times, and partially crossed by the Appalachian orogeny.

The inherited structure is that of (1) the St. Lawrence geosyncline, occupying the western and northern half of the area; (2) the narrow New Brunswick geanticline; (3) the smaller, eastern, Acadian geosyncline; and (4) the outer wide borderland or geanticline Novascotis, now very largely warped and faulted into the Atlantic. These fundamental structures were in existence as early as late Lower Cambrian time, and were accentuated as sinking or rising fields until the Middle Devonian, when all of Greater Acadia was transformed into land. Almost all later Paleozoic deposition (except the late Lower Carboniferous marine beds) was of continental type, and spread as flat-lying strata from Novascotis widely across the peneplaned Acadian folds, the New Brunswick geanticline, and a part of the St. Lawrence geosyncline.

The three-fold anchoring of the area into permanent dry land by the deformations progressed from the interior outward, as follows: (A very local movement at the close of the Cambrian, as yet known only in northernmost Vermont.) (1) The Taconic isoclinal intense folding and overthrusting, with areas of nappes, which is very widespread in the western part of the St. Lawrence geosyncline through eastern New York, the Taconic, Green, and inner or northern side of the Notre Dame mountains, thence across the Gulf of St. Lawrence and central Newfoundland into the Atlantic; this disturbance continues south in the Appalachian geosyncline as far as central eastern Pennsylvania. (2) The Acadian revolution, when the remainder of the St. Lawrence geosyncline, the New Brunswick geanticline, the Acadian trough, and the borderland Novascotis were folded almost wholly into permanent dry land; later, however, in Windsor (late Lower Carboniferous) time, the ocean invaded one of the intermontane valleys (Northumberland channel) from the northeast across central Newfoundland, the New Brunswick geanticline, and the Acadian trough into the Bay of Fundy. (3) The Appalachian revolution, which elevated epirogenically, faulted, and locally cross-folded (best seen in the Long Range Mountains of Newfoundland) the Maritime Provinces, and refolded (crossed) the southwestern part of the Acadian geosyncline from the Bay of Fundy across southernmost Maine and eastern Massachusetts.

Prof. William B. Scott of Princeton University, speaking on "The Extinction of Pleistocene Mammals," stated that the presence of Pleistocene Mammals is not necessarily proof that the deposit in which the fossil occurs is of Pleistocene date for the various species died out at very different times and places and several of them, in both North and South America, persisted until what, in the Old World, were historic times. Discoveries made recently in Ecuador prove that the American *Mastodon* continued to exist until after the Christian Era, and the cavern at Last Hope inlet,

in Patagonia, has yielded the famous skin-fragments of an extinct ground sloth and an extinct species of horse and cat that cannot be more than a few centuries old.

The subject of the length of geologic time received some attention. A few geologists still abide by the older estimates that allow only between eighty and one hundred million years since the beginning of the Paleozoic. Others prefer Barrell's scale which allows six hundred million years for the same events. According to Dr. F. E. Matthes of Washington, D. C., this vast discordance of ideas which reflects unfavorably upon geological science is no longer justified. Though it may never be possible to compute accurately the duration of any one division of geologic time, geomorphologic data are now on hand that rule out decisively the shorter time scales and call for figures of the high order of magnitude of those based upon radioactive disintegration in rocks.

The final melting away of the great ice cap that a short time ago covered so much of northern North America was long believed to have everywhere resulted in its slow withdrawal along a continuous line. As soon as melting at the end of the ice overcame its forward motion this "retreat" began and continued as though some force were pulling the ice back where it came from. Recently evidence has been found that in the hilly and mountainous northeastern United States the front of the ice did not move slowly northward in this way but that forward motion all but ceased and the great cap melted in place. The hills and mountains first showed through. The continuous cap then split up and left isolated, stagnant masses in the protected valleys. R. F. Flint proved this mode of dissipation by "stagnation" for Connecticut. Others have advocated it for parts of New York State, and now T. C. Brown of Fitchburg, Mass., shows that the deglaciation of the Nushua Valley in Massachusetts took place in the same way.

Prof. W. H. Hobbs of the University of Michigan spoke of the prevailing notion that normal or gravity faults must of necessity imply an origin in tensional stress conditions where they are formed. He pointed out, however, that geological phenomena at the time of great earthquakes indicate that such faults come into existence simultaneously with a reduction of area and indicate a compressional rather than a tensional stress condition. The evidence cited involves the observed behavior of rails, pipes, bridges, etc., which are crossed by such fault lines. The above conclusion involves a seeming paradox but it is explained when earthquake phenomena are considered with reference to the earth as a whole.

F. A. Melton of Norman, Okla., and M. K. Hubbert of Chicago, Ill., presented a critical review of isostasy. They reviewed the gravitational theory underlying the conception, the relations between the different kinds of anomalies, and the geologic data pertinent to the question and concluded that:

1. Regions of the order of size of a physiographic province, and larger, seem to be usually in a state of approximate isostatic balance.

2. Local isostatic balance as defined in the publications of the U. S. Coast and Geodetic Survey seems to be far from the truth.

3. The "depth of compensation" had still best be considered an unknown quantity which may or may not have any real physical significance.

Dr. Karl Ver Steeg of Wooster, Ohio, showed that profiles drawn along the ridge crests in east-

ern Pennsylvania show pronounced slopes towards the wind and water gaps, from divides which were established on the Kittatinny peneplain. He concluded that all peneplains will show on their ridge crests, these long, gentle slopes towards the wind and water gaps or towards the stream valleys. And that these old fossil divides, which occur as remnants on peneplains are frequently misinterpreted for warped areas due to the uplift of the peneplain.

The forty-third annual meeting of the Geological Society of America, the twenty-second annual meeting of the Paleontological Society of America, the eleventh annual meeting of the Mineralogical Society of America, and the meeting of the Society of Economic Geologists were held at the University of Toronto, Dec. 29-31, 1930.

The Society of Economic Geologists met at Charlottesville, Va., on Apr. 24 and 25, 1930, and combined the technical sessions and the reading of papers with short field excursions in the neighboring region. M. R. Campbell of the U. S. Geological Survey delivered the presidential address entitled "Coal as a Recorder of Incipient Rock Metamorphism" (published in *Economic Geology*, vol. 25, November, 1930, pp. 675-696). The speaker pointed out that even when the term metamorphism is employed in the restricted sense of important changes produced in rocks as the result of pressure and heat, the metamorphic changes begin early in the history of the rock. The alterations produced in ordinary sedimentary rocks, the shales, limestones, and sandstones, during these incipient metamorphic stages are barely recognizable. On the other hand the hydrocarbon compounds, which are of common occurrence, are readily affected. The petroleum compounds, due to their volatile nature, leave little or no residue to mark the stages through which they have passed and therefore are of little value. Coal is a much more promising material. Its mode of origin is almost universally recognized as definitely known. It is readily affected by pressure and heat and it is not destroyed by the agent that produces the changes.

The speaker proceeded to show that the quality of a coal is related to the geologic structure of the region in which it is found. The rank of the coal agrees with the intensity of compression to which it has been subjected. Certain physical changes are also marked. In other cases the stresses applied to the coal have been too slight to change materially the percentage of volatile matter and the fixed carbon but have been adequate to reduce the content of moisture.

The various stages of incipient metamorphism in coal were then related to the ranks of coal and the speaker concluded by pointing out that eight such stages can be recognized, six of which have been accompanied by so few changes in the associated sediments that they can be considered as incipient stages of rock metamorphism clearly recorded by coal alone.

A. N. Murray of the University of Illinois presented the preliminary results of an investigation of limestone as a reservoir rock for oil (Project 23 of the American Petroleum Institute Research) in a paper entitled "Limestone Oil Reservoirs of the Northeastern United States and of Ontario, Canada" (published in *Economic Geology*, vol. 25, August, 1930, pp. 452-469). The conclusion is reached that only secondary porosity, owing to openings in a limestone developed after the rock has been deposited and indurated,

is of importance in forming oil reservoirs. It is significant that the author rejects the conception very generally held, that the process of dolomitization is responsible for the porosity so frequently characteristic of dolomite. He could find no criteria recorded in the literature by which porosity by dolomitization could be distinguished from primary porosity or porosity developed by leaching and solution. He believes that dolomitization molecule for molecule, which would undoubtedly result in decrease of volume, would produce fractures similar to those produced in igneous rocks upon cooling or in sediments upon dehydration, and perhaps even a decrease in the thickness of the beds, but not porosity as generally understood. The peculiar, erratic occurrence of porosity in dolomites and the rapid passage of highly porous into non-porous phases as well as the way in which other rocks are affected by shrinkage all indicate that the porosity is developed through leaching and solution. The dolomitization proper must then be owing to a volume for volume replacement.

It was then shown that the porous limestone reservoirs in the eastern United States and Ontario have all, with the possible exception of those of Traverse age in Michigan, been eroded before the formations that now overlie them were deposited. Leaching of the more soluble calcite at and above a water table is therefore believed to account for the porosity and consequently for the existence of limestone oil reservoirs.

J. L. Gillson and J. E. A. Kania discussed the "Origin of the Emery Deposits at Peekskill, New York" (*Econ. Geol.*, vol. 25, August, 1930, pp. 506-527) and concluded that they were formed by contact metamorphic post-consolidation processes rather than by a reaction between the basic magma and the aluminous wall rock. The emery occurs both in the endometamorphosed igneous rock and the exometamorphosed schist. Many thin bands of the ore occur so far within the schist as to preclude the possibility of their formation by magmatic reaction. The existence of quartz and corundum in the same thin sections of the igneous rock, the sequence of mineralization and the presence of tourmaline, rutinated quartz with cavities that contain air bubbles, deuterite magnetite, etc., prove an origin by emanations.

Prof. A. M. Bateman presented the results of his study of copper ores of Northern Rhodesia (published in *Econ. Geol.*, vol. 25, June-July, 1930, pp. 365-418) and concluded that the Northern Rhodesian Copper Belt will in the future be the greatest copper mining centre of the world. The ore is contained in the Roan series, 3000 to 4000 feet of continental clastic sediments of late pre-Cambrian age, that rests unconformably upon a pre-mineral basement complex. The sediments lie in simple pitching folds truncated by erosion that has removed the anticlines, and are intruded by younger granites and basic igneous rocks. The granite intrusions probably account for the metallization. One or more beds of the Roan series have been rather uniformly metallized with minute specks of copper sulphides. Sparse and erratic deep oxidation occurs in all the mines and some have little but oxidized ores. The ore beds are between 25 and 100 feet thick and remarkably continuous. Chalcocite is the dominant sulphide and since much of it is hypogene there is no reason for marked diminution in tenor of copper below the zone of supergene enrichment.

Three other papers of considerable general im-

portance were the "Genetic Classification of the Idaho Ore Deposits," by Clyde P. Ross; "Summary of Nitrate Deposits in the United States," by G. R. Mansfield; and "Antimony Deposits of the World," by F. C. Schrader.

The American Institute of Mining and Metallurgical Engineers held its yearly New York meeting in February, 1930. An important contribution, issued subsequently as *Technical Publication No. 335*, Class I, No. 31, is the "Occurrence of Quicksilver Ore Bodies," by C. N. Schuette of San Francisco, California. Deposits of cinnabar are peculiar in that it is difficult to fit them into ordinary classifications. They have no definite prevailing form and though undoubtedly formed at or near the surface, they differ from the widespread epithermal vein type of deposit. The author considers that quicksilver bodies the world over present certain geological group characteristics of great importance to prospecting and mining. They are all primary concentrations from magmatic solution and should be sought where the most favorable conditions for concentration occur. That is where some impervious stratum causes a concentration of the ore-bearing solutions. The major part of the paper deals with data accumulated during personal visits to all the quicksilver mines in the United States and a review of the world's literature on the subject. It is a valuable summary.

IMPORTANT PUBLICATIONS: *The New Evolution, Zöbgenesis*, by Austin H. Clark (Baltimore, Md., 1930), emphasizes the intimate interrelations of the entire organic world, living and fossil, and presents the conclusion that the major groups of animals have risen simultaneously and have or have had no connecting links. Prof. Charles Schuchert (review in *American Journal of Science*, August, 1930) believes that this conception is hardly tenable in the light of our present knowledge.

Living Africa, by Bailey Willis (N. Y., 1930), was an interesting account of journeys through the "Rift Valley" and volcanic regions of Africa sponsored by the Carnegie Institute of Washington in order to study the origin of the so-called rifts. The book is largely a transcript of letters written from the field and though it recurs continuously to the object of the trip, it is strictly non-technical. The first part sets forth "The Question" to be solved and shows how an explanation of the valley led deep into the explanation of the continents themselves. The end of the book is a chapter setting forth "The Answer." These two parts are more scientific in their treatment. The author discards the rift or downfaulting hypothesis in favor of the idea of progressive, differential uplift of the whole mass of the continent and the lagging behind of the valleys themselves. In the case of the valley occupied by Lake Tanganyika, the bottom of which is 1600 feet below sea level, a great depression must have occurred.

Sons of the Earth, by Kirtley F. Mather (N. Y., 1930), is a popular presentation of man's relation to the Earth and its other inhabitants. It gives a brief and lucid outline of the methods by which Historical Geology has been developed and the geological time scale constructed, then traces the development of life through the higher vertebrates to man. Much of the book is devoted to geological and archaeological traces of man on the earth. This carries the reader further along towards modern man than is customary in purely

geological treatises and presents the modern knowledge of early American savages and civilization.

Geologic History of the Yosemite Valley, by Francois E. Matthes (U. S. Geol. Service p. 160), is a beautifully illustrated discussion of all phases of the geology of a region famous for its scenery. So many people have visited this region and wondered about the origin of the valley that this professional paper should serve a larger public than is usual for such writings.

Cave Number.—*Journal of the Tennessee Academy of Sciences*, July, 1930, is a popular and well-illustrated treatment of caves and cave forms that describes their origin, extent, the living things that inhabit them, and their relation to human history.

"Origin of Limestone Caverns" is an important paper by W. M. Davis published in the *Bulletin of the Geological Society of America* (vol. 41, September, 1930, pp. 475-628). It considers the method of initiation of caverns and the cycle through which they pass and refers to many cavernous regions particularly in North America. The change from solution, which excavated the cavern, to deposition which lined it with dripstone forms, has always been difficult to explain. This is generally regarded as due to the fact that the cavern, after it is opened out, admits much air; and the water that is dissolving calcium carbonate in its course through the solid body of the rock, maybe only a few feet away, deposits the same because of evaporation or loss of carbon dioxide when it emerges into the comparative open of the cave. The author with his "two-cycle" theory proposes to consider: "the possibility, which has very likely occurred also to others, that large caverns are ordinarily excavated by ground-water solution during an epoch when the body of limestone in which they occur lies below the water table of its district; and that the change from this epoch of solution excavation to the following epoch of depositional replenishment takes place when the water table sinks below the cavern level in consequence of regional elevation or other effective cause. After such change the ground water, which had completely filled the cavern during the progress of its excavation, is drained away and its place is taken by ground air, the presence of which provokes evaporation of percolating vadose water and escape of carbon dioxide from it, and thus compels it to deposit calcite and form dripstones on the cavern roof and floor.

"The sinking of the water table in consequence of regional elevation or other effective cause as a means of dividing cavern history into two epochs is therefore an essential feature of the above proposal." It was recognized, however, that this theory failed to explain certain types of caverns.

Chapters of the Geology of Scotland, by the late B. N. Peach and the late John Horne; edited by M. Macgregor (Ox. Univ. Press, 1930), is a posthumous presentation of the work of these two masters of Scottish geology. A significant contribution to our knowledge of the geology of a very complicated region.

"Upper Ordovician and Lower Devonian Stratigraphy and Paleontology of Percé, Quebec," by C. Schuchert and J. A. Cooper, appeared in the *American Journal of Science*, September and October, 1930. Recent fossil collecting and stratigraphic work have proved the presence of thick Upper Ordovician and Lower Devonian formations in this region, but the Silurian is lacking.

This paper also presents the local faunas of the Upper Ordovician in the vicinity of Percé.

The Titanotheres of Ancient Wyoming, Dakota, and Nebraska, by Henry Fairfield Osborne (U. S. Geol. Survey Monograph 55, 2 vols., Wash. 1930), is an exhaustive monograph on the Perrissodactyla, with special reference to the Titanotheres, that considers all the allied forms of life as well. The origin of the Titanotheres is traced to a small, late Cretaceous or basal Eocene quadruped in central Asia from which the nine perrissodactyl families of Europe and North America developed. The known titanotheres are sharply limited as to geographic distribution and their geologic range is confined to the 600,000 to 1,000,000 years between the end of the early Eocene and the lower Oligocene.

"Some Problems of Mountain Structure and Mountain History," by C. R. Longwell, published in the *American Journal of Science*, June, 1930, is a brief paper summarizing the modern trends of research and speculation in a fundamental but so far highly conjectural branch of geology. It considers briefly three questions: "(1) Is diastrophism periodic? (2) Do folding and thrusting result directly in mountain uplift? (3) What is the rôle of isostasy in relation to mountain making?" The author concludes that diastrophism is *recurrent* rather than periodic; that considerable initial uplift is characteristic of many folded mountain zones; and that both geologic and geodetic evidence "leads us squarely back to the conclusions of Barrell that the crust is strong enough to bear loads of considerable size." We must recognize "the effects of enormous horizontal forces on the one hand, and a play of vertical movement to preserve isostatic balance on the other."

Die Oszillations-Theorie, eine Erklärung der Krustenbewegungen von Erde und Mond, by Erich Haarman (Stuttgart, 1930), is discussed by C. R. Longwell in the *American Journal of Science* (September, 1930). This work combats the contracting earth theory of diastrophism and maintains that folds, thrusts, etc., are the secondary effects of large vertical movements, which constitute primary diastrophism and which have been frequently repeated in geological time. Major uplifts are *geotumors* and subsided areas are *geodepressions*. Sediments collect in the *geodepressions*. They are plastic and easily deformed by their own weight. They are crowded from the margins towards the middle and form folds that become more pronounced downward. This is "full-trough gliding" and gives rise to regular, upright folds and steep thrusts.

On the other hand the overturned folds and low angle thrusts characteristic of most mountain zones are the result of "free-gliding" off the rising slopes of a growing and migrating "geotumor." Recumbent folds and thrusts so produced are later raised by migration of the "tumor" to the position of the old trough. Haarman sees a sufficient cause for these distortions of the earth in polar wandering. Longwell finds this theory difficult to apply to Appalachian structure but sees many valuable suggestions in the book.

F. B. Taylor presented a "Correlation of Tertiary Mountain Ranges in Different Continents" (*Bull. Geol. Soc. Am.*, vol. 41, September, 1930), in which he traces the main ranges from the western Americas through Asia to south and central Europe and shows many similarities in their details of character and position. He then relates the force that caused this epoch of intense mountain

building to a general equatorward movement of the great continental sheets on the Earth's surface, a movement initiated by a sudden increase in the centrifugal force acting upon the Earth's crust. The mountain making began the world over during the same geological period. This sudden beginning and the intensity of the force, along with other considerations, lead him to postulate that the moon was captured by the earth at that time and its tidal effect produced the observed effects. This hypothesis automatically excludes itself as an explanation of all preceding mountain building and seems therefore on very shaky ground but the paper gives a good analysis of mountain trends.

Re-Study of the Geology of the Saratoga Area and the Problem of the Mineral Waters, by R. J. Colony in the Report of the Saratoga Springs Commission to the New York Legislature of 1930, represents a check-up on that part of the previously mapped geology of the area which is connected with the valuable mineralized springs, and additional observations upon the origin of the water, of the dissolved substances in the water, and the amount available. The author makes only minor changes in the geology of the area. He traces most if not all of the mineralized water to a meteoric source in the Adirondack Mountains and the dissolved substances, excepting the iron, alumina, silica, lime, and magnesia, to exhalations from a subjacent igneous mass. There is a double system of ground water in the region. The upper, normal ground water, which owes its origin to precipitation on the local water shed; and the lower mineralized ground water, derived from the limestone underlying the area. The two are separated by impervious shale beds and rarely mingle and then only because of special local conditions. All available analyses of the mineralized waters are compared and discussed. Their peculiar lack of sulphates and magnesium chloride, their high content of sodium chloride, their supersaturation with carbon dioxide, and the presence of lithium chloride point to an origin connected with igneous phenomena.

"Changes in Hornblende at about 800° C.," by V. E. Barnes (*Amer. Mineralogist*, Sept. 1930), is a study made to determine the relation between the changes that occur in green hornblende when it is heated and the natural basaltic hornblende. It was found that "green hornblende, when heated in air, changes to brown hornblende, which has the same optical properties as basaltic hornblende." "The iron poor hornblendes do not change on heating." "Oxidation of ferrous to ferric iron causes the changes in optical properties observed upon heating common hornblende" and "heated hornblendes in general have a more complete change of ferrous to ferric iron than basaltic hornblendes."

"Basis for Computing the Age of a Radioactive Mineral from the Lead Content," by A. F. Kovarik (*Amer. Journal of Science*, August, 1930, pp. 81-100), considers the corrections that must be made in the usual procedure in order to allow for the presence of "ordinary" lead and the isotopes radium G, thorium D, actinium D and presents an approximate formula which makes it possible to calculate the amount of ordinary lead present without knowing the age of a mineral, which formula can be used as a correction in the formula in vogue to calculate the age of the mineral.

"Differentiation in the Cape Spencer Flow," by Richard J. Lund (*American Mineralogist*, Decem-

ber, 1930), dealt with the method of differentiation that has accounted for the observed differences in mineral and chemical composition at different horizons within an extensive diabase flow about 550 feet thick. The conclusion was reached that differentiation is due to the crystallization of plagioclase and pyroxene with relative movement of pyroxene and, to a less extent, plagioclase. No progressive enrichment in the tenor of iron in the residual liquid is indicated in the study of this flow.

In "The Heavy Mineral Suites and Correlation of the Granites of Northern Brittany, the Channel Islands, and the Cotentin," by A. W. Groves (*Geological Magazine*, vol. 67, No. 791, 1930), the nearly uniform character of the heavy mineral suites of granites studied over a distance of nearly 200 miles convinces the author that considerable importance should be attached to correlations by this method. The results obtained in this particular study are discussed and the general problems involved in the method as well as the objections that have been raised against it are thoroughly reviewed and commented upon by the author in this article.

"The X-Ray Method Applied to a Study of the Constitution of Portland Cement," by L. T. Brownmiller and R. H. Bogue (*Amer. Journal of Science*, October, 1930), describes the X-ray method, shows its limitations, and indicates that the results agree with those obtained by phase equilibria, chemical, and microscopical methods. Together they define the major constituents of Portland cement clinker as tricalcium silicate and beta dicalcium silicate together with tricalcium aluminate, tetracalcium aluminoferrite and magnesia. Free CaO is not normally present in amounts as great as 2.5 per cent. A bibliography is attached.

Annotated Bibliography of Economic Geology, Prepared under the Auspices of the National Research Council (vol. II, Nos. 1 and 2, 1930) is the second volume of a compilation that seeks to make the world's literature in economic geology available to all who can read English. Brief, succinct abstracts accompany all the titles listed.

Fluorspar Deposits of Canada, by M. E. Wilson (Geol. Surv. of Canada, Econ. Geol. Ser. 6, Ottawa, 1930), is a report which considers the deposits according to provinces and describes their general character and origin. *Borate and Associated Minerals from the Kramer District, Mohave Desert, California*, by W. T. Schaller (U. S. Geol. Survey Prof. Paper 158.1, 1930), describes the deposits of borates and discusses their origin and peculiarities. *Limestones, Their Origins, Distribution and Uses*, by F. J. North (London, 1930), is a summary of the literature of limestone that reviews the geology, geographic distributions, and utilization of the rock. It is limited to a discussion of British limestones but contains much data of interest to students of limestones anywhere in the world.

Summarized Data of Gold Production, by R. N. Ridgeway (U. S. Bureau of Mines, Economic Paper No. 6, 1930), gives the amounts and percentages for all the important gold-producing countries from 1493 to 1927. The distribution is tabulated. "Chemical Composition of Peat and the Role of Microorganisms in its Formation," by Silman A. Waskman (*Amer. Journal of Science*, January, 1930), points out that the progress made in the understanding of peat has passed from a geological through a botanical, physico-chemical,

and chemical, to a microbiologic point of view. The microscopic population plays a most important rôle and must be understood in order to comprehend the formation and transformation of this valuable substance. An exhaustive bibliography is attached.

"Hydrothermal Origin of the Rand Gold Deposits—Part I. Testimony of the Conglomerates," by L. C. Graton (*Ec. Geol. Supplement*, May, 1930), is a complete summation of the evidence that points to the conclusion indicated in the title. The author uses the method of showing first what the placer theory would demand, second, "how the placerists have seen the facts in a way to meet this demand," and finally of showing "that in reality the facts do not meet those demands but instead are incompatible with them." On the other hand the facts are believed to be compatible throughout with a hydrothermal theory of origin. It is well written and convincing, but so is the other, or placer theory, to those who know the ore deposit only through the literature. Whichever side finally proves to be right this volume is a worth while and much needed contribution.

Potash found in Government test holes. The thirteenth and fourteenth test holes drilled by the U. S. Geological Survey in New Mexico passed through many beds of polyhalite, several of which are thick enough and rich enough to have potential commercial value. Sylvite, kainite, and several other potash bearing salts were encountered in small quantities. The thirteenth test hole was churn-drilled 850 feet to the top of the salts and core drilled 1289 feet deeper. It encountered many beds of salt, including nine beds of polyhalite, each more than 2 feet thick and each containing more than 10 per cent of K_2O . The fourteenth test hole encountered a 6-foot 5-inch bed of polyhalite at a depth of 1658 feet containing 12.04 per cent of K_2O and a 3-foot 10-inch bed at a depth of 1740 feet with 13.43 per cent K_2O . The latter two are the most important sources of K_2O yet encountered in the region. The fifteenth and sixteenth holes, reported on subsequently, encountered a number of thin beds of polyhalite but no other potash-bearing minerals. This latter occurs in sufficient quantity at several depths to have a potential value. The seventeenth and eighteenth test holes in Lea County, N. Mex., and Loving County, Tex., were also analyzed later in the year.

The U. S. Geological Survey has completed a preliminary examination of the metalliferous deposits of western Oregon. The State of Oregon was coöperating in the investigation which was to include the non-metallic as well as the metallic resources of the State. Mining began in Oregon about 1852 with the discovery of gold placers near Jacksonville in the southwestern part of the State. Gold quartz lodes were soon uncovered but up to 1928 the placers yielded more than two-thirds of the gold production. Cinnabar was observed in the sluice boxes soon after placer mining began and was easily traced to its source. A desultory production has continued ever since. Increase in price during the past two years, the result of the cartel among Spanish and Italian producers, has stimulated prospecting and development.

Copper lodes, though small compared to the leading copper deposits of the United States, are among the most promising deposits in Oregon. Deposits of silver, lead, and zinc are also known and some platinum is produced as a by-product of placer gold-mining operations in the State.

The search for a commercial source of manga-

nese in the United States continued. Combined exploration under private auspices and the U. S. Geological Survey proved the existence of enormous quantities of manganese as nodules in the Pierre shale outcrops on both sides of the Missouri River near Chamberlain, South Dakota. The quantity of manganese per cubic yard of shale was, however, much lower than in any material so far treated as a source of manganese. It does not seem justifiable to include this in estimates of national reserves of manganese though in a great emergency, when cost is a secondary consideration, it may be of considerable value.

The U. S. Geological Survey continues to publish reports on the surface water supply of many districts in the United States and its outlying possession as an important part of its work of recording the natural resources and geologic conditions of this area. A few of those published during 1930 are listed below: *Water Supply Paper 636-C*, "The New England Flood of November, 1927," by H. B. Kinnison; *Water Supply Paper 615*, "Surface Water Supply of Hawaii, 1924-1925," by Grover and Carson; *Water Supply Paper 616*, "Geology and Water Resources of the Kau District, Hawaii" (including parts of Kilauea and Mauna Loa volcanoes), by Stearns and Clark; *Water Supply Paper 618*, "The Green River and its Utilization," by R. R. Wooley; *Water Supply Paper 636-D*, "Surface Water Supply of the San Joaquin River Basin, California, 1815-1927," by H. D. McGlashan.

New Books: *College Textbook of Geology, Part II, Historical Geology*, by T. C. Chamberlin and R. S. Salisbury, re-written and revised by R. T. Chamberlin and Paul MacClintock (New York). An up-to-date revision of a standard and much used textbook. Weakest in its one-sided presentation of theories of earth origin. *Outlines of Physical Geology*, by Pirsson, revised and rewritten by C. R. Longwell (New York). Essentially a briefer presentation of the material of the recently revised Pirsson and Schuchert *Textbook of Geology*, 3d ed. It loses none of its clarity and is well adapted to a short course in geology. *Guide to the Study of Non-Metallic Mineral Products (except building stones)* by W. S. Bayley (New York), a valuable summary of knowledge in an important field. Contains many references. Chapter II is a genetic classification of the materials discussed and serves to emphasize geologic mode of formation. The classification is not followed in the body of the book. *Economic Geology*, 6th ed. by H. Ries (New York), the latest edition of a standard textbook. References and material brought up to date. *Petrographic Methods and Calculations*, by A. Holmes (London). A second impression without any important changes. *Elements of Optical Mineralogy, Part III, Determinative Tables*, by N. H. and A. N. Winchell, entirely rewritten and much enlarged by A. N. Winchell (New York). Long awaited to complete the second edition of this important textbook of optical mineralogy. A valuable textbook *Elements of Topographic Drawing*, by Sloane and Montz (New York), is designed for a course of instruction and as a reference book for the topographic draughtsman. Contains suggestions for office practice and pictures and descriptions of useful tools and accessories. *Increasing the Recovery of Petroleum*, two volumes, by W. H. Osgood (New York), a valuable compilation of the available information concerning methods which will enable the operator to recover considerably more oil from a given field

than at present. *Methods in Geological Surveying*, by E. Greenly and W. Howel (London), describes the aims and methods of geological map making and considers the geological map as an end in itself. Shows how and where to draw geological boundaries.

The Mineral Industry of the Far East, by Boris P. Torgasheff (Shanghai, China), is a compilation rendered extremely difficult because of the great number of sources from which the material had to be gathered and therefore all the more valuable. It is only a first step in developing accurate knowledge of the resources of this vast area but done as thoroughly as the material would permit. Considers general outlines of the mineral industry; metals (except iron); non-metals; coal, iron and oil; market conditions and general information. *Oil Fields in the United States*, by W. A. Ver Wiebe (New York), aims to set before the student the geological details of every important oil-producing area in the United States. *Introductory Economic Geology*, by W. A. Tarr (New York), is a simple presentation of the earth materials used by man for the student with only a general knowledge of geology, or for the interested layman.

Lehrbuch der allgemein Bodenkunde, by A. Stebutt (Berlin), is a textbook of general soil science. The subject is not strictly geological but is closely allied. The first part considers the origin and properties of the soil; the minerals from which the soil is formed; the composition of the outer crust of the earth; the origin of clastic sediment; the loose soil as a disperse system; colloid systems; porosity of soils; and the relation of soils to water, air, organic matter, and to heat. Parts two to four take up soil dynamics, soil genesis, and the theory of soil fertility.

Alluvium, by Kurd von Bülow (Berlin, 1930), considers the principles of the geology of the youngest epoch in earth history, or post-glacial time.

GEORGETOWN UNIVERSITY. A Roman Catholic institution of higher education for men in Washington, D. C.; founded in 1789. In the autumn of 1930, 2695 students were enrolled, with a distribution as follows: Arts and sciences, 962; medical, 567; dental, 208; dental hygiene, 11; law, 493; foreign service, 425; and graduate school of arts and sciences, 29. The faculty numbered 383. The Riggs Memorial Library contained 163,427 volumes; the Hirst Library, 10,252 volumes; and the individual libraries maintained by the professional schools, many additional volumes. In September, 1930, the school of dental hygiene was opened in connection with the university school of dentistry. President, the Rev. W. Coleman Nevils, S. J., Ph.D., D.D.

GEORGE WASHINGTON UNIVERSITY, THE. A nonsectarian institution of higher learning for men and women in Washington, D. C.; founded in 1821. The enrollment for the first semester of 1930-31 was 6165, distributed as follows: Junior college, 2116; Columbian College, 1350; graduate school of letters and sciences (accepted as candidates for the degree of Ph.D.), 68; school of medicine, 297; law school, 814; school of engineering, 407; school of pharmacy, 51; school of education, 675; school of government, 65; division of library science, 128; division of fine arts, 134. The 1930 summer sessions had an enrollment of 1691. The faculty numbered 390. The endowment amounted to \$1,616,661, from which the income for 1930 was \$73,907. The total

income from all sources was \$1,313,057. The total number of volumes in the university library, the law school library, and the library of the school of medicine was 89,000.

During 1930-31 fundamental changes in organization became operative. An autonomous junior college was created, underlying the work of the senior (Columbian) college of letters and sciences and all of the professional schools. Upon the completion of the two-year course in the junior college, Columbian College offered junior and senior courses leading to the bachelor's degree and one year of graduate study leading to the master's degree. The faculty of Columbian College was organized into four divisions of study—languages and literature, mathematics and the physical sciences, the natural sciences, and the social sciences—through which it was to exercise complete educational control. To foster the development of creative ability in the individual student, the university also instituted an independent study plan through which upper classmen who were adjudged capable of profiting thereby might undertake special study projects under the personal supervision of an instructor and freed of formal class routine. A council for graduate study directed doctoral research. President, Cloyd Heck Marvin, Ph.D., LL.D.

GEORGIA. POPULATION. According to the Fifteenth Census of the United States, the population of the State on Apr. 1, 1930, was 2,908,506. The population on Jan. 1, 1920, was 2,895,832. The capital is Atlanta.

AGRICULTURE. The following table gives the acreage, production, and value of the principal crops in 1929 and 1930:

| Crop | Year | Acreage | Prod. Bu. | Value |
|----------------|------|-----------|--------------------------|---------------|
| Cotton .. | 1930 | 3,903,000 | 1,625,000 ^a | \$106,255,000 |
| | 1929 | 3,782,000 | 1,343,000 ^a | 39,125,000 |
| Corn | 1930 | 3,729,000 | 45,494,000 | 44,399,000 |
| | 1929 | 3,656,000 | 50,458,000 | 10,814,000 |
| Tobacco . | 1930 | 127,000 | 104,994,000 ^b | 16,806,000 |
| | 1929 | 110,000 | 89,870,000 ^b | 7,130,000 |
| Hay | 1930 | 685,000 | 452,000 ^c | 7,078,000 |
| | 1929 | 710,000 | 437,000 ^c | 12,679,000 |
| Peanuts . | 1930 | 565,000 | 384,200,000 ^b | 13,415,000 |
| | 1929 | 607,000 | 394,550,000 ^b | 7,072,000 |
| Sweet potatoes | 1930 | 115,000 | 9,430,000 | 9,424,000 |
| | 1929 | 124,000 | 11,780,000 | 5,403,000 |
| Peaches .. | 1930 | ..... | 4,698,000 | 3,312,000 |
| | 1929 | ..... | 2,880,000 | 6,127,000 |
| Oats | 1930 | 360,000 | 8,280,000 | 7,632,000 |
| | 1929 | 424,000 | 9,540,000 | 2,030,000 |
| Potatoes . | 1930 | 20,000 | 1,624,000 | 2,191,000 |
| | 1929 | 20,000 | 1,565,000 | 794,000 |
| Wheat ... | 1930 | 49,000 | 588,000 | 1,318,000 |
| | 1929 | 85,000 | 850,000 | |

^a Bales. ^b Pounds. ^c Tons.

Farms in the State numbered 256,252 in 1930, as against 241,095 in 1925 and 310,732 in 1920.

MINERAL PRODUCTION. Stone and clay products, as usual, furnished in 1928 about two-thirds of the total value of minerals produced in the State. The quantity of the divers sorts of stone produced rose, for 1928, to 1,028,060 short tons, from 849,290 for 1927. The value of the total, however, diminished, for 1928, to \$5,854,226, from \$6,146,613 for 1927. The total value of the clay products was \$3,656,489 for 1928, as against \$4,879,736 for 1927. Cement, third of the products in order of yearly total value, was not separately reported as to totals. The value of raw clay produced, largely used in clay products, was, for 1928, \$1,687,654; for 1927, \$1,537,378. Fuller's earth, of which the State afforded about one-third of the domestic production year by year, was produced

in Georgia to the quantity of 100,406 short tons in 1928, and to the value of \$1,572,041. Secondary mineral products included sand and gravel, iron ore, coal, coke, barite, and manganiferous ore. These and others helped bring the total value of the yearly mineral product of the State up to \$14,740,431 for 1928; for 1927 it was \$16,758,390.

TRANSPORTATION. The total number of miles of railroad line under operation on Jan. 1, 1930, was 6762.26. No additional construction of line in 1930 was reported.

EDUCATION. The educational issue was involved in the submission to the popular vote, in the November election, of the proposed constitutional amendment to permit the State to levy an income tax of not over 5 per cent, and to require a reduction of the ad-valorem State tax. This proposal, as the State already had an income tax without the proposed limit, was regarded by the promoters of expenditure for public education, as likely, if adopted, to impede the educational programme. They accordingly opposed it and contributed to its defeat.

FINANCE. State expenditures for the year ended Dec. 31, 1929, as reported by the U. S. Department of Commerce, were: for maintaining and operating governmental departments, \$17,180,829 (of which \$5,466,803 was for local education); for operating public service enterprises, \$6946; for interest on debt, \$323,566; for permanent improvements, \$10,220,700; total, \$27,732,041 (of which \$11,954,022 was for highways, \$2,456,922 being for maintenance and \$9,497,100 for construction). Revenues were \$28,135,650. Of these, property and special taxes furnished 28 per cent; departmental earnings and compensation to the State for officials' services, 6; sale of licenses, 53.7 (including taxation of sales of gasoline, amounting to \$7,678,994). The funded debt outstanding on Dec. 31, 1929, was \$8,035,595; the net debt slightly less. On a property valuation of \$1,311,069,248 were levied in 1929 State taxes of \$6,555,346.

POLITICAL AND OTHER EVENTS. A pipe line conveying natural gas from the Monroe and Richland fields of Louisiana through Alabama into Georgia was put in operation by the Southern Natural Gas Company. Gas was delivered to Atlanta beginning with the latter part of January, on contract with the gas company serving the city. Other communities in the State were served also. There occurred a conflict between Atlanta and the Federal Census authorities over the issue whether the population of Atlanta as officially rendered should be that of the incorporated city proper, as the Census Bureau contended, or that of Greater Atlanta, a group of municipalities of which the Legislature of 1929 had by act authorized the future consolidation. Atlanta sought in the Supreme Court of the District of Columbia in September a writ of mandamus to compel the Census Bureau to give under "Atlanta" the population of the greater unit, which was set forth as 360,692 or some 90,000 in excess of Atlanta proper. The answer alleged that the Greater Atlanta, consolidation not having yet been effected, was not a political unit in the sense common to other American cities.

The political habit of liberating prisoners threw Atlanta into confusion when during the absence of Mayor I. N. Ragsdale the acting Mayor, J. A. Couch, ordered the release of the city's 268 prisoners on Independence Day. Upon the Mayor's return the prisoners as far as possible were re-

captured and put back in confinement. The proponents of the Stone Mountain Confederate Memorial project renegotiated in August and September for the reappointment of the original sculptor, Gutzon Borglum, to resume the work.

A special legislative session was called by Governor Hardman to assemble on May 1, but the session was not held. Its purpose was to have been the establishment of a balance between State revenue and outgo; but the Governor, postponing the session indefinitely on April 18, declared that he would make further investigation of the expected revenue from the statutory income tax. This tax, which had been impugned in the courts, was declared by the State Supreme Court on April 17 to be constitutional.

The State tax on chain stores, imposing a yearly payment of \$50 for each shop of a chain of five or more, enacted by the Legislature of 1929, was contested in the courts, as discriminatory and as designed to hinder the development of stores of that type. The State Supreme Court ruled on July 22 that the operation on a Sunday of a moving picture theatre was unlawful, if admission were charged, even though, in the case specified, the profits went to a charitable purpose. The same court ruled on June 17 against a practice, employed in the public schools of Emanuel County, of giving separate and inferior schooling to children whose parents failed to pay a monthly tuition fee; it was declared that the State guaranteed to each child an equal opportunity of education.

Lynchings were somewhat numerous in Georgia in the course of the year, as in some other Southern States. One was reported in February and three occurred in September and early October.

ELECTIONS. Richard B. Russell, Jr., Democratic candidate for Governor, and the usual Democratic State ticket were elected on November 4, unopposed. U. S. Senator William J. Harris, Democrat, also unopposed, was reelected. Twelve Democratic Representatives, of whom only one had a Republican opponent, were sent to the Seventy-second Congress. The voters rejected a proposal to amend the State constitution so as to give the Legislature authority to levy a State income tax, graduated as to its rates, up to a maximum of 5 per cent. The opponents of this proposal held that a decision of the State Supreme Court, upholding the constitutionality of the questioned existing income-tax law, had rendered the amendment unnecessary.

OFFICERS. Governor, L. G. Hardman; Secretary of State, George H. Carswell; Attorney-General, George M. Napier; Treasurer, W. J. Speer; Auditor, Tom Wisdom; Comptroller-General, W. B. Harrison; Superintendent of Education, M. L. Duggan; Commissioner of Agriculture, Eugene Talmage; Commissioner of Commerce and Labor, H. M. Stanley.

JUDICIARY. Supreme Court: Chief Justice, Richard B. Russell; Assistant Justices, Marcus W. Beck, Samuel C. Atkinson, H. Warner Hill, S. Price Gilbert, James K. Hines.

GEORGIA, UNIVERSITY OF. A State institution of higher education for men and women in Athens, Ga.; chartered in 1785 and opened in 1801. The enrollment in the 1930 summer session was 2446 and for the autumn term, 1869. The faculty numbered 118. The productive funds of the university amounted to \$425,000, and the income for the year from the State and other sources was \$400,000. The library contained

64,000 volumes. President, Charles M. Snelling, Sc.D.

GEORGIA (GEORGIAN SOCIALIST SOVIET REPUBLIC). One of the three Transcaucasian republics established after the Russian Revolution of 1917. The Social Democratic republic proclaimed May 26, 1918, was replaced in February, 1921, by a Soviet government, which in 1922 united with Armenia and Azerbaijan to form the Transcaucasian Socialist Federated Soviet Republic, affiliated with the Union of Soviet Socialist Republics (see RUSSIA). Georgia is bounded on the north by the Caucasus, on the east by Azerbaijan, and on the south and southwest by Armenia and Turkey. Capital, Tiflis. Area, 26,381 square miles; population, according to the census of 1926, 2,660,963. The chief cities with their populations are Tiflis, 294,000; Kutais, 48,196; and Sukhum, 61,974. At the end of 1925, there were 211,210 pupils attending the public schools.

Agriculture engages about 90 per cent of the people. Corn, vine growing, and the raising of fruits are the principal agricultural pursuits. Silk production and the beekeeping are long-established activities. The chief mineral production is that of manganese, around Tchiaturi, where the greatest deposits of this mineral in the world are found. Other mineral deposits are coal, naphtha, copper ore, lead, and iron ore. The territory contains valuable forests. All the basic industries were nationalized by the Soviet government. The railways total 570 miles. Another line from Akhal-Senaki through Sukhum to Tuapse was under construction.

GEORGIA SCHOOL OF TECHNOLOGY. An institution for the scientific and technical education of men in Atlanta, Ga., founded in 1888. The enrollment for the autumn of 1930 was 2365, while that in the summer session was 574. The faculty numbered 150. The endowment amounted to \$420,000, and the income from appropriations and fees, to \$650,000. There were 25,000 volumes in the library. In 1930 a grant of \$300,000 for the establishment of an aeronautical engineering centre was received from the Daniel Guggenheim Fund for the Promotion of Aeronautics. President, Marion Luther Brittain, LL.D.

GERMAN-AMERICAN DEBT SETTLEMENT. See GERMANY under History.

GERMAN EVANGELICAL SYNOD OF NORTH AMERICA. See EVANGELICAL SYNOD OF NORTH AMERICA.

GERMANIC LANGUAGES. See PHILOLOGY, MODERN.

GERMAN LITERATURE. The economic depression and political unrest of Germany during the year 1930 seemed to have paralyzed the creative urge of the outstanding figures of her literary world. The men and women who had been the real leaders in fiction, drama, and poetry seem to have spent themselves in their recent works and their latest efforts did not add to their fame. An astonishing number of newcomers, however, produced some works of unusual interest. Though they lack in clarity and what was once considered indispensable in literature as other forms of art, beauty of contents and form, they held out promise of a new life.

FICTION. The older generation of Germany's novelists is represented by Arthur Schnitzler's *Therese*, the record of a woman's life, more depressing, more morbid than any of his previous stories. The pathological viewpoint of the physi-

cian-author overrules his æsthetic sense. A number of historical novels deserve mention: Hermann Stegemann's *Die letzten Tage des Marschalls von Sachsen*; Wilhelm von Scholz's story of Breslau of the year 1452: *Der Weg nach Ilok*; Grete Auer's novel of the wars of the Vendee, *Bonvouloir*, a novel of the French Revolution by a newcomer; Hans Flesch, who has made Therioigne de Merincourt, one of the prominent participants, the heroine of *Die Amazone*. Klaus Mann's *Alexander* is rather immature in psychology; Wilhelm Bölsche, the master in the art of welding science, lore, and poetry into fascinating books, has written a Teutonic folk-tale on the origin of beer, entitled *Der Zauber des Königs Arbus*. Heinrich Hauser's *Schwarzes Revier* is a nature story in which the adventures of a little river recall George Ponsot's delightful *Roman de la Rivière*. Alfred Bock, the dean of Hessian writers, published *Wege im Schatten* and was honored by an *Alfred Bock Buch*, compiled by his friends. Other stories of varying merit were Victor von Kohlenegg's quaint *Das Paradies*, Walter von Molo's divorce story *Die Scheidung*, Rudolf Presber's *Die Wittve von Ephesus*, Rene Schickeles *Symphonie für Jazz* with its sidelights upon Berlin life, Arnold Zweig's *Die Novellen um Claudia*, Hermann Hesse's *Narziss*, Arnold Ulitz's *Worps*, a story of mental deficiency, Alfred Neumann's *Der Held*, and Cuno Hofer's delightfully humorous *Meine Geschichte und die meiner Gäste*.

Biography enters into *Franz Liszt: himmlische und irdische Liebe*, by Jos. Aug. Lux and *Manet's Leben* by Albert Flament. Josef Ponten's *Volga, Wolga und Volk auf dem Wege* treat the German Wanderlust. Ina Seidel's *Rene und Rainer* seem remote descendants of Wilhelm Meister, and *Das Wunschkind* reflects her poetic trend. Echoes of the war ring through Paul Blum's *Menschen im Zwinger*, P. M. Claden's *Desirée Dannacker*, and Ernst Ottwalt's *Ruhe und Ordnung*. Heinz Stegweits *Der Tumult um den Schüler Sadowsky* harks back to Wedekind. Erich Ebermayer's *Der Kampf um Odilienberg* is an Alsatian story of today and Richard Hubenbeck's *China frisst Menschen* one of China.

At the head of books of short stories stands the posthumous *Klabund-Lesebuch*. Others are Ruth Schaumann's *Der blühende Stabshort*, Heinrich Mann's *Sie sind jung*, Paul Ernst's *Geschichten zwischen Traum und Tag*, Hans Grimm's African stories, *Der Richter in der Karu*, Wilhelm Speyer's *Sonderlinge*, Oscar Walter Cisek's prize-crowned *Der Tatarin*, Alex. Gregory's *Die P. kehrt zurück*, Paul Wertheimer's *Plakate*, Kasimir Edschmid's *Hallo Welt*, and Waldemar Bonsels' *Vagabunden*.

A survey of the last publications of the year proves as the most valuable pictures of post-war German life *Die grosse Sache* by Heinrich Mann, and *November 18* by that unexcelled chronicler of Berlin life, Georg Hermann. Gerhart Hauptmann's *Die Spitzhacke* is autobiographical, dealing with the demolition of his parental home in Silesia; *Die Jünglingszeit des Johannes Schattenhold* is the story of the youth of Jakob Schaffner, who is ranked with Switzerland's greatest authors, Gottfried Keller and Conrad Ferdinand Meyer. A dedicatory letter to Galsworthy in place of preface adds additional interest to Felix Salten's latest animal book, *Gute Gesellschaft*. Rudolf Hans Bartsch's *Die Verführerin* and Rudolf Greinz's *Der Turm des Schneigens* are in the customary vein of those popular authors,

while Karl Hans Strobl in his *Od* touches upon the occult. Max Dreyer's *Der Weg durchs Feuer* presents economic problems of the present in a variety of characters.

DRAMA. Among the most important plays of the year, though they were not all stage successes, three had Napoleon as the central character: Stefan Zweig's *Das Lamm der Armen*, Heinrich Lilienfein's *Nacht in Polen 1812*, and Wilhelm Speyer's *Stern und Dämon*. Other historical dramas were Ernst Lissauer's *Luther und Thomas Münzer*, Hans Kyser's *Columbus*, Hans Rehberg's *Cecil Rhodes*, Hans Sassmann's *Metternich*, Ferdinand Bruckner's *Elisabeth von England*, Reinhard Goering's *Die Südpolexpedition des Kapt. Scott*, and Dietzschmidt's powerful Judas tragedy: *Verräter Gottes*. An interesting miracle play was Hermann Heinz Ortner's *Sebastianlegende*.

The marriage problem is treated in George Kaiser's *Clairvoyance*, and plays by John Henry Mackay and Alfred Döblin. Lion Feuchtwanger unsuccessfully attempted Shavian wit in *Wird Hill amnestiert?* Karl Schönherr returned to his old manner in *Kraftmensch*, but in *Herr Doktor, haben Sie zu essen?* he had an eye on the cinema. Wedekind's influence was apparent in Peter Martin Lampel's *Pennäler*; while Max Halbe's *Präsidentenwahl* treated an Ibsen problem with French technique. Franz Theodor Czukor's *Gesellschaft der Menschenrechte* has Georg Büchner as chief character. Max Brod's *Lord Byron aus der Mode*, and Hermann Stegemann's *Daniel Juno* did not add to their reputation, while the veteran Ludwig Fulda's adherence to outworn dramatic traditions in *Die verzauberte Prinzessin* and *Fräulein Frau* was decidedly naïve.

Two plays about war prisoners were Paul Wanner's *P.G.* and Werner Ackermann's *Flucht nach Shanghai*. China furnishes the background of Gerhart Menzel's *Fein-Ost* and Klaus Mann's *Gegenüber China* with its sallies against America. Other new plays were Robert Hohlbaum's *Kriegsminister*, Fritz von Unruh's *Phaea*, E. G. Kolbenheyer's *Jagd ohne Mensch*, Leonhard Frank's *Hufnägels*, Herbert Eulenberg's *Industrie*, Bruno Frank's *Sturm im Wasserglas*, Fritz Schwiefert's *Marguerite*, Friedrich Wolf's *Cyankali*, and Lola Landau's interesting *Die Wette mit dem Tod*. Ernst Toller, one of the most conspicuous figures in post-war German literature, wrote a play about the sailor revolt in the German navy in 1918: *Feuer aus den Kesseln*.

Georg Kaiser's *Mississippi* presents an improbable story of a flood menacing New Orleans while a fanatical religious sect prays for the destruction of the sinful city. Eberhard Wolfgang Möller added another to the many plays on the subject of the *Panama-Skandal*. The greatest dramatic work of the year was Franz Werfel's powerful panorama of the Hussite Wars, *Das Reich Gottes in Böhmen*, with its subtitle *Tragödie eines Führers*.

POETRY. As in other countries, the post-war state of mind in Germany did not favor purely poetical production. Anthologies are numerous; among them are Ernst Bender's *Deutsche Dichtung der Neuzeit*; Ferdinand Avenarius's *Handbuch deutscher Lyrik*; George Ellinger's *Die neulateinische Lyrik in Deutschland in der ersten Hälfte des 16. Jahrhunderts*; Alex. von Bernus' *Das Irdische Paradies*, translations of English lyrics of the 18th and 19th centuries; and Friedrich Bruns's *Die amerikanische Dichtung der Gegenwart*. Hans Mühle's *Das proletarische*

Schicksal is an anthology of contemporary labor poetry. Christian Morgenstern is represented by *Auswahl*, selections from his works. New volumes have been published by Heinrich Federer, *Ich lösche das Licht*; Hermann Stegemann, *Von Leben zu Leben*; Siegfried von der Trenck, *Heraclitus-Christus*; and Max Reuschle, a disciple of Stefan George, *Begrenzung*. Two women show a distinct personality: Erika Mitterer in *Dunst des Lebens* and Ruth Schaumann, *Die Kinder und die Thiere*. Friedrich Sacher's *Neue Gedichte* contains some interesting verse.

LITERATURE. Every year brings new histories of German Literature. Among the latest are R. F. Arnold's colossal work in 250 volumes; Paul Wiegler's first volume, ending with the death of Goethe, and Hans Kindermann's *Die deutsche Literatur nach Entwicklungsreihen*. Ernst Berkowsky's *Die deutsche Romantik* is an interesting work. Hans Naumann's *Die deutsche Dichtung der Gegenwart vom Naturalismus zum Expressionismus*, Heinz Kindermann's *Das literarische Anklitz der Gegenwart*, Moritz Heymann's posthumous collection of critical essays: *Dichtung von Dichtern gesehen*, and Walter Musch's *Psychoanalyse und Literaturwissenschaft*, lead up to the present, as does Gerda Eichbaum's unique work dealing with the problems of modern youth in the period 1880-1914: *Die Krise der modernen Jugend im Spiegel der Dichtung*. Other books of literary content and interest are Josef Bickermann's *Don Quichote und Faust*, Otto Baltzer's *Judith in der deutschen Literatur*, and Alfred Folgar's critical essays.

BIOGRAPHIES, LETTERS, DIARIES. Emil Ludwig, whose *Lincoln* was published in Germany, while commended for his unretouched realism, was not highly ranked by German critics as historian or biographer. Rudolf Craemer's *Gladstone als christlicher Staatsmann*, and Kurt Kersten's *Bismarck und seine Zeit* are of general interest. Hans Kohn's *Martin Buber: sein Werk und seine Zeit* is a tribute to a writer, ranking high among scholars specializing on Hebrew lore and literature. Hermann Stegemann's *Persönlichkeit und Werk* is a testimonial for the sixtieth birthday of the Alsatian historian, novelist, poet, and politician. A beautiful tribute of friendship is Jacob Wassermann's *Hoffmannsthal als Freund*. E. F. Podach offers the first authentic account of Nietzsche's breakdown in *Nietzsche's Zusammenbruch*.

Max Dauthendey's letters to his wife, *Mich ruft Dein Bild*, pathetically recall the life of a poet prominent in the literary "revaluation" of the eighties. Delightful additions to musical biography are *Die kleine Chronik der Anna Magdalene Bach* and Elsa Reger's *Mein Leben mit und für Max Reger*. Other noteworthy works were H. von Maltzahn's *Karl August von Weimar* and Otto Flake's *Marquis de Sade*. A Schlange-Schönige presents among his *Führer und Völker*, Clémenceau, Lloyd-George, and Woodrow Wilson.

Of unusual interest to musicians is *Franz Liszt als Lehrer*; edited from the notes of a pupil by his granddaughter, Daniela Thode-Bülow. The letters of *Napoleon und Josephine* appeared in German. Heinrich Otto Meissner is the editor of Kaiser Friedrich III's diaries from 1848 to 1866. The charming personality of the poet and novelist Marie von Ölfers is reflected in her letters and diaries.

HISTORY. Joh. Ziekursch contributed to modern German history *Das Zeitalter Wilhelm II*, which

may find a supplement in Count Robert Zedlitz-Tritschler's *Zwölf Jahre am deutschen Hofe*. Julius Petersen's *Die stürmischen Generationen* and Arthur Feiler's *Das Experiment des Bolshevismus* are of general interest. Other works deserving attention are Annette Kolb's volume on Briand, and Fritz Dietrich's *Die Gandhi-Revolution*.

PHILOSOPHY, RELIGION, ETC. An unusually interesting personality was introduced to German readers in the Polish author of remote Scotch descent, Louis F. Anderson, whose *Das Logische, seine Gesetze und Kategorien, Die Seele und das Gewissen*, and *Gottes logische Welt* were creating keen interest among German philosophers. Books on mysticism were multiplying on the book-market; of recent publications the most noteworthy were A. Curtius's *Die neue Mystik*, Fried. Markus Huebner's *Zugang zur Welt; Magische Deutungen*, Karl Joel's *Wandlungen einer Weltanschauung*, and Karl Gruber's *Okkultismus und Biologie*. Breder Christiansen's *Das Gericht unserer Zeit* is a book to make our generation think. Other books belonging to this group are Paul Tillich's *Protestantismus als Kritik und Gestaltung*, Curt Horn's *Das Christusbild unserer Zeit* and Coudenhove-Kalergi's *Wesen des Antisemitismus*.

MISCELLANEOUS. A book touching new ground was Martin Beradt's *Der deutsche Richter*. The pessimistic egotism of the period is treated in Wilhelm Michel's *Das Leiden am Ich*. Ernst Robert Curtius and Arnold Bergstrasse collaborated on *Frankreich*, a work on French culture, economics, and politics, which was compared with Wilhelm Dibelius's *England*. M. J. Bruns wrote *Die Kultur der Vereinigten Staaten von Amerika*, Kuno Francke on *Deutsche Arbeit in Amerika*, Kurt Ziemche, *Die neue Türkei*; and Otto Heller, *Sibirien-ein neues Amerika*. Less serious but enjoyable were the numerous travel books of Wilhelm Hausenstein, among them *Drinnen und Draussen* and *Badische Reise*. Oscar C. H. Schmitz justly entitles his essays on the problem of Germany's position in Europe's cultural community *Wespennester*. Tim Klein's *Im Kampfe der Zeit* and Joseph Wittig's *Aussichten und Wege* had timely interest. Walter von Molo's *wischen Tag und Traum* and Gustav Schüler's *Von Tieren und Narren* are delightful reading, and Franz Blei's *Männer und Masken* is a fair specimen of his brilliant prose. Max Dvorak's collected essays on art history are stimulating.

Intensely stimulating, although sketchy in form, is Annette Kolb's book of reminiscences of travel, meetings with great contemporaries, tributes to Romain Rolland, Gerhart Hauptmann and others, under the title *Kleine Panfare*. Count Keyserling's *Amerika: der Aufgang einer neuen Welt*, suggesting in that country the dawn of a new world, and Arthur Holitscher's *Wiedersehen mit Amerika* are books of personal impressions leading to interesting deductions. Artists will welcome Arthur Möller Van den Bruck's *Die italienische Schönheit*, revised and condensed from a previous book on the evolution of Italian culture, and Georg Gronau's comprehensive study of *Giovanni Bellini*. Of unusual interest to students of literature is Margarete Süßmann's *Die Frauen der Romantik*, with its portraits of Bettina von Arnim, Caroline and Dorothea Schlegel, Rahel Varnhagen and Karoline von Günderode. Alfred Kerr's *Spanische Rede von dem deutschen Drama* with its subtitle *Das Theater der*

Hoffnung adds to the author's brilliant essays.

TRANSLATIONS. The Germans lead in translations from all languages. Among the American and English writers that appeared in German translations during the year are Prof. James T. Shotwell, Sinclair Lewis, E. Thompson-Seton, Jack London, Mary Johnston, R. C. Sheriff, Hugh Walpole, Bertrand Russell, John Cowper Powys, Chesterton, and others. A valuable addition to the innumerable translations into German is Heinrich Lützelers's *Die symbolische Franziskus-legende* admirably done from the Latin. See **PHILOLOGY, MODERN**.

GERMAN NEW GUINEA. The name applied to all the former German territories in the western Pacific. See **NEW GUINEA**.

GERMANY. A federal republic of central Europe, constituted after the abdication of Emperor William II on Nov. 9, 1918; and organized under the constitution adopted July 31, 1919, by the National Assembly at Weimar; formerly the German Empire. It is bounded on the north by the Baltic Sea, Denmark, and the North Sea; on the west by the Netherlands, Belgium, Luxemburg, and France; on the east by Lithuania and Poland, whose Danzig corridor isolates East Prussia from the rest of Germany; and on the south by Switzerland, Austria, and Czechoslovakia. The German Empire consisted of 25 Federal States and the Imperial Reichsland; the Federal Republic consists of 18 republics. Capital, Berlin.

AREA AND POPULATION. At the census of Oct. 8, 1919, the area of the Republic, including the

AREA AND POPULATION

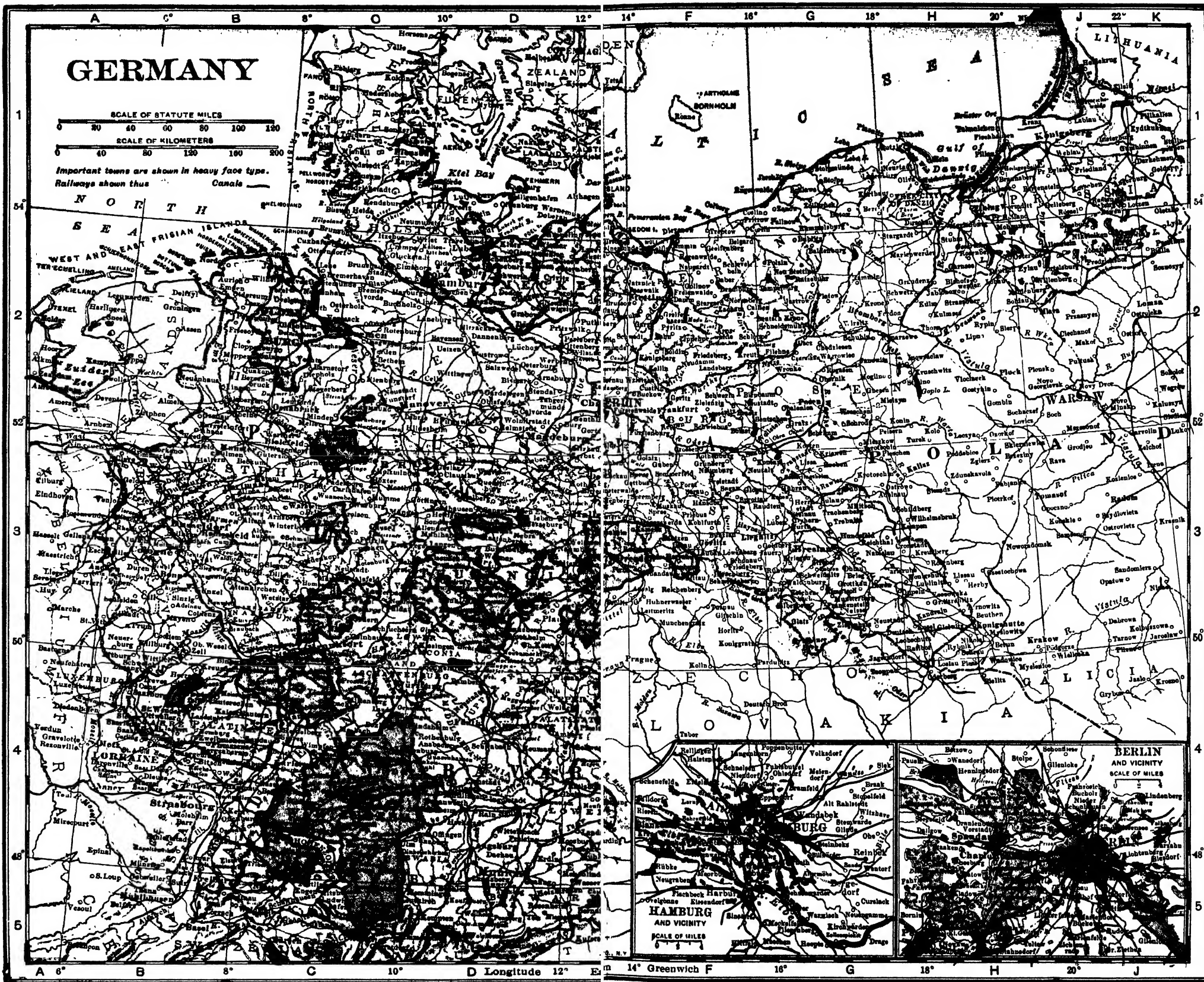
| States of the Empire | Area English sq. miles | Population June 16, 1925 | Pop. per sq. mile 1925 |
|--|------------------------------|--------------------------------|---------------------------------|
| Prussia * | 113,036 | 38,175,989 | 338 |
| Bavaria * | 29,343 | 7,379,594 | 251 |
| Württemberg | 7,532 | 2,580,235 | 342 |
| Baden | 5,819 | 2,312,462 | 397 |
| Saxony | 5,789 | 4,992,320 | 868 |
| Mecklenburg-Schwerin | 5,066 | 674,045 | 133 |
| Thuringia | 4,537 | 1,609,300 | 355 |
| Hesse | 2,970 | 1,347,279 | 454 |
| Oldenburg | 2,480 | 545,172 | 220 |
| Brunswick | 1,418 | 501,875 | 354 |
| Mecklenburg-Strelitz | 1,131 | 110,269 | 98 |
| Anhalt | 890 | 351,045 | 396 |
| Lippe | 469 | 163,648 | 349 |
| Waldeck | 408 | 55,816 | 137 |
| Schaumburg-Lippe | 131 | 48,046 | 367 |
| Hamburg | 160 | 1,152,523 | 7,203 |
| Lübeck | 115 | 127,971 | 1,113 |
| Bremen | 99 | 338,846 | 3,423 |
| German Republic * | 180,985 | 62,410,619 | 345 |
| Prussian Saar District * | 574 | 670,000 | 1,167 |
| Saarpfalz * | 164 | 98,000 | 598 |
| Saar District (altogether) | 738 | 768,000 | 1,041 |
| German Republic (with Saar District) * | 181,723 | 63,178,619 | 348 |

* Excluding the Saar and including Waldeck, absorbed by Prussia Apr. 1, 1929.

* The figures for the population of the Saar District, in which the census of 1925 could not be taken, are estimates.

Saar Valley, was 182,213 square miles and the population, 59,852,682, of whom 28,496,419 were males and 31,356,263 females. The accompanying table from the *Statesman's Year Book* for 1930 gives area and population according to the census of June 16, 1925. The estimated population in 1929 was 64,036,000, excluding the Saar Basin, with 770,030 inhabitants in 1927.

That the German population would reach a maximum of about 65,000,000 in 1935 and thereafter drop sharply to about 46,000,000 in 1975, was predicted by Ernst Kahn, a Frankfurt stat-



istician, on the basis of population studies completed in 1930. He pointed out that while marriages per thousand of the population increased from 8 to 9.2 between 1900 and 1929, births fell from 2,000,000 to 1,100,000 annually, indicating a decline in children per marriage from more than 4 to 1.9 in the same period. In Berlin, figures showed that between 56 and 61 per cent of the marriages remained childless. The decrease in the birth rate was only less marked in the smaller cities and even in Catholic Bavaria and Upper Silesia. Emigration in 1928 totaled 57,241, of whom 45,504 went to the United States and 8269 to other American countries (total for 1927, 61,379). Cities having more than 500,000 inhabitants at the census of 1925 were: Berlin (including suburbs), 4,024,165; Hamburg, 1,079,126; Cologne, 700,222; Munich, 680,704; Leipzig, 679,159; Dresden, 619,157; and Breslau, 557,139.

EDUCATION. Elementary education is compulsory between the ages of 6 and 14. A census in 1926-27 showed 52,785 public elementary schools, with 6,659,769 pupils; 572 private elementary schools, with 36,991 pupils; 1574 *Mittelschulen*, with 263,992 pupils; and 2532 secondary schools, with a total of 813,017 students (including 934 schools for girls, with 292,293 students). There were also 10 fully equipped technical high schools, with 20,495 students in 1928, and various other professional schools, besides 23 universities, with 5406 instructors and 83,172 students in 1928. The student enrollment in the respective universities was as follows: Berlin, 10,691; Bonn, 5085; Breslau, 3545; Cologne, 5532; Erlangen, 1551; Frankfurt, 3657; Freiburg, 3829; Giessen, 1496; Göttingen, 3578; Griefswald, 1534; Halle, 1962; Hamburg, 2605; Heidelberg, 3257; Jena, 2750; Kiel, 2422; Königsberg, 2513; Leipzig, 2309; Marburg, 3293; Munich, 8158; Münster, 3265; Rostock, 1405; Tübingen, 3288; Würzburg, 2447. The total university enrollment included 12,037 women and 4073 foreigners.

AGRICULTURE. There were in Germany in 1928, according to official estimates, 51,556,972 acres of arable land, 20,165,876 acres of grass, meadows, and pasture, and 204,575 acres of vineyards. About 61 per cent of the cultivated area produces grain and legumes, while 21 per cent produces

and south German states, while large estates prevail in the northeast. The area and production of the principal crops in 1929 are given in the accompanying table.

The yield of cereal crops in 1930 was considerably reduced by adverse weather conditions. This with the low prices prevailing for agricultural products increased agrarian discontent and demands for Government aid. The national farm indebtedness in 1928 was estimated at 11,400,000,000 marks (about \$2,715,000,000). Official estimates placed the 1930 wheat yield at 3,500,000 tons and the rye yield at 7,600,000 tons. The wheat crop in 1929 totaled about 9,000,000 tons. Livestock in Germany on Dec. 1, 1929, included 18,008,000 cattle, 19,920,000 swine, 3,611,000 horses, 3,475,000 sheep, and 2,620,000 goats.

FORESTS AND FOREST PRODUCTS. The forested area in 1927 totaled 31,035,443 acres, of which 10,328,563 acres were state and partly state forests, 4,914,498 acres communal forests, and the remainder privately owned. Germany was the leading paper producer in Europe in 1929, the output reaching 2,112,500 metric tons (2,088,500 in 1928). Production of chemical pulp was 1,203,958 metric tons, of mechanical pulp, 845,000 tons; of boards, 427,000 tons. Imports of pulpwood supplies in 1929 amounted to 2,533,872 metric tons.

MINING. Prussia supplies the great bulk of the minerals raised in Germany, the chief mining areas being in the districts of Westphalia, Rhenish Prussia, and Silesia (coal and iron), Central Germany (brown coal), the Harz (iron and copper ore), and the Westerwald (iron ore). In 1925 there were 2942 mines in Germany, employing 808,593 persons. Primary horse power directly applied in mining operations was 1,416,750 in 1925 and 1,104,673 in 1907; the horse power of electric motors was 1,672,915 in 1925 and 244,903 in 1907. It was estimated (1929) that in the Ruhr district alone coal reserves within 1000 meters of the surface totaled 28,500,000,000 tons; those within a 1500-meter depth, 75,000,000,000 tons; and those within the limit of coal occurrence, about 250,000,000,000 tons. With an annual output of 100,000,000 tons, the 1000-meter reserves would last about 280 years.

In 1929 the coal output increased 8 per cent to 163,400,000 tons, the coke output 13.9 per cent to 38,500,000 tons, and the lignite output 5.4 per cent to 174,458,000 tons, the highest figure since the World War. Coal exports in 1929 totaled 26,796,000 tons, or 11 per cent more than in 1928. Production in metric tons of other minerals and mineral products in 1929 was: Briquets, 47,823,000; potash, 1,401,000; pig iron, 13,401,000; crude steel, 16,246,000.

INDUSTRY. Difficult conditions obtaining in foreign markets for new capital, the weakening of the home market, and an abnormally severe winter, which crippled activity in a number of lines during the first quarter of the year, were some of the adverse factors facing German industry in 1929. Despite the marked decrease in long-term German loans contracted abroad and the increase in bankruptcies from 11,000 in 1928 to 15,000, industry as a whole continued to develop. The comprehensive programme for reëquipement and technical rationalization was virtually completed and its benefits began to make themselves felt. Production was maintained at the 1928 level, new foreign markets being found for the increasing proportion of products which could not be disposed of in the depressed home market.

GERMAN CROPS: AREA AND PRODUCTION

| Crop | Area ^a | | Production ^b | |
|--------------------------------|-------------------|--------|-------------------------|-----------|
| | 1928 | 1929 | 1928 | 1929 |
| Wheat | 4,269 | 3,955 | 141,592 | 123,053 |
| Rye | 11,452 | 11,680 | 335,504 | 321,050 |
| Barley | 3,753 | 3,835 | 153,726 | 146,105 |
| Oats | 8,696 | 8,793 | 481,964 | 508,645 |
| Spelt | 312 | 301 | 6,187 | 5,548 |
| Lupins | 116 | 75 | 53° | 34° |
| Potatoes | 7,039 | 7,008 | 1,516,363 | 1,472,553 |
| Sugar beets .. | 1,123 | 1,125 | 11,011° | 11,091° |
| Beet sugar .. | ..... | ..... | 1,864° | 1,961° |
| Fodder beets .. | 1,767 | 1,805 | 22,644° | 24,208° |
| Hay, alfalfa, and clover | 18,793 | 18,650 | 30,185° | 31,237° |
| Hops | 38 | 38 | 18,446° | 30,074° |
| Tobacco | 25 | 24 | 51,948° | 52,000° |
| Grapevines .. | 179 | 177 | 54,229° | 53,336° |
| Potatoes | 18,793 | 18,650 | 1,516,363 | 1,472,553 |

^a Thousands of acres.

^b Thousands of units—bushels except as indicated.

° Unit, metric ton.

° Unit, pound.

° Unit, gallon of wine.

potatoes, sugar beets, and cattle turnips. The average size of individual farms in Germany (leaving out of consideration the very smallest) was 28.65 acres, as compared with 144.8 acres in the United States. The small farms predominate in the west

In 1930 manufacturing for home consumption steadily declined and unemployment increased as the world-wide economic depression and fall in commodity prices made itself felt. German exports, however, continued to expand, taking up some of the slack in the domestic market. The general index of industrial production, based on 100 as the 1928 average, fell to 84.6 in the second quarter of 1930, as compared with 109.1 for the second quarter of 1929. Unemployment increased steadily during the year, the official report for the month of September placing the total at 3,088,000, of whom about 2,000,000 received unemployment insurance benefits. The number of registered unemployed was approximately twice as great as for the same month of 1929. See UNEMPLOYMENT.

The Ruhr is the centre of the steel industry, while iron production centres mainly in the Ruhr, the Saar, Upper Silesia, Hanover, Bavaria, and Saxony. Other leading manufacturing lines are the chemical, electrical, textile, beet sugar, potash, glass, porcelain, earthenware, clock, wood ware, and brewing industries. Beet sugar production in 1928-29 totaled 1,841,356 metric tons (preliminary figures), with 329,002 tons of molasses as by product. A total of 54,997,000 hectoliters (1 hectoliter equals 22 gallons) of beer was brewed in Germany in 1928, mostly in Bavaria. Production figures of some of the leading industries in 1928 and 1929, with comparative figures for 1913, are given in the accompanying table.

INDUSTRIAL PRODUCTION OF GERMANY

| | 1913 | 1928 | 1929 |
|----------------------------------|---------|---------|---------|
| Pig iron . . . 1,000 metric tons | 10,916 | 11,804 | 13,397 |
| Crude steel do . . . | 11,768 | 14,517 | 16,246 |
| Rolling-mill products . . do . . | 9,520 | 10,568 | 11,285 |
| Rayon metric tons | 3,500 | 18,000 | 20,000 |
| Cotton consumption * | | | |
| million lb. | 1,333 | 740 | 753 |
| Vessels launched | | | |
| gross tons | 465,226 | 376,416 | 249,079 |

* Includes linters.

The steel output in 1929 was exceeded only in the boom year of 1927, while pig iron production showed a large gain. Exports of iron and steel products were the highest since 1913, and imports were the lowest since 1926.

FISHERIES. The North Sea fisheries yielded 232,808,666 kilos of fish in 1928 (214,086,508 in 1927), and the Baltic fisheries 38,094,329 kilos.

COMMERCE. German exports in 1929 rose to 14,456,000 marks (1 mark equaled \$0.238) from the 1928 total of 12,307,500,000 marks, while imports declined to 13,986,200,000 marks from 14,968,100,000 marks in 1928. The balance of trade was favorable (by 47,600,000 marks) for the

GERMAN FOREIGN TRADE IN 1928 AND 1929

[By main commodity groups, in millions of marks;
1 mark equals \$0.238]

| Commodity groups | Imports | | Exports | |
|------------------------------------|----------|----------|----------|----------|
| | 1928 * | 1929 | 1928 * | 1929 |
| Livestock | 144.8 | 149.7 | 18.8 | 22.0 |
| Foodstuffs and beverages | 4,187.9 | 3,817.8 | 622.7 | 701.5 |
| Raw materials, semi-finished goods | 7,218.4 | 7,205.1 | 2,749.6 | 2,926.8 |
| Finished goods | 2,450.1 | 2,262.5 | 8,884.5 | 9,832.4 |
| Total | 14,001.2 | 13,484.6 | 12,275.6 | 13,482.2 |
| Gold and silver | 966.9 | 551.6 | 31.9 | 973.8 |
| Grand total | 14,968.1 | 13,986.2 | 12,307.5 | 14,456.0 |

* Figures for 1928 corrected by Reich Statistical Office under improved system of computing trade returns.

second time since the World War. Deliveries in kind on reparations account, which are included in the export total, increased by 130,319,000 marks to a total of 799,141,000 marks.

Changes in values of Germany's foreign trade by main commodity groups in 1928 and 1929 are shown in the accompanying table issued by the U. S. Department of Commerce.

The general increase in world trade, energetic efforts of German exporters, the industrialization of several of the leading export markets, and lessened domestic demand were important factors in the growth of exports in 1929. With a few minor exceptions, practically all items in the finished-goods group were exported in greater quantities, while imports were generally lower than in 1928.

The United States continued to be the principal source of German imports, followed by Great Britain, Argentina, the Netherlands, and France. While Argentina remained in third place, Great Britain advanced from fourth to second place, and France dropped from second to fifth. Imports from all leading sources of supply showed a downward trend, while German exports to all leading customer nations increased over 1928. The Netherlands replaced Great Britain as the most important market for German goods, while the United States supplanted France as the third important market. The trade balance, which favored the United States by 1,230,700,000 marks in 1928, remained favorable to that country by 796,700,000 marks in 1929.

Germany's favorable balance of trade increased to 1,642,000,000 marks in 1930. Surplus exports and foreign services were thus sufficient to cover her entire reparation payments for the year of 1,800,000,000 marks. Exports declined to 12,035,000,000 marks in 1930, while imports of 10,393,000,000 marks represented an even greater decline from the 1929 figure. The large increase in the favorable balance was due to the fact that prices of imported goods declined more than prices of exports and that depressed domestic trade conditions reduced the demand for foreign raw materials.

FINANCE. Budget estimates for the fiscal year ended Mar. 31, 1930, balanced revenues and expenditures at 11,039,100,000 Reichsmarks, including estimated ordinary receipts and expenses of 10,750,000,000 Reichsmarks. Actual returns showed a deficit in the ordinary budget of 399,000,000 marks and a surplus in the extraordinary budget of 133,000,000 marks. The surplus in the extraordinary budget was created entirely by borrowing. The total uncovered deficit at the end of the year was 1,284,000,000 marks, of which 1,059,000,000 marks were carried over from previous years. Chief items of expenditure in the budget estimates for 1929-30 were: Payments to States and communes, 3,467,000,000 marks; reparation under the Dawes Plan, 2,500,500,000 marks; general administrative expenses, 2,479,900,000 marks; war and civil pensions, 1,719,400,000 marks; debt service, 465,600,000 marks; internal charges arising out of the World War, 252,400,000 marks; and unemployment relief, 154,300,000 marks. For the 1930-31 budget and political repercussions of the Government's financial policies, see below under *History*.

The debt of the Reich on Mar. 31, 1930, totaled 8,453,000,000 marks, as compared with 8,417,000,000 marks on Mar. 31, 1929. The aggregate debts of the Reich, the Federal States, and the munic-

ipalities at the beginning of 1930 totaled 20,598,000,000 marks, or 6,000,000,000 marks more than in March, 1928. The municipal debt constituted 43 per cent of the total. The total public debt (Federal, State, and municipal) in 1913 amounted to 32,000,000,000 marks. Foreign loans secured by Germany in 1930 were estimated by the Reichskredit Bank at 1,403,000,000 marks, of which 887,000,000 marks represented Germany's share of the Young Plan loan and the Swedish Match Company's loan. The total foreign indebtedness, excluding reparations, was estimated at \$6,200,000,000 in September, 1930, while German capital abroad amounted to about \$2,000,000,000.

COMMUNICATIONS. Railway lines on Jan. 1, 1929, totaled 36,255 miles, of which 33,406 miles were owned by the Federal government and operated by the German Railways Company, a private concern. In 1929, the German Railways Company lines hauled 1,980,300,000 passengers and 485,920,000 tons of freight; gross revenues were equivalent to \$1,274,204,000 and operating expenses totaled \$1,069,453,000, leaving a net revenue of \$204,751,000. Comparative figures for 1928 were: Passengers, 2,009,400,000; freight, 480,966,000 tons; gross revenue, \$1,227,890,000; operating expenses, \$1,022,067,000; net receipts, \$205,822,000. Effective Sept. 1, 1930, the Government approved passenger-rate increases of from 3 to 8 per cent, and also increases on express baggage and odd-lot freight to offset the severe decline in revenues. Railway revenues in 1930 were estimated at \$190,000,000 less than in 1929.

There were 7614 miles of inland waterways (1928), of which 1412 miles were canals. In the same year the inland waterways fleet comprised 19,105 vessels of 6,630,342 tons and carried 107,700,000 tons of goods. In 1930 work was under way on a 380-mile canal, navigable for 1500-ton ships, linking Aschaffenburg on the Main with Passau on the Danube. The total cost was estimated at \$185,000,000. In 1928, German air lines carried 120,700 passengers and the planes flew an aggregate of 7,116,062 miles (107,620 passengers and 6,196,392 miles in 1927), while air mail carried in 1929 totaled 385 tons. On Apr. 1, 1930, the Luft Hansa company opened an air taxi service with 150 planes, the fare to any point in Germany being about 42 cents a mile. The postal, telephone, telegraph, and radio broadcasting services are operated by the Federal government. Gross receipts of the Federal Post Office for the fiscal year ended Mar. 31, 1930, totaled 2,281,000,000 Reichsmarks (2,205,000,000 in 1928-29) and net receipts were 222,700,000 Reichsmarks (235,860,000 in 1928-29). The number of subscribers to the radio broadcasting service on Mar. 31, 1930, was over 3,000,000. See **CANALS**.

SHIPPING. The German merchant marine on June 30, 1929, totaled 4,092,552 registered gross tons, as compared with 5,459,296 tons in 1914. Vessels under construction in German shipyards on Mar. 1, 1930, numbered 109, with a total tonnage of 328,000, most of which were for German account. Pooling of the operations of the Hamburg-American and the North German Lloyd Lines to eliminate duplications of tonnage and passenger transportation was undertaken following an agreement reached between the two companies in March, 1930. A total of 49,090 merchant vessels, aggregating 21,613,088 net tons, passed through the Kaiser Wilhelm (Kiel) Canal in 1929. The

German Baltic mercantile fleet in 1930 totaled 423,800 gross tons, as compared with 436,500 gross tons in 1929 and 544,133 tons in 1914. The decrease of the Baltic fleet was attributed to the concentration of German shipping interests on the transoceanic trade. See **SHIPPING, MERCHANT**.

For **ARMY AND NAVY**, see under **MILITARY PROGRESS AND NAVAL PROGRESS**.

GOVERNMENT. Under the constitution of the Republic adopted July 31, 1919, and promulgated Aug. 11, 1919, executive power is vested in the President elected by the people for seven years, and in a ministry appointed by him and responsible to the Reichstag, or lower house of Parliament. Legislative power is vested in the Reichstag, consisting of 575 members (following election of Sept. 14, 1930), who are elected by universal, equal, direct, secret franchise of male and female voters, on the principle of proportional representation; and in a federal council, the Reichsrat, consisting of 68 members (Prussia, 26; Bavaria, 11; Saxony, 7; Württemberg, 4; Baden, 3; other states, 15). The consent of the Reichsrat is required to all bills before their introduction into the Reichstag, but the latter body may pass a bill over the heads of the former by a two-thirds vote. The composition of the Reichstag at the beginning of 1930, ranging in the order named from the reactionary Right to the radical Left, was: National Socialists (Hitler), 12; German Nationalists (Hugenberg), 64; Bavarian People's party, 17; German Peasants' party, 8; Economic party, 23; Centre, 61; People's party, 45; Democrats, 25; Social Democrats, 152; Communists, 54; four other small parties, 36; total, 491.

The Ministry at the beginning of 1930 was constituted as follows: Chancellor, Hermann Müller (Social Democrat); Foreign Affairs, Dr. Julius Curtius (German People's party); Interior, Karl Severing (Social Democrat); Finance, Dr. Paul Moldenhauer (German People's party); Economic Affairs, R. Schmidt (Social Democrat); Labor, R. Wissell (Social Democrat); Justice, Theodor von Guérard (Centre); Defense, Lieut.-General Wilhelm Groener; Posts, Dr. G. Schätzkel (German People's party); Transport, Dr. A. Stagerwald (Centre); Food and Agriculture, Hermann Dietrich (German Democratic party); Minister for Occupied Provinces, Dr. J. Wirth (Centre). President in 1930, Paul von Hindenburg, elected Apr. 26, 1925; assumed office, May 12, 1925.

HISTORY

Two major issues shaped the course of events in Germany in 1930. Financial stringency, with its related problems of industrial depression, unemployment, and farm relief, led to the collapse of the Müller Coalition Cabinet on March 27. And a resurgent nationalism, demanding the abandonment of both parliamentary government and Stresemann's policy of peace, made phenomenal gains in the elections of September 14.

RATIFICATION OF THE YOUNG PLAN. The year opened with the attention of the nation focused upon the international conference at The Hague, where on January 20 a final agreement was reached among the German and Allied delegations upon the somewhat modified Young Plan for the payment of German war reparation (see **REPARATIONS**). The negotiations at The Hague were featured by the announcement of Dr. Hjalmar Schacht, president of the Reichsbank, that the bank would refuse to cooperate in the estab-

lishment of the Young Plan unless the plan was restored to its original form. This action by Dr. Schacht, who had been called to The Hague in an advisory capacity by the German delegation, threatened the success of the conference. The Reichsbank president was forced to reverse his position, however, when the German government provisionally arranged for other German banks to contribute the needed capital for the establishment of the Bank of International Settlements.

The Cabinet on February 11 introduced bills for putting into effect the Young Plan and separate agreements for the liquidation of Polish-German debts and the debts owing to the United States. These bills immediately became involved in the controversy as to financial policy among the parties forming the Government coalition—a struggle which seriously weakened the position of the Cabinet. The Catholic Centre party insisted upon definite determination of the Reich's future financial policy as the price of its support for the Young Plan. The Socialists demanded a special tax on salaried workers for one year to raise 100,000,000 marks needed for a more comprehensive unemployment insurance scheme. This measure the People's party bitterly opposed as detrimental to industry, already heavily taxed. On March 5, Finance Minister Moldenhauer reconciled these conflicting demands in a compromise scheme for raising some 475,000,000 marks (\$118,750,000) in new taxation needed to meet the Young Plan annuities and to balance the budget. A larger unemployment insurance reserve (\$62,500,000) was to be accumulated; partly out of reserves of the Bank for Industrial Obligations, which was to cease functioning when the Young Plan came into effect, partly through the sale of German railway company preference shares, and partly through a one-fourth of 1 per cent increase in insurance fees paid by both employers and employees. Increased taxes on beer, coffee, tea, mineral waters, and gasoline were to provide further revenues.

With the somewhat hesitant support of the coalition parties thus assured, the Cabinet secured the Reichsrat's approval of the Young Plan on March 5. The bill had passed its first reading in the Reichstag when Dr. Schacht on March 7 suddenly resigned as president of the Reichsbank on the ground that he was unwilling to accept the responsibility for the execution of the Young Plan, as modified by the two Hague conferences. His dramatic effort to torpedo the Young Plan strengthened opposition to it in the Reichstag temporarily. But on March 11 the Reichstag approved the bill on its second reading by a vote of 251 to 174, at the same time electing Dr. Hans Luther, former Chancellor and former Finance Minister of the Reich, as Dr. Schacht's successor. The following day the Young Plan was ratified on its final reading, the Centre party having been forced into full support by a warning from President Hindenburg that he would not sign the bill unless it was ratified by a substantial majority. The President signed the Young Plan bill on March 13, at the same time issuing an appeal to his countrymen to rise above their party differences for the good of the Fatherland. The supplementary agreements with the United States and Poland were signed on March 13 and 18, respectively.

REPARATION REPORT. The financial difficulties, which gave rise to the Government's chief problems in 1930, were attributed by S. Parker Gil-

bert, Agent-General for Reparations, in his final report of June 15, 1930, to the Reparations Commission, to the Government's unwillingness to live within its income. (For other details of report see REPARATIONS.) Revenues, Mr. Gilbert said, had been sufficient for all legitimate requirements. Despite important reductions in taxation during the first years of the Dawes Plan, the Government's income had risen to an estimated total of 10,061,000,000 marks (\$2,394,418,000) in 1929-30, as compared with 7,757,000,000 marks (\$1,846,166,000) in 1924-25.

Notwithstanding these increases, the Government "for the past four years has spent more than it has received and at times, especially in 1929-30, it has made commitments to spend even more than it could borrow," the report stated. Mr. Parker attributed much extravagance to the system of divided responsibility under which the States and communes spent the taxes collected and distributed to them by the Reich. He also criticized the obscurity of the budget as encouraging unsound financial practices, and considered the existing derangement of public finances one of the chief reasons for the recession in the volume of production and trade. Mr. Gilbert pointed out that social expenditures, including unemployment insurance, rose from 259,000,000 marks (\$61,642,000) in 1924-25 to 1,345,000,000 marks (\$320,011,000) in 1929-30, and that there had been little effort to keep the unemployment insurance system on a self-sustaining basis.

FAIL OF THE MÜLLER CABINET. The compromise agreement on the unemployment insurance fund and other financial measures which united the Government coalition (excepting the Bavarian People's party) in support of the Young Plan, soon broke down under the strain of the intense party feeling aroused during the Young-Plan debate and the subsequent discussion of financial reforms for 1930. The Social Democrats, who with 152 votes formed the largest group in the Reichstag, overwhelmingly voted to withdraw their support from the Cabinet rather than accept the less drastic reform in the system of unemployment insurance advocated by the other Government parties.

The Cabinet resigned immediately (March 27) and President von Hindenburg entrusted Dr. Heinrich Brüning, Centrist leader in the Reichstag, with the formation of a new Ministry. Dr. Brüning's Cabinet, confirmed on March 30, was drawn from the conservative and middle-class parties, omitting the Social Democrats, who now became the most powerful of the Opposition groups. Membership of the Ministry was as follows: Chancellor, Heinrich Brüning; Foreign Affairs, Julius Curtius; Interior, Joseph Wirth; Finance, Paul Moldenhauer; Agriculture, Martin Schiele; Labor, Adam Stegerwald; Transportation, Theodor von Guérard; Justice, Johann V. Bredt; Economics, Hermann R. Dietrich; Posts, George Schätzel; Defense, General Wilhelm Groener; Minister Without Portfolio, Gottfried R. Treviranus.

The Cabinet represented the Catholic Centre, the Democratic, Economic, and Bavarian People's parties, and included also one German Nationalist, Dr. Schiele, and the leader of the newly formed Conservative People's party, Dr. Treviranus, who had broken away from Dr. Hugenberg's German Nationalists. The inclusion of Dr. Schiele, who was spokesman for the agrarian interests in the Reichstag, was attributed to President von

Hindenburg's insistence upon the extension of financial relief to the hard-pressed agriculturalists of eastern Germany. Dr. Schiele's participation had the effect of splitting the ranks of the German Nationalists, although he resigned from the party to avoid committing it to the Government's programme. Under the leadership of Dr. Alfred Hugenberg, the Nationalists had been prepared to oppose the Brüning Government. The Ministry commanded only 199 votes out of 491 and its existence depended upon the support of some of the Nationalists.

President von Hindenburg, taking a serious view of the crisis, authorized the Chancellor to dissolve the Reichstag if the Cabinet failed of a vote of confidence and to conduct the Government under Article 48 of the Constitution, which gives the President virtually absolute power "if public safety and order be seriously disturbed or threatened." Dr. Brüning's programme, outlined to the Reichstag on April 1, was similar to that of his predecessor—loyal execution of Germany's international obligations, immediate relief for agriculture (to cost \$100,000,000), financial and treasury reforms, and strict economy. That the late Dr. Strösemann's foreign policy of coöperation in the reconstruction of Europe would be continued was insured by the presence in the Cabinet of Dr. Curtius. The Government survived its first test in the Reichstag on April 3, when a Socialist "no-confidence" motion was defeated 252 to 187. Only a last-minute shift in the Nationalist ranks prevented Brüning's downfall.

TAXATION AND FARM RELIEF. The difficulties of framing a taxation measure to secure the additional income needed for agricultural relief and financial reform arose immediately to plague the Government. Each proposal of the Finance Minister was met in turn by objections of the groups most likely to be affected by it. By bargaining with each of the protesting parties, the Cabinet finally framed a tax measure which provided for additional income of approximately 534,000,000 marks (about \$127,198,000) from the following sources: Beer, 150,000,000 marks; gasoline, 77,000,000; tobacco and sugar, 30,000,000; mineral waters, 40,000,000; tea and coffee, 50,000,000; tax on industry, 50,000,000; turnover tax, 110,000,000; special tax on large department stores, 27,000,000.

The farm relief bill, submitted to the Reichstag along with the tax reform bill, provided for the upward revision of import duties on a long list of agricultural products sufficient to give Germany one of the highest tariffs in Europe. Export bounties were granted German farm products and a sliding tariff on grain was provided whereby the Cabinet might increase the rate to maintain the price of the domestic product. On April 14, Chancellor Brüning won a substantial majority for the agrarian measure and secured the passage of the tax reform bill by the narrow margin of six votes. Both bills were signed by President von Hindenburg April 30, after ratification by the Reichsrat. The Cabinet was saved again only by a split within the Nationalist party. A majority of the Nationalist deputies, led by Count Westarp, defied Hugenberg, the official party leader, and voted in support of the Government.

The new agricultural tariff had brought strong protests from Poland and Rumania and threats of retaliatory measures from various European countries. In Germany, also, the tariff was bit-

terly criticized by the Association of German Industry, while the Socialists and Trade Unionists threatened to abrogate existing wage scales because of the expected rise in the cost of living.

THE PARLIAMENTARY DEADLOCK. The budget for the fiscal year ending Mar. 31, 1931, as submitted to the Reichstag on May 2, made no provision for meeting the accumulated deficit of 1,284,000,000 marks (about \$305,592,000) outstanding at the end of the 1929-30 fiscal year. Appropriations aggregated about 11,277,000,000 marks (\$2,685,000,000), or 352,800,000 marks (\$84,000,000) more than in 1929-30. The methods proposed for raising this sum failed to win the approval of the various parties forming the Government coalition, however, and for two months Chancellor Brüning negotiated with the party leaders in an effort to secure an agreement necessary to the passage of a budget. In the meantime the deficit was constantly growing, due to enlarged expenditures for unemployment relief. It was estimated in August, on the basis of existing taxation, that the deficit for 1930-31 would total over 760,000,000 marks (about \$180,000,000). Finance Minister Moldenhauer resigned June 18 because of opposition to his budget proposals, and was succeeded June 26 by Herman Robert Dietrich, Democratic Reichstag leader.

The budget measure finally brought to a vote on July 16 provided for increases in the income and poll taxes, and curtailment of the period for payment of tobacco taxes. It was accompanied by notice from President Hindenburg that if rejected by the Reichstag he would make the budget effective through the application of Article 48 of the Constitution, which grants the President extraordinary powers in case of emergency. Nevertheless the budget was rejected by a vote of 256 to 193, with the Nationalists, National Socialists, Social Democrats, and Communists voting in opposition. Rather than resign or request the dissolution of the Reichstag and new elections, the Ministry chose to put the budget into force under the President's "emergency" decree. The Social Democrats countered two days later with a bill annulling the emergency law, and the bill was passed 236 to 221, with the same parties supporting it as had opposed the budget measure, except for 23 Nationalists under Count Westarp, who again defied the party leader, Hugenberg, and voted with the Government forces. As provided by the Constitution, President Hindenburg was forced to sanction the annulment of his decree. He then dissolved the Reichstag, ordering new elections for September 14.

The Brüning Cabinet, saved from immediate defeat, again invoked Article 48 and adopted a budget on July 26, with the President's approval, which differed only in minor respects from that rejected by Parliament. The new budget, effective September 1, cut expenditures by \$40,000,000 and increased revenues by a 5 per cent raise on the general income tax, a 10 per cent increase on the income tax of bachelors, and a special additional levy of 2½ per cent on civil employees. It also gave the communes authority to increase the beer and head taxes and provided for the relief of agriculture.

FASCISM'S ELECTORAL TRIUMPH. The elections of September 14 were remarkable chiefly for the immense gains registered by Herr Adolph Hitler's National Socialist (Fascist) party on an extremely nationalistic platform calling for the scuttling of both parliamentary government in

Germany and the entire foreign policy of Stresemann and Curtius, based on coöperation with the League of Nations and with the European Powers in the economic reconstruction of Europe. Opposing the Versailles Treaty, Young Plan, League of Nations, and Locarno Pact, the Hitlerites demanded the return of territory, including the colonies, severed from Germany by the peace treaty, withdrawal of "the war-guilt lie," union of Germany and Austria, and the elimination of foreign elements, and particularly Jews, from German national life. In the economic sphere, they favored heavy taxation of the rich in the interests of the working man, the poor, and the small middle-class shopkeeper, abolition of unearned income, repayment of war profits, nationalization of the great trusts, a share for the government in all large business undertakings, and the communalization of great department stores.

On this programme, the National Socialists polled a vote of 6,401,210 out of a total of 34,942,854, as compared with 809,980 out of 30,724,478 votes cast in 1928. They increased their representation in Parliament from 12 to 107, ranking next to the Social Democrats as the second group in the Reichstag. The Communist gains were only less sensational, their vote increasing to 4,587,708 from 3,263,354 in 1928, and their parliamentary delegation to 76 from 54 in 1928. The Social Democrats polled 8,572,016 votes, as compared with 9,150,533 in 1928, and held only 143 seats instead of 152 in the previous Reichstag, but still remained the strongest party. The Centre and Bavarian People's parties registered slight gains, while the German People's, Economic, and State parties lost ground. The extremist gains were undoubtedly due to widespread bitterness at difficult economic conditions, which were attributed partly to the Versailles Treaty and the Young Plan and partly to the lack of energetic leadership in Parliament.

Among the consequences of the election was the dissolution of the Democratic party, organized in 1918 by Dr. Hjalmar Schacht, Theodor Wolff, and others, and the formation of a new State party of liberal and moderate tendencies. Attempts made by Dr. Scholz of the People's party to form a new party incorporating all conservative middle-class groups failed. A third party, the Conservative People's party, was reorganized by Herr Gottfried Treviranus and Count Westarp, but lost all except five of its 19 seats in the former Reichstag. Treviranus himself was eliminated from the Reichstag.

THE NEW REICHSTAG. The newly elected Reichstag convened October 13 amid riotous demonstrations by Fascist and Communist mobs outside the Parliament building and adjourned after a week of stormy sessions until December 3. It was composed as follows: Social Democrats, 143; National Socialists, 107; Communists, 76; Centrists, 68; Nationalists (Hugenberg), 41; German People's party, 29; Economic party, 23; State party, 20; Bavarian People's party, 19; Landvolk, 18; Christian Socialists, 14; German Peasants, 6; Conservative People's, 5; Hanoverians, 3; Land Union, 3; total, 575. The parties in Opposition to the Brüning Government now held a safe majority, but the Social Democrats were won over to a policy of benevolent neutrality and indirect support of the Ministry. With their aid the Government secured the Reichstag's approval of its emergency decrees by a margin of 119 votes.

By unexpectedly large majorities, Chancellor Brüning pushed through a measure establishing an amortization fund out of which the Reich's floating debt was to be liquidated in the succeeding three years, shelved motions demanding the cessation of reparation payments by referring them to the Foreign Relations Committee, and secured tacit approval of the 1930 budget measure. The amortization fund was supported by a credit of \$125,000,000, negotiated with a syndicate of American and other foreign bankers, which the Reichstag approved also.

THE 1931-32 BUDGET. In the interim between the October and December sessions of the new Reichstag, the Brüning Cabinet formulated its budget plans for the fiscal year commencing Apr. 1, 1931. As approved by the Ministry, October 24, the ordinary budget estimates balanced at 10,400,000,000 marks (about \$2,475,000,000), while extraordinary income and outgo were estimated at 237,773,000 marks (about \$56,590,000) additional. The proposed budget was 1,134,000,000 marks (about \$270,000,000) less than the 1930 budget decreed in July. Social welfare disbursements and transfers to the Federal States and municipalities were each reduced by about \$100,000,000, while appropriations for the various Ministries were cut about \$75,000,000.

The budget was approved by the Reichsrat on November 20. Subsequent developments, including the withdrawal of the Economic party's Minister from the Cabinet, convinced Dr. Brüning that his budget programme would meet defeat if submitted to the Reichstag. Accordingly, President von Hindenburg on December 1 again invoked Article 48 of the Constitution and decreed the enactment into law of the finance programme. Confronted with this *fait accompli* upon reconvening December 3, the Reichstag voted by a majority of 38 to sustain the decrees. Their rejection would have meant either resignation of the Government and the possible formation of a Right cabinet including the National Socialists or the dissolution of Parliament and new elections. Rather than face these alternatives, the Social Democrats voted to support the Government.

NATIONAL DEFENSE LAW. A new and more drastic national defense law, designed to check the growing agitation against the Republic by Communists on the one hand and by Monarchists and National Socialists (Fascists) on the other hand, was adopted by the Reichstag March 15, the vote being 265 to 151. Insults or agitation directed against the flag or Constitution of either the Reich or its constituent States, or insults against the President and Government officials in their public capacities were made punishable by not less than three months' imprisonment. The same penalty was provided for those who urged or praised treason against the Republic. Police were authorized to break up any anti-republican meeting which threatened to disturb the peace.

Passage of the bill followed numerous violent Communist demonstrations in the industrial centres, the discovery of widespread Communist propaganda in the army, and an official warning issued by Minister of Defense Groener on March 8 that the danger of a Communist uprising was imminent.

Fascist and Communist gains in the elections of September 14, the Leipzig trial late in September, and the so-called "Frick Affair" increased the alarm of the republican elements. The Leip-

zig trial involved the cases of three army officers who were convicted of treason for plotting a Fascist *putsch* in collaboration with National Socialist leaders. The National Socialists seized the opportunity for a great Fascist demonstration. Adolph Hitler, called as a witness, startled the country and Europe by predicting that if his party gained control, the heads of the German Social Democratic and middle-class leaders who signed the Versailles Treaty would "roll in the sand." He said, however, that Fascist plans would be executed only within legal channels. Fascist threats against the Social Democrats and pacifists were repeated during the tumultuous sessions of the Reichstag in October. They promised a war to free the Reich of the burdens imposed by the Versailles Treaty, if "legal" methods failed. Earlier in the year, the openly Fascist activities of Herbert Frick, a Cabinet official of the conservative State of Thuringia, caused Minister of Interior Severing to discontinue Federal contributions to the government of that State. Frick was forced to promise that he would not allow his Fascist sympathies to dictate appointments to the State police force.

The *Stahlhelm*, or monarchist military organization, was ordered dissolved by the Social Democratic government of Prussia in its provinces of Rhineland and Westphalia early in the year on the ground that its activities were illegal. The ban was withdrawn in June, however, when President Hindenburg, who was honorary president of the organization, threatened to omit his scheduled visits to these provinces in connection with the celebration of the final liberation of the Rhineland from foreign occupation.

EVACUATION OF THE RHINELAND. In accordance with the agreement reached at the Hague Reparation Conference, French and Belgium troops evacuated the final zone of occupation of the Rhineland on June 30, 1930, five years before the date fixed in the Treaty of Versailles. The jubilant celebration of their departure by the Rhineland population was marked by attacks upon Germans who had advocated the separation of the Rhineland from the German Reich following the World War. A proclamation by President Hindenburg voiced the nation's gratitude to those who had suffered "through arbitrary foreign rule" because of their allegiance to Germany. French troops were cheered as they left Mainz, however. Hindenburg's official visit to the liberated districts was cancelled July 23, following a disaster which marred a reception celebration at Coblenz. A small bridge crowded with spectators collapsed, costing the lives of about 40 people, mostly women and children. Evacuation of the last Allied troops in Germany, consisting of 250 railway police in the Saar, took place Dec. 12, 1930.

FOREIGN RELATIONS. The recrudescence of aggressive nationalism in Germany, evidenced by Fascist election gains and anti-separatist riots in the Rhineland, aroused much anxiety in France, Poland, and the countries of the Little Entente, particularly after Premier Mussolini placed Italy at the head of the nations demanding the revision of the peace treaties. A counter-wave of nationalism swept France and her allies, threatening Foreign Minister Briand's policy of peace and arousing forebodings of another European war (see articles on each country under *History*). The tension was increased during August by unauthorized speeches made by Gottfried Treviranus, the German Minister for Occupied Areas,

in which he demanded revision of the eastern frontier and the elimination of the Polish Corridor. Subsequently, however, both Chancellor Brüning and Foreign Minister Curtius pledged Germany to a continuance of Stresemann's policy of peaceful cooperation with the other European Powers. German liberals remained cool toward Premier Mussolini's offer of assistance in securing a revision of the peace treaties. Nevertheless, the Government's response to Briand's proposal for a political and economic federation of European states made it plain that a revision of the European political structure must precede Germany's adherence to such a federation.

Friction between guards along the German-Polish border led to an armed clash on June 7, in which a Polish officer was killed. A Polish and German Mixed Commission appointed to conduct an inquiry was unable to agree upon a joint report and finally presented separate reports jointly to both Governments. For relations with Russia, see *RUSSIA* under *History*.

GERMAN-AMERICAN DEBTS. The agreement for the settlement of the debt to the United States, ratified by the Reichstag on March 12, was approved by the American House of Representatives May 22 and by the Senate June 5.

It provided for the payment by Germany of the costs of the American army of occupation and of awards of the Mixed Claims Commission, amounting to approximately \$753,400,000 including interest, over a period of 52 years. The agreement was negotiated during 1929 as an aid to the work of the Young Commission in fixing German reparation payments. As compensation for the seizure of 94 German vessels during the World War by the United States government, James W. Remick, war claims arbiter, on June 10 awarded German shipowners sums aggregating \$74,243,000. The chief claimants were the Hamburg-American Line, which received \$38,801,000, and the North German Lloyd, which obtained \$27,311,000.

American claims of \$40,000,000 for the alleged destruction by German agents of the Black Tom and Kingsland munitions plants in 1916 and 1917 were heard by the German-American Mixed Claims Commission at The Hague in September. An interesting development was the admission by Dr. Karl von Lewinski, chief counsel for Germany, that German agents had violated American neutrality in 1915 and 1916 by hiring men to infect horses and mules destined for the Allied armies with anthrax, to foment strikes, and to place bombs on the piers used by Allied vessels. He denied any connection between the activities of German agents and the munitions explosions. The commission rejected the American claims by a unanimous decision issued Nov. 14, 1930. On Dec. 10, 1930, the famous Blücher Palace on Unter den Linden was purchased by the United States Government for the use of the American Embassy and other official missions of the United States in Berlin.

OTHER EVENTS. Two great mine disasters occurred in Germany in 1930. Explosions in the Wenceslaus mine at Neurode, Lower Silesia, on July 10, and in the Anna mine at Alsdorf, Rhenish Prussia, on October 21 cost the lives of nearly 300 miners. A law placing further restrictions upon the sale of liquor in Germany was passed by the Reichstag April 8 and became effective July 1. See *LEAGUE OF NATIONS, NAVAL PROGRESS, and FRANCE, ITALY, and POLAND* under *History*.

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GIBRALTAR. A British possession consisting of a small peninsula on the southwest coast of Spain. The Rock of Gibraltar commands the entrance to the Mediterranean Sea. Area, $1\frac{3}{4}$ square miles; population, at the census of 1921, 20,638, of whom 2932 were military and 546, naval men. The civil population on Jan. 1, 1929, was estimated at 15,719, excluding about 1212 aliens. The inhabitants are chiefly descendants of Spanish and Italian settlers. In 1928-29 there were 13 government-aided elementary schools with 2681 pupils, and five secondary schools. The revenue in 1928 was £164,180 and the expenditure, £165,993. There was no public debt. Trade is mainly transit. Vessels entered in 1928 numbered 3478 of 6,712,702 tons; cleared, 2045 of 5,562,527 tons. Cables connect with the Continent, with eastern Mediterranean ports, and with England. Gibraltar is under a governor who is also commander-in-chief. He is assisted by an executive council, established in 1922. Governor in 1930, General Sir Alexander J. Godley, appointed October, 1928.

GIFTS AND BENEFACTIONS. See UNIVERSITIES and COLLEGES.

GILBERT, S. PARKER, AGENT-GENERAL FOR REPARATION PAYMENTS. See REPARATIONS; GERMANY under *History*.

GILPIN, CHARLES SIDNEY. An American Negro actor, died at Eldrid Park, near Trenton, N. J., May 6, 1930. He was born in Richmond, Va., Nov. 20, 1878, and attended the St. Francis School there. At the age of 14, he began to work in a printing office in Richmond, occasionally appearing in music halls. In 1903 he joined the Canadian Jubilee Singers at Hamilton, Ontario, and in 1905-06 toured with Williams and Walker's Abyssinia Company, and Gus Hill's Smart Set Company. He was a member of the Pekin Stock Company of Chicago in 1907-08; he was with the Pan-American Octette in 1911-13; he toured in *Old Man's Boy* in 1913; and he appeared in vaudeville in Canada in 1914. In 1916 he was appointed producer at the Lafayette Theatre in New York, where he was at the head of the first dramatic stock company in that city. He played the rôle of William Custis in Drinkwater's *Abraham Lincoln* in 1919 and he was cast for the part of Brutus Jones in O'Neill's *The Emperor Jones*, produced in New York by the Provincetown Players in 1920. His interpretation of the rôle of Brutus Jones, the pullman car porter who became a ruler in the West Indies, received unusual praise from the New York dramatic critics. From 1920 to 1924, he played in *The Emperor Jones* and, thereafter, in revivals of the play. Because of ill health, he retired in 1929.

GIPSY MOTH. See ENTOMOLOGY, ECONOMIC.

GIRL SCOUTS. A nonsectarian movement for girls, started in Savannah, Ga., in 1912 by Mrs. Juliette Low and adapted from the scouting programme begun in England in 1907 by Sir Robert Baden-Powell. It is a leisure-time programme which supplements and interprets the all-too-frequently scattered and puzzling experiences of the "teen-age" girl in home, school, church, and neighborhood. It rests upon the development among girls of ideas of growth and service, and the full, happy, and useful employment of their

interests and capacities in work and play with other girls in their respective communities.

The working membership unit of the Girl Scouts is the troop, consisting of from 8 to 32 members. This, in turn is divided into patrols, consisting of from four to eight girls in each patrol. The adult leader of the troop is known as the captain. There are three ranks in Girl Scouting: Tenderfoot; second class; and first class. The requirements for these and for some 50 proficiency badges and for the Golden Eaglet award are described in the *Girl Scout Handbook*. In each community women interested in the movement are organized as local councils, community committees, or troop committees to help support and develop the local Girl Scout activities.

The active, paid-up memberships in the Girl Scouts as of Oct. 31, 1930, totaled 197,021, with an additional enrollment of 8456 Brownies (girls between 7 and 9) and 30,983 leaders. In 1930, 13 national training schools, as well as courses in many colleges and universities, were conducted for Girl Scout leaders and young women who were interested in training for volunteer leadership. On Jan. 1, 1930, the national organization entered upon a five-year plan, aiming to increase the membership and enlarge the influence of the Girl Scout movement and to develop and enrich its whole programme.

The national organization is a member of the World Association of Girl Guides and Girl Scouts, which in 1930 included 28 countries. At the sixth world conference held in Foxlease, England, in July, 1930, Lady Baden-Powell was elected chief guide, and an international Girl Scout and Girl Guide flag—a gold trefoil on a blue background—was adopted. The next biennial world conference was to be held in Poland in 1932.

The official organ for girls is *The American Girl Magazine*, and for leaders, *The Girl Scout Leader*, each a monthly publication. The officers elected at the national convention held in Indianapolis, Ind., Oct. 1-4, 1930, were: Honorary president, Mrs. Herbert Hoover; chairman of the board of directors, Mrs. Nicholas Brady; president, Mrs. Frederick Edey; corresponding secretary, Mrs. Julius H. Barnes; treasurer, Mrs. Edgar Rickard; national director, Miss Josephine Schain. National headquarters are at 670 Lexington Avenue, New York City.

GLACIERS. See EXPLORATION under *Asia*.

GLADSTONE, glád'stūn, HERBERT JOHN GLADSTONE, FIRST VISCOUNT. An English statesman, youngest son of William Ewart Gladstone, died in Hertfordshire, Mar. 6, 1930. He was born in London, Jan. 7, 1854, and was educated at Eton and at University College, Oxford University. After lecturing in history at Keble College in 1877-80, he entered Parliament as a Liberal member for Leeds (1880-85), after which he represented Leeds, West, until 1910. He was private secretary to his father in 1880-81, Junior Lord of the Treasury during 1881-85, and Financial Secretary to the War Office in 1886. He was Under-Secretary of the Home Office in 1892-94 and First Commissioner of Works in 1894-95. From 1899 to 1906, he served as chief whip to the Liberal party and, from 1905 to 1910, was Secretary of State for Home Affairs. In 1910 he was created viscount and Knight of the Grand Cross of St. Michael and St. George. Later in the same year, he was appointed High Commissioner and first Governor-General of the new Union of South Africa, an office which he held until 1914. In these

years, he successfully established the new Government, for which services he was made Knight of the Grand Cross of the Bath. During the World War, Lord Gladstone was head of the War Refugees Organization in England. He attracted popular notice in 1925, when he defended his father's name against attacks made upon it by Captain Peter Wright in his book, *Portraits and Criticisms*. Lord Gladstone was the author of *W. G. O. Gladstone* (1918) and *After Thirty Years* (1928), also a biography of his father.

GLANDS. See MEDICINE, PROGRESS OF.

GODDARD ROCKET. See AERONAUTIC ROCKET EXPERIMENTS.

GODOY, JOSÉ FRANCISCO. A Mexican diplomat, lawyer, and writer, died in Mexico City, July 29, 1930. He was born in Tampico, Mexico, Aug. 9, 1851, and received his education in Mexico City and San Francisco, Calif. On being admitted to the bar, he practiced for a number of years in California and Mexico. He also edited *The Railroad* and *The Mexican Commercial Review* (in English and Spanish) and was on the staff of *The Two Republics*, *La Patria*, and other dailies. After serving as chargé d'affaires of Mexico in the Central American republics during 1893-96, he became first secretary of the Mexican Embassy in Washington, where he was stationed until 1903. He was then appointed Minister of Mexico to the Central American Republics and, in 1905, to Cuba, holding the latter post for more than 15 years. His best-known work was *Tratado de Extradición* (1896), used as a textbook in many Latin-American schools. He wrote, in collaboration, *A Few Facts about Mexico*, *Mercantile and Legal Hand Book of Mexico*, *The Prominent Men of Mexico*, *Biography of President Porfirio Díaz*, and *La Ciudad de San Francisco*, and edited *Today's Diplomatic and Consular Review*.

GOLD. The U. S. Bureau of the Mint, with the cooperation of the Bureau of Mines, issued the accompanying preliminary estimate of refinery production of gold in the United States during the calendar year 1930 based on arrivals at U. S. Mints and Assay Offices and at private refineries.

UNITED STATES GOLD PRODUCTION, 1930

| States | Ounces | Value |
|--------------------------|------------------|---------------------|
| Alaska | 394,779 | \$ 8,160,800 |
| Alabama | 10 | 200 |
| Arizona | 151,428 | 3,130,300 |
| California | 438,912 | 9,073,100 |
| Colorado | 214,195 | 4,427,800 |
| Georgia | 203 | 4,200 |
| Idaho | 20,748 | 428,900 |
| Illinois ..... | ..... | ..... |
| Maine | 29 | 600 |
| Michigan ..... | ..... | ..... |
| Missouri ..... | ..... | ..... |
| Montana | 45,724 | 945,200 |
| Nevada | 134,410 | 2,778,500 |
| New Mexico | 29,576 | 611,400 |
| North Carolina | 184 | 3,800 |
| Oregon | 13,975 | 288,900 |
| Pennsylvania | 639 | 13,200 |
| South Dakota | 402,422 | 8,318,800 |
| Tennessee | 1,030 | 21,300 |
| Texas | 1,122 | 23,200 |
| Utah | 200,103 | 4,136,500 |
| Vermont ..... | ..... | ..... |
| Washington | 3,720 | 76,900 |
| Wyoming | 450 | 9,300 |
| Philippine Islands | 178,934 | 3,698,900 |
| Total | 2,232,593 | \$46,151,800 |

Comparison with 1929 production indicates an increase in 1930 of \$500,400 in gold. Comparison with the year of largest production, 1915, when gold amounted to \$101,035,700, gives a reduction of \$54,883,900 in gold.

Considering the figures in the above table, it will appear that California continued in 1930 to be the largest producer with an output of 438,912 ounces, which may be compared with 409,020 ounces in 1929. This increase came from the lode mines and practically all the larger mines recorded a greater output. There was again a decrease in placer mining carried on mainly by dredging, but the active mining of copper during the first half of the year served to increase the gold production. In South Dakota the Homestake Mine at Lead, which was the largest gold producing mine in the United States, showed a gain of \$1,900,000 over 1929, notwithstanding a serious fire which occurred in July. In Colorado gold output was 214,195 ounces as compared with 220,285 in 1929, Cripple Creek production being valued at \$2,526,667, and that of San Juan County at \$658,357. The decrease of gold production in Utah from 237,211 ounces in 1929 to 200,103 ounces in 1930 was accounted for by reduced operations of the Utah Copper Company. Nevada also showed a decline from \$3,384,211 in 1929 to \$2,729,000 in 1930. Various improvements in the metallurgy of gold were scored during the year and are discussed in the article METALLURGY (q.v.).

WORLD PRODUCTION. Unlike most metals, there was an increased output in the world production of gold in 1930 over 1929 represented by approximately 1,000,000 fine ounces or over \$20,000,000. This carried out the well-known fact that gold mining attracts labor and capital when business conditions are generally unfavorable, but the significance was considered of no special importance by competent authorities. Cost of production did not show any particular decline during the year, although in Africa it was reported that native labor would soon be in a position to supplant white workmen underground and that other economies would be introduced in the mining and milling of low-grade ores. Looking at the production figures for 1929 and 1930 the accompanying tabulation from the *Engineering and Mining Journal* is of interest in this connection.

WORLD PRODUCTION OF GOLD, 1929 AND 1930 [In Fine Ounces]

| Country | 1929 | 1930 |
|--------------------------|-------------------------------|-------------------------------|
| Transvaal | 10,414,066 ^a | 10,719,760 ^a |
| United States | 2,208,386 ^b | 2,232,593 ^b |
| Canada | 1,928,308 ^c | 2,089,766 ^c |
| U. S. S. R. (Russia) ... | 835,918 ^d | 868,068 ^d |
| Others | 4,126,152 ^e | 4,589,813 ^e |
| Total | 19,512,830^b | 20,500,000^e |

^a South African government sources.

^b U. S. Bureau of the Mint.

^c Dominion Bureau of Statistics.

^d Non-ferrous Metals Trust, U. S. S. R.

^e Estimate by *Engineering and Mining Journal*.

The gold production from Ontario mines for 1930 was \$35,385,274, being a net gain of some \$2,000,000 over the 1929 output of \$33,383,169, and forming a record for the Province. Total gold production for the Dominion of Canada was stated by the Dominion Bureau of Statistics at 2,089,766 fine ounces valued at \$43,199,000 as against 1,928,308 ounces and \$39,861,663 in 1929.

The gold mining industry in South Africa not only enjoyed a new record for production in 1930, but was unusually prosperous. It is the most important and most stable form of commercial activity in this British Dominion, and in 1930, due to over-production and general depression, resulting in lower prices for the farmers, there was more

native labor available for the gold mines so that they could be worked adequately and economically, a condition that had not previously prevailed. As a result, in 1930 the gold production of the Transvaal was valued at £45,558,980, as compared with £44,236,141 in 1929. At the end of the year the native labor engaged totaled over 200,000, the largest number ever employed in the mines. Furthermore, commercial conditions enabled the mines to purchase supplies including food stuffs for the laborers lower than ever before, while improvements in operation, especially in connection with the low grade mines, served to increase production. The Government was sympathetic toward mining in general and low grade propositions in particular, and some development was in progress during the year. This prosperity in the Rand was also of interest, as it developed discussion as to the life of the South African properties and whether there would not be at the prevailing rate of production a considerable decrease within a decade. The exhaustion of these fields would naturally affect world production with the various economic consequences that might ensue. Whether a reduced output of gold would affect the financial situation of the world or not was a matter of discussion during the year with diversified views held by various authorities. See FINANCIAL REVIEW; SOUTH AFRICA, UNION OF.

In Rhodesia the gold mining industry was estimated to have maintained its normal output or about 550,000 ounces, a few thousand ounces less than in 1929. Some of the mines closed down during the year, while others opened or reopened. In Southern Rhodesia the Sherwood-Starr Mine was being developed and the government was granting concessions over a large area for exclusive prospecting rights. Similar work had been done with advantage in Northern Rhodesia.

The withdrawal in 1930 of the Lena Goldfields Company from its concession for the production of gold and other minerals in the Soviet Union (see RUSSIA under *History*) was considered an unfavorable factor in the immediate outlook for the Russian gold-mining industry. The company, which was British-managed and financed, produced about 35 per cent of the gold mined in the Soviet Union in 1929, and had made plans for important extensions in its operations. Other developments, however, promised an eventual substantial increase in Russian production. A large new gold-bearing field, about 750 kilometers long and 250 kilometers wide, was discovered late in 1929 by an expedition of the Soviet Academy of Sciences in the vicinity of the Indigirka and Kilyma Rivers in the Yakutsk Republic, Siberia. A special administrative unit to develop the non-ferrous metal, gold, and platinum industries of the Soviet Union was organized early in 1930. Later, an institute to carry on technical and economic research in the use of gold, platinum, and rare metals was established under the Council of Labor and Defense. The institute's activities were to include prospecting, mining, the special treatment of minerals, and the training of specialists. Completely equipped experimental laboratories and plants were to be provided.

The *Economic Review of the Soviet Union* for July 1, 1930, reported that the Soviet gold industry, with headquarters at Irkutsk, Siberia, had employed a number of American technicians, including eight engineers, a dredge superintendent, and an instructor in dredge operation. Four American consulting engineers and geologists

were employed by the *Tzvermetzoloto* (United Nonferrous and Precious Metals Industry).

GOLD COAST. A British African territory extending 334 miles along the Gulf of Guinea between the French Ivory Coast and Togoland; comprising, in addition to the colony proper, Ashanti and the Northern Territories. The area of three divisions is estimated at about 80,000 square miles; population at the census of 1921, 2,078,043, including 2165 Europeans. Accra, with 38,000 inhabitants, is the capital and chief town. In 1928-29, 35,976 pupils were enrolled in 28 Government schools and 246 assisted schools.

Staple products and chief exports are cacao, palm oil, kola nuts, palm kernels, lumber, india rubber, manganese, gold, and diamonds. Including bullion and specie, imports for 1928 totaled £12,200,045 and exports, £13,824,875. Cacao shipments represented 90 per cent of the value of exports. Mineral exports ranked next in value as follows: Gold, £684,815; manganese, £610,209; diamonds, £584,279. The manganese deposits are among the richest known. For the year ended March 31, 1929, revenues amounted to £4,703,967, and expenditures to £5,419,732. The public debt March 31, 1929, stood at £11,791,000. The railway mileage operated in 1929 was 495 miles; main highways, 1530 miles; secondary highways, 3157 miles. Telegraph and telephone lines extended 4298 and 5758 miles, respectively. Of the 5,462,930 tons of shipping entered and cleared in 1928, 2,891,152 were British. The harbor of Takoradi, opened in March, 1928, offers complete shelter for ships of over 30-foot draft.

Ashanti, annexed by Great Britain in 1901, is under the Governor of the Gold Coast. It has an area of 24,560 square miles; population, census of 1921, 407,000, including 400 Europeans. Government schools enrolled 1025 pupils and mission schools, 4251, in 1928. Valuable forests in the western part yield mahogany, cedar, fruits, oil, rubber, and gum copal. The gold output (1928-29) was valued at £456,533. Local receipts (1928-29), £171,715; expenditures, excluding railways, posts and telegraphs, £503,015.

The Northern Territories, constituted a British protectorate in 1901, also are under the Governor of the Gold Coast but locally administered by a commissioner, with his headquarters at Tamale. Area, 35,000 square miles; population at the census of 1921, 527,914, of whom only 49 were Europeans. Navrenko is the chief town with a population of about 15,000. The chief crops are yams, millet, maize, rice, Guinea corn, and tobacco. Local revenue in 1928-29 totaled £20,687; expenditure, £131,519. Governor of the Gold Coast in 1930, Sir Alexander R. Slater; Chief Commissioner of Ashanti, John Maxwell; Chief Commissioner of Northern Territories, Maj. A. H. C. Walker-Leigh.

GOLD MOVEMENTS. See BANKS AND BANKING; FRANCE under *Finance*.

GOLF. The year 1930 was notable in golf history for the scintillating achievement of Robert Tyre Jones Jr., of Georgia, in capturing all four of the premier golf championships of the world—the United States and the British open and amateur titles. The feat had never before been performed. At the end of the season, Jones, who had won 12 major golf titles since 1923, announced his retirement from competitive golf.

In the International Walker Cup matches at Sandwich, England, Jones paired with Dr. Willing of Portland, Ore., to defeat Torrance and Hartley

in the foursomes, 8 and 7, and defeated Roger Wethered in the singles, 9 and 8. He then won the British Amateur title, the only major championship he had never held, by again defeating Roger Wethered in the final, 7 and 6, at St. Andrew's, Scotland. At Hoylake, England, on June 20, he added to his laurels the crown of British Open golf champion, with an aggregate of 291 strokes for 72 holes. He retained his United States Open title in July on the Interlachen Club course, Minneapolis, though closely pressed by Macdonald Smith. His victory in the United States Amateur contest came when he defeated Gene Homans 8 up and 7 to play in the final at the Merion Cricket Club course, Ardmore, Pa., September 27. It was the fifth time he had annexed the American Amateur title. To climax his sensational career, Jones was awarded the James E. Sullivan Memorial Medal for 1930 as the American who had done most to advance the cause of sportsmanship during the year.

Miss Glenna Collett, of Greenwich, Conn., retained the Women's United States title by defeating Miss Virginia Van Wie in the final of the tournament at Los Angeles, October 18. Tommy Armour, of Detroit, won both the Professional Golfers' Association championship at the Fresh Meadow Country Club, New York, on September 13, and the Canadian Open golf crown at Ancaster, Ontario, July 30. To win the latter event, Armour defeated Leo Diegel by three strokes in a 36-hole play-off made necessary when he and Diegel tied with scores of 277 in the 72-hole championship contest proper the week previous. The 1930 champions in the other Canadian golf events were: Amateur, C. Ross Somerville, London, Ont.; professional, Willie Lamb, Thornhill, Ont.; Women's Open, Miss Maureen Orcutt, New York. The Women's British title went to Miss Diana Fishwick, of England, who defeated Miss Collett, and the British Professional title to C. A. Whitcombe, of England. George von Elm, American Amateur Open champion in 1926, captured the French Open Amateur crown at Versailles and C. A. Whitcombe won the Irish Open championship at Portrush. Both the French and Irish tournaments were held in June.

The Intercollegiate title of the United States went to George T. Dunlap Jr., of Princeton, who defeated Lawrence Moller, of Notre Dame, in the final. Princeton also won the Intercollegiate team championship. Other title winners of the year were: Western Open, Gene Sarazen, of New York; Western Amateur, Johnny Lehman, Chicago; United States Seniors, Dr. George T. Gregg, Oakmont, Pa.; United States Women's Seniors, Mrs. Samuel S. Laird Jr., of the Westchester Country Club.

GOLLANCZ, SIR HERMANN. A British rabbi and educator, died in London, Oct. 15, 1930. Born in 1852, he attended the Jews' and University colleges, London, and received in 1897 the highest rabbinical diplomas (Hatarath Horaah) from the chief rabbis in Galicia and in 1899 the D.Litt. degree from the University of London. For more than 50 years (1892-1923) he was preacher at the Bayswater Synagogue. He also held the Goldsmid professorship of Hebrew at the University College from 1902 to 1924, and was nationally known as a social worker, serving on the committees of many philanthropic and educational institutions and founding several synagogues for the industrial classes. In 1913 he was appointed a member of the Birth-Rate Commission, and in

1917 served on the Cinema Commission. He was president of the Jewish Historical Society of England during 1905-06 and of the Union of Jewish Literary Societies during 1925-26. In addition to many translations from Hebrew, Aramaic, and Syriac, his important works are: *Russia and the Alien Question* (1905) and *The Foundation of Religious Fear* (1915).

GOLLANCZ, GOL'ANKS, SIR ISRAEL. A British scholar and educator, died in Hampstead London, June 23, 1930. He was born in London, July 13, 1863, and studied at the City of London School; University College, London; and Christ's College, Cambridge. He became Quain English student and lecturer at University College, London, in 1892; university lecturer in English at Cambridge in 1896; and professor of English language and literature in King's College, University of London, in 1906. He also acted as fellow and secretary of the British Academy from its foundation in 1903 until his death, and was president of the Philological Society during 1919-22. He was knighted in 1919. Besides critical editions of numerous medieval alliterative poems he edited and translated many Old and Middle English texts, as the *Pearl* (1891); *Cynewulf's Christ* (1892); and the *Exeter Book of Anglo-Saxon Poetry* (1895). He was general editor of *The Temple Classics*; *The King's Library*; *The Medieval Library*; and *The Temple Shakespeare*. His other contributions to Anglo-Saxon and Elizabethan scholarship include: *The Parliament of the Three Ages* (1897); *Hamlet in Iceland* (1898); *The Book of Homage to Shakespeare* (1916); *The Sources of Hamlet* (1926); and *The Caedmon Manuscript of Anglo-Saxon Biblical Poetry* (1927).

GOLOVIN, ALEXANDER JAKOWLEWITSCH. A Russian painter, died in Detskoie, Russia, Apr. 17, 1930. He was born in Moscow in 1863 and received his art education at the Moscow Art School, studying also under Il. M. Prjanishnikoff. His first important work was "The Descent from the Cross" (1889). During 1895-97 he traveled through Italy and Spain, exhibiting on his return a collection of landscapes and folk-studies. He also exhibited at the Universal Exposition in Paris in 1900. His principal works are mural paintings in the Moscow Opera House and theatres in Leningrad, and portraits of his contemporaries, including Count Kankrin, the poet Kusmin, the painter N. C. Roerich, Mlle. Smirnoff, Mme. Makowsky, and the singer Chaliapin. Several of his portraits are found in the Tretjakoff Gallery in Moscow, as is also a genre work entitled "The Workshop of the Icon Makers." Prior to his death the title of the People's National Artist was conferred on him by the Soviet Government.

GOODWILL CONGRESS. See INTERNATIONALISM.

GORDON BENNETT CUP COMPETITION. This annual international competition for aërostats or freely flying balloons is described under AERONAUTICS.

GORDONITE. See MINERALOGY.

GOUCHER COLLEGE. A nonsectarian college for women in Baltimore, Md.; founded in 1885. The enrollment for the first semester of the year 1930-31 was 879. The faculty had 106 members. The endowment funds of the college amounted to \$2,393,318. The library contained 51,000 volumes. President, David Allan Robertson, who was elected to the office in May, 1930.

GRAHAM LAND. See FALKLAND ISLANDS.

GRAIN. See AGRICULTURE; OATS; RYE; WHEAT; ETC.

GRAIN CORPORATION, NATIONAL FARMERS'. See AGRICULTURE; COÖPERATION.

GRAND ARMY OF THE REPUBLIC, THE. A patriotic order formed in 1866 in Decatur Ill., among a number of former soldiers who had served in the Civil War. The first post (No. 1) was organized in Springfield, Ill., receiving its charter from Dr. B. F. Stephenson who had been active in securing the formation of the organization and who became the department commander of the States. The purpose of the society is to "enjoy a companionship made sacred by common sufferings and sacrifices"; its corner stones, "Fraternity, Charity, and Loyalty," demand the care and protection of sick and helpless comrades and their widows and orphans; the upholding of all comrades in their worthy endeavors; and loyalty to the flag and laws of the Republic. Auxiliary orders are the Woman's Relief Corps, Ladies of the G. A. R., Sons and Daughters of Union Veterans, and their auxiliaries. The maximum strength of the organization was in 1890 a membership of 409,487. On Dec. 31, 1929, there were 2238 active local posts with a membership of 21,080.

The sixty-fourth national encampment was held in Cincinnati, Ohio, Aug. 24-29, 1930, while Des Moines, Iowa, was selected for the 1931 encampment. Delegates to the national encampment are chosen by the department encampments and those to the department encampments, held in June, by the posts. The officers elected for 1930-31 were: Commander-in-chief, James E. Jewel, Fort Morgan, Colo.; senior vice commander-in-chief, Jacob Secrest, Cincinnati, Ohio; junior vice commander-in-chief, Charles H. Lewis, Pawtucket, R. I.; surgeon-general, Edward H. Cowan, Crawfordsville, Ind.; chaplain-in-chief, Henry Hilton Wood, Long Beach, Calif.; quartermaster-general, Cola D. R. Stowits, Buffalo, N. Y.; and adjutant-general, David N. Heizer, Colorado Springs, Colo. National headquarters are in the First National Bank Building, Fort Morgan, Colo.

GRANT, REAR ADMIRAL ALBERT WESTON, U. S. N., RET. An American naval officer, died in Philadelphia, Pa., Sept. 30, 1930. He was born in East Benton, Maine, Apr. 14, 1856, and was graduated from the U. S. Naval Academy in 1877. Commissioned an ensign in the U. S. Navy in 1881, he was promoted through the ranks to rear admiral in 1915. During the Spanish-American War he served on the battleship *Massachusetts*, and in 1902 became executive officer of the *Oregon*. Later, after serving as commander of the gunboat *Frolic* (1903-05) and of the *Arcthusa* (1907-08), he was appointed chief of staff of the Atlantic fleet during the cruise of the American battleships around the world. On his return in 1909 he was given command of the battleship *Connecticut*, and the following year was assigned to duty at the Philadelphia Navy Yard. In 1914, after having supervised the construction of the *Texas*, he became commander of that vessel, and in 1915 was made head of the submarine force of the Atlantic Fleet. Following the declaration of war with Germany in 1917, he was made commander of Battleship Force One, and in 1918 he commanded the United States Fleet in the Western Atlantic. The next year he was assigned to the Navy Yard in Washington and retired in 1920.

GRAPEFRUIT. See HORTICULTURE.

GRAPES. See HORTICULTURE.

GRAPHITE. In the U. S. Tariff Act of 1930 the graphite industry asked for increased protection, but the scheduled results were too small to be of material assistance, especially in the depression of the year. By the Act of 1930 amorphous graphite had to pay 10 per cent ad valorem; crystalline lump, chip, or dust 30 per cent ad valorem; and crystalline flake, 1.65 cents per pound. The reason for the decline of the year in consumption and prices lay in the widespread slump in the metal industries where graphite crucibles, and also linings for furnaces figure. In 1929 the total natural graphite sold or used by producers was 6458 short tons valued at \$310,891, an increase of 15 per cent in quantity and 5 per cent in value compared with 1928. This total included 3555 tons of amorphous graphite valued at \$46,650 in 1929, and 2903 tons of crystalline valued at \$264,241. The amorphous graphite was used largely in paint manufacture while the crystalline was used in batteries, carbon electrodes, crucibles, lubricants, and stove polish. In 1929 there were imported 23,961 short tons valued at \$1,065,186 and in 1930, 16,725 tons valued at \$122,426. Mexico supplies the larger part of the United States imports, together with Madagascar, Ceylon, and Canada, all of which are large producers.

At the end of 1930 there was a difference of opinion in the United States regarding the future of the American graphite industry, with a few operators believing that they could compete with producers abroad, while others maintained that the crystalline graphite industry of the United States was practically dead. Mines in Texas and Alabama, belonging to a company which was the principal producer in the United States for a number of years, closed down at the end of 1920 and did not reopen in 1930. Two other Alabama graphite plants operated only a portion of the year, while a third was organized to take over existing properties and operate in the future. The same condition prevailed at other plants, while the Canadian Graphite Corporation closed its plant and the Black Donald mine at Calabogie, Ontario, was in operation during part of the year. There was a slight decline in production of Mexican amorphous graphite, while Ceylon was feeling the competition of producers in Madagascar. The Korean amorphous graphite industry operated about as usual.

GRASSHOPPERS. See ZOÖLOGY.

GREAT BRITAIN. UNITED KINGDOM OF GREAT BRITAIN AND NORTHERN IRELAND. A constitutional monarchy comprising England, Scotland, Wales, Northern Ireland, the Channel Islands, and the Isle of Man. Capital, London; ruling sovereign in 1930, George V. The term Great Britain literally applies only to the island including England, Scotland, and Wales, but is often extended to include the other units of the United Kingdom. The British Empire comprises the United Kingdom, India, the dominions of Australia, Canada, Irish Free State, Newfoundland, New Zealand, and South Africa, and the various colonies, protectorates, dependencies, and other territories subject to the ultimate control of the British Parliament.

AREA AND POPULATION. The area of England, Scotland, Wales, the Isle of Man, and the Channel Islands is 89,041 square miles and that of Ireland, 32,586 square miles. (See IRELAND,

NORTHERN, and IRISH FREE STATE.) The estimated population of England, Scotland, and Wales on June 30, 1929, was 44,491,000, as compared with 44,375,000 on the same date in 1928 and 42,919,710 at the census of 1921. The growth of the population from 1925 to 1929 is shown in the accompanying table. It excludes the army, navy, and merchant seamen abroad.

BRITISH POPULATION, 1925 TO 1929

| Year (30 June) | England and Wales | Scotland | Total of Great Britain |
|-------------------|----------------------|-----------|---------------------------|
| 1925 | 38,890,000 | 4,893,032 | 43,783,032 |
| 1926 | 39,067,000 | 4,897,000 | 43,964,000 |
| 1927 | 39,290,000 | 4,895,000 | 44,185,000 |
| 1928 | 39,482,000 | 4,893,000 | 44,375,000 |
| 1929 * | 39,607,000 | 4,884,000 | 44,491,000 |

* Provisional figures.

The steady decline of the birth rate continued in 1929. Births in England and Wales totaled 643,673, as compared with 660,267 in 1928, while the rate per 1000 of population fell to 16.3 from 16.7 in 1928. Illegitimate births numbered 29,307; deaths, 532,525; marriages, 313,316; divorces, 3396. The Scottish population in 1929 continued to decrease. The small surplus of births over deaths was more than offset by emigration. Scottish births were estimated at 92,876; deaths at 70,917, and marriages at 32,992. The birth rate per 1000 of population was 19, as against 19.8 in 1928, and the death rate was 14.5 (13.3 in 1928). British emigration to places other than Europe in 1929 totaled 143,686 (136,834 in 1928), while 56,217 persons of British nationality entered Great Britain for permanent residence (59,105 in 1928). The surplus of British and alien emigrants over immigrants was 121,467. Of British subjects leaving the United Kingdom, 65,588 went to British North America, 30,709 to the United States, 18,377 to Australia, 6265 to India and Ceylon, 5766 to British South Africa, and 4700 to New Zealand. Emigrants assisted under the Empire Settlement Act increased from 47,855 in 1928 to 72,213 in 1929.

The population of London proper in 1929 was 4,430,000, as compared with 4,484,523 at the census of 1921. Greater London in 1928 had 7,849,000 inhabitants. The estimated populations of other English cities on June 30, 1928, with census populations of 1921 in parentheses, were: Birmingham, 968,600 (919,444); Liverpool, 872,600 (802,940); Manchester, 755,900 (730,307); Sheffield, 515,440 (490,639); Leeds, 476,500 (458,232). In 1929 Glasgow, Scotland, had 1,061,900 inhabitants (1,034,174 in 1921) and Edinburgh, 429,600 (420,264).

The British Empire, including the United Kingdom and adjacent islands, India and its dependencies, the various British dominions, colonies, and protectorates, the Anglo-Egyptian Sudan and territories administered under mandate of the League of Nations, had a total area of about 13,355,426 square miles and a population approximating 449,583,000 in 1928.

EDUCATION. Elementary education was free and compulsory between the ages of 5 and 14. In the year 1929 there was in England and Wales a total of 20,747 ordinary public elementary schools, with accommodation for 7,099,609 pupils and an average attendance of 4,909,404 pupils. In Scotland (1927-28), there were 2919 primary schools, with an average attendance of 586,440. The number of certified secondary and technical schools in England and Wales in 1928-

29 was 1812, with 460,736 pupils; in Scotland there were 252 secondary schools, with an average attendance of 155,368. The universities enrolled an aggregate of 48,645 students in 1928-29, of whom 33,871 were in 11 English institutions, 11,831 in four Scottish universities, and 2943 in the University of Wales.

AGRICULTURE. Arable land in England, Scotland, Wales, the Isle of Man, and the Channel Islands in 1929 totaled 13,133,000 acres; permanent pasture, 17,069,000 acres; and rough grazing land, 14,896,000 acres. The land was divided into 476,707 holdings, of which 219,180 were from 5 to 50 acres in extent, 151,427 from 50 to 300 acres, 91,293 from 1 to 5 acres, and 14,807 over 300 acres. The acreage and the yield, in tons, of the principal crops for the whole of Great Britain in 1928 and 1929 are shown in the accompanying table from the 1930 *Europa*.

ACREAGE AND PRODUCTION OF BRITISH CROPS, 1928 AND 1929

| | Acreage | |
|--------------------------|---------------|---------------|
| | 1928 Acres | 1929 Acres |
| Wheat | 1,453,756 | 1,380,918 |
| Barley | 1,296,905 | 1,220,806 |
| Oats | 2,640,546 | 2,742,572 |
| Beans | 160,653 | 147,272 |
| Peas | 69,305 | 78,692 |
| Potatoes | 633,045 | 663,578 |
| Turnips and Swedes | 1,098,696 | 1,069,154 |
| Mangolds | 298,883 | 299,901 |
| Hay | 6,635,159 | 6,795,806 |
| | Production | |
| | 1928 Tons | 1929 Tons |
| Wheat | 1,328,000 | 1,329,000 |
| Barley | 1,122,000 | 1,099,000 |
| Oats | 2,147,000 | 2,277,000 |
| Beans | 133,500 | 112,600 |
| Peas | 58,025 | 64,090 |
| Potatoes | 4,545,000 | 4,743,000 |
| Turnips and Swedes | 16,613,000 | 14,909,000 |
| Mangolds | 5,776,600 | 5,711,800 |
| Hay | 7,302,000 | 6,286,000 |

Livestock in England and Wales on June 4, 1929, included 16,105,453 sheep, 5,957,594 cattle, 2,366,543 swine, and 999,273 horses; in Scotland, 7,555,520 sheep, 1,232,945 cattle, 161,005 horses, and 142,217 swine. The agricultural production falls far short of supplying domestic needs and large quantities of cereals, potatoes, sugar, coffee, beans, cotton, flax, wool, and dairy products are imported annually.

FISHERIES. The catch of British fishing vessels in 1929 totaled 1,053,218 tons, valued at £19,151,429 (provisional figures, excluding shell-fish), as compared with 1,002,596 tons, valued at £17,897,438 in 1928. A total of 13,574 boats and 52,474 men were employed in the fisheries of Great Britain and Northern Ireland in 1928.

INDUSTRY. British industrial activity increased 5.8 per cent in 1929, as against a decrease of 1.2 per cent in 1928, according to the Board of Trade's index of industrial production. Based on production in 1924 at 100, the general index number (for manufacturing and mining industries combined) was 106.8 for 1927, 105.5 for 1928, and 111.6 for 1929. Corresponding indexes for specific commodity groups were as follows for 1928 and 1929, respectively: Mines and quarries, 89.2 and 96.6; iron and steel and manufactures thereof, 102.3 and 114; nonferrous metals, 119.3 and 120.5; engineering and shipbuilding, 113.1 and 120.9; textiles, 99.9 and 98.5; chemical and allied trades, 110.3 and 112.5; leather and boots

and shoes, 102 and 98.5; food, drink and tobacco, 101.9 and 106; gas and electricity, 126 and 135.7.

The output, in thousands of metric tons, of the principal mineral and metallurgical industries in 1929, with comparative figures for 1928 in parentheses, was as follows: Coal, 260,832 (241,284); coke, not available for 1929 (12,035); pig iron, 7704 (6720); steel ingots and castings, 9804 (8664); lead, 10.9 (8.7); zinc, 59.4 (56.3). The output of cotton yarn in 1929 was estimated at 1,269,600,000 pounds (1,299,600,000 in 1928); of rayon, 56,904,000 pounds (54,240,000 in 1928); of motor cars, 239,000 (212,000 in 1928). The tonnage of new ships launched was 1,524,000 (1,444,000 in 1928) and the gross tonnage under construction Dec. 31, 1929, was 1,560,000 (1,243,000 at the end of 1928). Units of electricity generated in 1929 totaled 10,878,981, as compared with 9,927,851 in 1928. In 1930, steel production declined to 7,298,300 tons and the pig-iron output to 6,196,800 tons.

Due to the boycott in India and the curtailment of demand in other foreign markets the British cotton-manufacturing industry in 1929 and 1930 was extremely depressed. It had lost ground steadily since the boom year of 1920, however. British cotton spinning and weaving companies declined from 1974 in 1920 to 1805 in 1929; the number of spindles, from 60,079,394 to 59,133,966; and the number of looms, from 798,083 to 739,887. The number of looms idle at the close of 1929 was estimated at 96,000 or about 13 per cent of the total. The shipbuilding industry in 1929 had the best year since 1920, with the exception of the abnormal period of 1927, but the output of shipping tonnage in 1929 was approximately 20 per cent below the pre-war average. Rationalization of the British shipbuilding industry through the scrapping of superfluous or obsolete shipyards was undertaken by the National Shipbuilders Security, Ltd., organized Feb. 28, 1930, with a board of directors representing the principal shipbuilding companies of the Kingdom. Although Great Britain in 1930 was building more than 50 per cent of the world's tonnage, the decline in naval construction, and the increasing size of ships, entailing a smaller number of berths for the same tonnage, resulted in the agreement for orderly curtailment of redundant facilities. See SHIPBUILDING.

A scheme for the rationalization of the coal-mining industry in Cheshire and Lancashire was agreed upon Oct. 27, 1930, by the owners of 140 pits producing about 18,000,000 tons of first-grade coal annually. Progress in electrification of industry continued. The first unit of a national system of electrical power generating plants and transmission lines, with which the Central Scotland Electricity Board planned to link virtually all the communities of Scotland, was inaugurated the first week in May when a \$4,000,000 plant-extension project at the Portobello power station was formally opened. The first unit of the Lochaber hydro-electric power project in Scotland was inaugurated also in 1930; this project was the largest undertaking of its kind in the kingdom and included a 15-mile rock tunnel. The available water-power resources of Great Britain are estimated at 900,000 horse power, of which 210,000 horse power were developed in 1922.

At the end of 1929 there were 6,378,000 members of coöperative retail distributive societies in the United Kingdom. Sales for the year totaled \$1,095,000 and the net surplus was \$132,000,000.

For business conditions in 1930 and political repercussions, see below under section on *History*.

COMMERCE. Total British imports in 1929 rose to £1,221,591,000, an increase of nearly £26,000,000, or 2 per cent, over 1928, while the total exports and reexports amounted to £839,297,000, a decrease of £4,500,000, or one-half per cent. The adverse trade balance of £382,294,000 was over £30,500,000, or nearly 9 per cent, larger than in 1928. As compared with 1928, the volume of trade was greater than indicated, as price levels in 1929 were lower. There was little indication of a definite recovery in the export trade, however. Coal exports, totaling £48,617,000, showed a marked increase, a gain which was more than offset by the £10,000,000 decline in exports of cotton manufactures which were valued at nearly £135,500,000, or 18½ per cent of the total exports. While exports of British products showed a slight increase, reexports of imported merchandise declined to £109,742,000, a figure £10,500,000, or nearly 9 per cent, lower than in the previous year.

British foreign trade in 1930 declined more than \$1,670,000,000, according to preliminary figures of the Board of Trade. Exports totaled \$2,852,764,730, a decrease of \$793,981,000 from 1929, and imports amounted to \$5,224,200,000, a decline of \$879,625,000. The heaviest declines were recorded in export items in cotton yarns and manufactures, iron and steel, silk and other textiles, machinery, chemicals and dyes, and coal. Exports of ships and aircraft showed an increase.

Reduced shipments to India were chiefly responsible for the decline in cotton exports in 1929 although Brazil, Switzerland, Germany, and British West Africa each took about £1,000,000 less than in 1928. The decline in the industry is illustrated by comparative figures for 1924, when cotton manufactures were valued at £200,000,000, or about 25 per cent of all exports. Other leading exports in 1929 were: Woolen manufactures, £53,000,000 (£57,000,000 in 1928); vehicles (including locomotives, ships, aircraft), £50,000,000 (£47,00,000); iron and steel, £68,000,000; non-ferrous metals and manufactures, £18,000,000; machinery, £54,500,000; electrical goods and apparatus, £13,000,000; chemicals, £26,500,000 (£25,500,000).

Of the total exports of the United Kingdom in 1929, 44.5 per cent went to other parts of the Empire, as compared with 45.3 per cent in 1928, and 46 per cent in 1927. British India, Australia, and the United States, in the order named, were the leading purchasers of British goods, their respective percentages of the total exports being 10.7, 7.4, and 6.2, as compared with comparative percentages for 1928 of 11.0, 7.7, and 6.4. Exports to the United States were valued at £45,581,000, or £1,084,000 less than in the previous year. Other leading customers, with the percentages of the total exports taken in 1929 and 1928 (in parentheses), were: Germany, 5.1 (5.7); Irish Free State, 4.9 (4.8); Canada, 4.8 (4.7); Union of South Africa, 4.5 (4.4); France, 4.3 (3.5); Argentina, 4 (4.3); Netherlands, 3 (3); New Zealand, 2.9 (2.7); Belgium, 2.7 (2.4); Italy, 2.2 (2); China, 1.9 (2.2); Japan, 1.8 (2); Egypt, 1.7 (1.5); Spain, 1.6 (1.4); Denmark, 1.5 (1.3); Sweden, 1.4 (1.3).

Among imports, the class of commodities including food, drink, and tobacco, comprising about 44 per cent of the total, increased by £5,300,000, or 1 per cent; raw materials and arti-

cles mainly unmanufactured increased by £4,900,000, or nearly 1½ per cent; and articles wholly or mainly manufactured, expanded by £16,500,000, or nearly 5 per cent. The value of imports of manufactures was higher than for any year since 1920.

The United States was again the leading source of imports, furnishing 16 per cent of the total (15.7 per cent in 1928) as against 6.7 per cent from Argentina (6.4 per cent in 1928), the second important source. Imports from other parts of the British Empire comprised 29.5 per cent of the total in 1929, as compared with 30.4 per cent in 1928, and 32.5 per cent in 1927. Other countries supplying British imports, with percentages for 1929 and 1928, respectively, were: Germany, 5.6 (5.3); British India, 5.2 (5.4); France, 4.6 New Zealand, 3.9 (3.9); Canada, 3.8 (4.8); Irish Free State, 3.7 (3.8); Belgium, 3.6 (3.6); Netherlands, 3.5 (3.6); Russia, 2.2 (1.8).

Bullion and specie movements, not included in the above figures, were the largest since 1920, with imports totaling £70,744,000 and exports, £86,682,000.

While the visible trade figures for 1929 showed an excess of imports over exports of £366,300,000, the Board of Trade estimated that invisible exports totaled about £517,000,000, leaving a total credit balance of £151,000,000, as compared with a corresponding balance of £152,000,000 in 1928 and £114,000,000 in 1927. Estimates of the various invisible items of trade in 1920 included: Excess of Government receipts from overseas, £22,000,000; net national shipping income, including disbursements by foreign ships in British ports, £130,000,000; net income from overseas investments, £285,000,000; net receipts from short interest and commissions, £65,000,000; net receipts from other sources £15,000,000. The total figures do not include the lending and repayment of capital.

Tourist expenditures in Great Britain in 1929 were estimated at over \$100,000,000, of which approximately \$40,000,000 was attributed to 142,000 American tourists who visited the country during the year. Preliminary returns for 1930 showed an increase of American tourists over 1929.

FINANCE. Due largely to a supplementary grant of £10,000,000 for unemployment relief, the Treasury operations for the fiscal year ended Mar. 31, 1930, resulted in a deficit of £14,523,000, instead of the surplus of £4,096,000 anticipated by the former Chancellor of the Exchequer, Winston Churchill, in his budget. Total ordinary revenue amounted to £734,188,748, as compared with the estimate of £746,060,000. Actual ordinary revenue in 1928-29 totaled £758,104,055, or £23,915,307 more than in 1929-30. Ordinary expenditure (1929-30) amounted to £748,712,000, including a Sinking Fund payment of £47,748,000, as compared with the estimate of £741,964,000.

Among revenue items, the stamp tax yielded only £25,670,000, against an estimate of £31,000,000, the decline being chiefly due to the Stock Exchange depression. To the diminution in consumption of alcoholic beverages was attributed the falling off of the excise tax yield from the £130,330,000 estimate to £127,500,000. The income tax produced practically the same amount as in 1928-29, the surtax fell short of the estimate by £1,500,000, while customs revenue was £1,000,000 higher than in the previous year. Post

Office receipts increased by £1,100,000, and motor duties by £694,000. Of the total expenditures, the service of the national debt took £307,251,685, as compared with the estimate of £304,600,000 and with actual payments of £311,490,566 in 1928-29.

Including self-balancing revenues and expenditures of the Post Office and road fund (£80,782,000) and other miscellaneous items the grand total of receipts in 1929-30 was £821,391,000 and of expenditures £1,065,710,000 (including the Exchequer balance on Mar. 31, 1930, of £6,125,000).

Much interest was attached to the first budget of the Labor Government, submitted to the House of Commons, Apr. 14, 1930, by the Chancellor of the Exchequer, Philip Snowden. He estimated that revenues for 1930-31 would amount to £789,445,000 (about \$3,836,700,000) and that expenditures would total £787,209,000 (about \$3,825,835,000), leaving an anticipated surplus of £2,236,000 (about \$10,857,000).

Under the budget, some £49,800,000 in additional revenues, required to meet increased expenditures for unemployment relief and other social insurance and to offset expected declines in beer, spirits, sugar, and other internal taxes, was to be raised chiefly through the following increases in direct taxation: Income tax, £21,000,000; surtax £7,500,000; estate duties, £3,000,000; customs and excise, £2,570,000; appropriation from rating relief suspense account, £16,000,000. The tax on the larger incomes, affecting about one-fourth of the 2,225,000 income-tax payers of the United Kingdom, was raised from 20 to 22½ per cent; the surtax and estate duties were raised proportionately and an additional tax of two cents a gallon was levied upon beer. The McKenna duties on motor cars, clocks, watches, motion picture films, and musical instruments were retained temporarily owing to the financial stringency, although at variance with Mr. Snowden's free trade theories. Various other "safeguarding," or protectionist, duties, were to be allowed to expire in the normal way, rather than repealed immediately. For the political aspect of the Snowden budget, see below under *History*.

The above figures for 1930-31 exclude the self-balancing Post Office and road funds, estimated to aggregate £83,835,000, and rating relief suspense account, which was calculated to balance at £20,103,000. Returns for the first half of the fiscal year 1930-31 showed an excess of expenditure over income of £58,218,866, as compared with a deficit of £50,861,376 in the first half of 1929-30.

The total national debt on Mar. 31, 1929, stood at £7,620,800,000, of which £6,536,100,000 represented the domestic debt and £1,084,700,000 the foreign debt. On Mar. 31, 1928, the total debt stood at £7,631,000,000. War debts payable to Great Britain in 1930 amounted to £17,700,000 and German reparation payments, £16,800,000, making a total of £34,500,000. In the same year, British debt payments to the United States totaled £33,038,000. Up to the end of 1929, Great Britain had paid the United States £279,564,000 in war debts and had received from her debtors £135,025,000, leaving a balance of £144,539,000 (about \$700,000,000) in excess payments to America over receipts from her debtors.

The total of foreign loans floated in Great Britain in 1929 was only \$130,000,000 short of the total floated in the United States, whereas in 1928 the United States was about \$500,000,000 ahead, according to a study made for the Finance

and Investment Division of the U. S. Department of Commerce. The foreign loans floated in Great Britain totaled \$541,468,153 in 1929 and \$768,300,000 in 1928. Comparative American totals were \$671,230,806 in 1929 and \$1,250,959,000 in 1928. Great Britain's net national wealth in 1930 was estimated by Sir Josiah Stamp at \$90,225,000,000, as compared with \$71,550,000,000 in 1914.

SHIPPING. The net tonnage of vessels cleared from British ports in 1929 amounted to 68,684,201 tons, as compared with 64,444,282 tons in 1928 and 63,500,026 in 1927. The net tonnage entering and clearing the Port of London in 1929 (including foreign, Empire, and coastwise trade) was 57,500,000 as compared with 32,750,000 in 1919. Pooling of the facilities of the six largest British ship lines on the North Atlantic in order to eliminate wasteful competition was announced early in November, 1930. The pool, which was considered an answer to the previous rationalization programme of the larger German ship lines, comprised the Cunard, White Star, Anchor, Red Star, Canadian Pacific, and Atlantic Transport lines.

At the beginning of 1929, vessels registered as belonging to the United Kingdom numbered 18,048, of 12,259,203 net tons, as compared with 17,981 of 11,853,329 net tons registered a year earlier. Of the 1929 total, 12,640 vessels of 11,763,192 net tons were steam and motor vessels. The contract for a new Cunard liner of 73,000 tons, to cost between \$4,000,000 and \$5,000,000, was awarded Dec. 1, 1930. The liner was regarded as a British effort to recapture the Atlantic speed record from Germany. It was to be completed in three years. See **SHIPPING**.

INTERNAL COMMUNICATIONS. Railway lines open for traffic at the beginning of 1929 totaled 20,386 miles, divided principally among the four great railway systems, as follows: London, Midland and Scottish, 7464 miles; London and North-Eastern, 6464 miles; Great Western, 3765 miles; and Southern, 2129 miles. Railway revenues in 1929 totaled \$950,427,000, a sum \$6,330,000 larger than the revenues for 1928 but \$34,000,000 smaller than those for 1927. Of the 1929 income, \$736,000,000 was devoted to expenditure, representing a decrease of about \$10,000,000 from the expenditure in 1928 and of \$43,800,000 from that of 1927. Net receipts in 1929 were about \$214,500,000, or \$17,000,000 more than in 1928 and \$9,733,000 above those of 1927. Dividend payments made by the four British railway companies on outstanding stock for the year 1929 represented in every case an increase over disbursements made on the same shares in 1928. The Great Western in 1930 received Government approval for the expenditure of £3,000,000 for further improvements to its dock system in the southern part of Wales.

Light railways open for traffic in 1928 totaled 2514 miles and there were about 3825 miles of canals (3641 miles in England and Wales). Registered motor vehicles in the country in September, 1929, numbered 1,434,256 (1,309,333 in September, 1928), and registered civil aircraft in 1929, 453. Air routes of the British Empire totaled 19,000 miles in 1929, as compared with 11,000 miles in 1928, and were expected to aggregate 35,000 miles at the end of 1930, according to Lord Thomson (q.v.), Secretary of State for Air. The 1929 mileage was divided as follows: Canada, 6500 miles; Australia, 5500; South

Africa, 1500; India, 715; and Great Britain, 5000. Two great trunk lines linking South Africa, and India and Australia with the United Kingdom via Egypt were being developed.

ARMY AND NAVY. The military system of the United Kingdom provides for a regular and territorial army and a reserve. Troops in the army serve both at home and abroad. Territorial troops serve only at home in peace times. The regular army in 1929-30 totaled 206,655, of whom 59,987 were in India. The strength of the territorial army on Jan. 1, 1930, was 6864 officers and 129,066 of other ranks, exclusive of the permanent staff. (See **MILITARY PROGRESS**.) The accompanying table from the *Statesman's Year Book* for 1930 shows the number of classes of the more important units of the British fleet, including the ships and vessels of the dominions. See **NAVAL PROGRESS**.

BRITISH NAVY: BY CLASSES OF SHIPS

| Class | Completed by end of | | |
|------------------------------------|---------------------|------|------|
| | 1927 | 1928 | 1929 |
| Battleships and battle cruisers .. | 20 | 20 | 20 |
| Cruisers | 50 | 50 | 54 |
| Aircraft carriers and tenders ... | 7 | 7 | 7 |
| Flotilla leaders and destroyers .. | 174 | 157 | 150 |
| Submarines | 56 | 51 | 53 |

The Royal Air Force in March, 1929, comprised 65 regular and eight Special Reserve or Auxiliary Air Force squadrons, each squadron consisting of 12 airplanes.

GOVERNMENT. The head of the state, George V, was born June 3, 1865, and succeeded to the throne May 6, 1910. The Cabinet in 1930 was composed as follows: Prime Minister and First Lord of the Treasury, James Ramsay MacDonald; President of the Council, Lord Parmoor; Chancellor, Lord Sankey; Privy Seal, Vernon Hartshorn; Chancellor of the Exchequer, Philip Snowden; Home Affairs, John Robert Clynes; Foreign Affairs and Deputy Leader of the House of Commons, Arthur Henderson; Dominions, J. H. Thomas; Colonies, Lord Passfield; War, Thomas Shaw; Air, Lord Thomson (killed in the R-101 disaster and succeeded Oct. 14, 1930, by Lord Amulree); Secretary of State for India, William Wedgwood Benn; Admiralty, Albert Victor Alexander; President of the Board of Trade, William Graham; Health, Arthur Greenwood; Agriculture and Fisheries, Christopher Addison; Education, Sir Charles Philips Trevelyan; Labor, Margaret Bondfield; Works, George Lansbury; Secretary of State for Scotland, William Adamson.

The composition of Parliament following the general election of May 30, 1929, was as follows: Labor, 288; Conservatives, 260; Liberals, 59; Independents, 8.

HISTORY

Foreign and domestic problems of unprecedented magnitude confronted Great Britain and the Empire on every hand in 1930, testing to the utmost the statesmanship of Premier MacDonald and his Labor government. Industrial depression and increasing unemployment placed heavy burdens upon the Ministry, while four important conferences—the London Naval Conference, the Imperial Conference, the Round Table Conference on India, and the negotiations with the Egyptian Nationalist delegation for revision of British-Egyptian treaty relations—focused the attention of the world upon the British capital.

The Government attacked its problems courageously. Yet its prestige steadily declined as the industrial depression grew more acute and the Imperial Conference adjourned without bringing the expected economic benefits. Municipal and by-elections during the year showed a strong trend toward Conservatism, and particularly toward the protectionist wing of the Conservative party. That the Labor government lived throughout 1930 was due to divisions in the ranks of both Conservatives and Liberals and to the reluctance of the Opposition to assume the responsibilities of government while the Indian and unemployment problems appeared unlikely of immediate solution. The overthrow of Labor and a new general election was generally anticipated for 1931.

It was recognized that the stresses and strains of the year were symptomatic of a radical reshaping of not only the political fabric of the Empire but also of the social and economic organization of the British nation. Labor extended the process, already inaugurated by its Conservative and Liberal predecessors, of taxing the landed aristocracy out of existence. "Gradually but very surely," wrote Sir Philip Gibbs in June, "Britain is being changed into a middle-class, bourgeois nation like Belgium or Holland."

Tension upon the political structure of the Empire was most powerful in India, Egypt, Iraq, Palestine, and Malta (see articles on each under *History*), politico-religious developments in the latter possession giving rise to a serious quarrel with the Vatican. Diplomatic relations with Soviet Russia, established late in 1929, were maintained despite repeated Conservative protests, and a temporary trade agreement was concluded in April which extended most-favored-nation treatment to both parties and authorized the establishment in Britain of a Soviet trade delegation having diplomatic privileges and immunities. But the deep-seated hostility between the two nations was nourished by the activities of the Communist International in India and other parts of the Empire, by Russia's invasion of additional British markets, and by Soviet fears of British aggression. The broadcasting of inflammatory communistic appeals to British workers from Soviet radio stations evoked sharp protests from Foreign Secretary Henderson in December.

In contrast to these threats to the Empire's peace and security were the termination of the naval rivalry with the United States through the treaty negotiated at the London Conference early in the year and the settlement of the reparations problem in accordance with the terms demanded by the Chancellor of the Exchequer (see *REPARATIONS*). Labor statesmen distinguished themselves as leaders in the movement toward the peaceful stabilization of Europe under the aegis of the League of Nations.

DOMESTIC PROBLEMS. The revival of British industry and trade was the major political issue throughout 1930, taking precedence over the immensely important developments in India and at the London Naval Conference. The Government failed utterly to redeem its election promises to reduce unemployment. On the contrary, the number of unemployed increased to 2,176,191 on October 6, the largest total in the preceding eight years and 768,966 more than on Oct. 6, 1929 (see *UNEMPLOYMENT*). The economic situation was almost continuously under discussion in Parliament, the press, and political meetings.

The Government carried out its other election promises of important social and economic legislation in the amended widows' pension and unemployment insurance laws, a housing bill giving local authorities power to eliminate slum areas, and a coal mines bill (finally approved July 23) which not only improved working conditions but made possible the first steps toward the reorganization of that industry. Another bill, which had not been passed by the end of the year, would raise the school-leaving age from 14 to 15. The Consumers' Council bill promised protection against excessive prices of household necessities, and the 1930-31 Labor budget (see page 325 under *Finance*), in the words of Premier MacDonald, "laid on the backs of those better fitted to bear it the burden that resulted from our predecessors' failure to meet their bills." Conservatives interpreted the budget differently, predicting an even more serious financial and economic crisis unless the process of "robbing a hard-working Peter to pay an unemployed Paul" was checked.

In its struggle with industrial depression, the Labor Cabinet enlisted the coöperation of "the city," or London financial interests. The Bank of England, abandoning its traditional policy of isolation, sponsored organizations to assist manufacturing firms and entire industries in rationalization and the acquisition of new capital. A national economic advisory council to assist the Government in its plans for economic reconstruction was appointed by Premier MacDonald on February 12. In addition to the Prime Minister, Chancellor of the Exchequer, Lord Privy Seal, president of the Board of Trade, and Minister of Agriculture and Fisheries, the board included Sir Arthur Balfour, Ernest Bevin, secretary of the Transport and General Workers' Union; G. D. H. Cole, Oxford economist; Sir Andrew Duncan, a director of the Bank of England; and Sir Josiah Stamp and J. M. Keynes, economists.

Labor's economic policies were strenuously opposed by the Conservatives and some Liberals. On July 9, the Government escaped defeat by only three votes during a discussion of Mr. Snowden's budget. The radical group within the Labor party, however, considered the Premier's programme far too moderate. Their demands for "socialism in our time" precipitated a schism within the Labor ranks. On February 17 Premier MacDonald withdrew from active participation in the Independent Labor party, controlled by the Left Wing. An ultimatum from the Parliamentary Labor party on March 26 demanded that the Government announce new plans for the alleviation of unemployment within two weeks. The Cabinet accordingly increased expenditures on roads and other public works and authorized the borrowing of \$250,000,000 instead of the contemplated \$200,000,000 for distribution in unemployment benefits. Disappointment with the provisions of the Snowden budget led to another Left Wing resolution on April 19. It called for a 100 per cent tax on large estates, state acquisition and operation of the Bank of England, and reconstruction of the Parliamentary Labor party so that its votes in Parliament would be in line with the party platform. Complete independence for India and Egypt was also urged. Despite Left Wing and Conservative objections, the budget measure was passed May 1, 255 to 139, with the Liberals supporting the Government and many Conservatives abstaining from voting.

On May 20 Premier MacDonald faced a new revolt within his party. Sir Oswald Mosley, Chancellor of the Duchy of Lancaster, who had been associated with Mr. Thomas in dealing with unemployment, resigned in protest at what he considered the Government's half-hearted measures. The Prime Minister's unemployment programme, however, was sustained, 210 to 29, at a Labor party meeting May 22, and again, by a majority of 29, during a debate in the House of Commons May 28, in which the Conservatives demanded protection as a cure for unemployment.

That criticism of his unemployment and other policies had not passed unnoticed, was evidenced when Premier MacDonald ended his first year in office by reorganizing his Cabinet. On June 3 he created a new Cabinet post by appointing J. H. Thomas as Secretary of State for the Dominions. Lord Passfield, who until then had served as Secretary of State for the Dominions and Colonies, remained in charge of colonial affairs. The Premier stated that the Imperial Conference scheduled for September made the division of work of the Ministry of Dominions and Colonies imperative. Mr. Thomas's work as Minister for Employment was taken over by a committee, in which he assumed the important task of persuading the Dominions to give further opportunities for the improvement of British trade and for British unemployed. On June 5, Vernon Hartshorn, Labor member on the Simon Commission, was appointed to succeed Mr. Thomas as Lord Privy Seal. Dr. Christopher Addison, once Minister of Health in the Lloyd George Cabinet, became Secretary of Agriculture, replacing Noel Buxton, who was elevated to the peerage. Ben Turner was succeeded as Secretary of State for Mines by Emanuel Shinwell, who held the same office in the Labor Government of 1924. Major Clement Richard Attlee, another member of the Simon Commission, was appointed Chancellor of the Duchy of Lancaster as successor to Sir Oswald Mosley.

A radical trend among British trade unionists was indicated at the Trades Union Congress at Nottingham in September. The Congress went on record as favoring a 44-hour week, an adequate state pension for all persons reaching the age of 60, and the assumption by the Government of the Bank of England's power to finance national undertakings. Suspicion of the movement toward rationalization of industry was revealed in the debates.

Internal strife was not confined to the Labor party alone. The old Liberal schism between the followers of the late Lord Asquith and of David Lloyd George reappeared to end the truce arranged between the factions previous to the general elections in May, 1929. Lloyd George's leadership was repudiated by Viscount Grey of Falloiden, former Foreign Secretary, speaking before the Liberal Council on January 14. He declared that unless Lloyd George stepped out before the next general election, the Liberal Council, composed of Asquith's former supporters, would fight under its own organization. Lloyd George replied January 20 with a conciliatory appeal for unity, but without offering to resign.

EMPIRE FREE TRADE. The Conservative policy of "safeguarding," consisting of moderate protective duties on a few imports from both the Dominions and foreign countries, evolved toward a policy of Empire free trade as a result of a bitter party struggle during the year. Empire

free trade had been vigorously advocated by Lord Beaverbrook in his chain of newspapers, as a remedy for Britain's economic ills. He proposed the development of the Empire as a single economic unit, with free trade between its component parts and with a general Empire tariff within which the Dominions would be allowed local tariffs to protect nascent industries. Conservative leaders at first received the proposals without enthusiasm, pointing out the difficulties of persuading India and the Crown Colonies to discriminate against foreign manufactures and the Dominions to withdraw their industrial tariffs on behalf of British manufactures.

Provoked by this lack of response, Lord Beaverbrook on February 17 launched the United Empire party, a new political party pledged to promote the Empire Free trade policy. He was joined by Lord Rothermere, owner of another great newspaper chain. Their powerful influence was directed toward unseating former Premier Stanley Baldwin as leader of the Conservative party. Baldwin sought to reconcile conflicting opinion in his party by extending his "safe-guarding" plan while pledging the party not to impose food taxes without first securing the consent of the country by referendum. He further promised to call an Imperial Conference to consider the whole question of Imperial relations, if the Conservatives returned to power at the next election. At a party meeting June 24, he won a vote of confidence on his plan for a national referendum on food taxes. His compromise policy failed to satisfy his critics, however, and in by-elections during the summer and autumn the United Empire candidates made serious inroads into the Conservatives' electoral strength. The general trend of sentiment seemed to be away from the traditional policy of free trade, espoused by both Labor and Liberals, and toward a policy of high protective tariffs and greater economic unity within the Empire. Despite strong opposition, Mr. Baldwin's leadership was confirmed at a meeting of Conservative members of Parliament and prospective candidates on October 30, when a resolution demanding his resignation was defeated 462 to 116.

The movement toward tariff protection found vigorous supporters in both the Liberal and Labor parties and the issue was widely debated in non-political circles. A group of British bankers on July 4 issued a pronouncement in favor of free trade within the Empire and a protective tariff on imports from all other countries. On August 31 a larger group of bankers and manufacturers, headed by Viscount Grey, demanded the retention of free trade.

The Labor Government's refusal to accept a preferential tariff at the Imperial Conference (see below) was sustained by the House of Commons, 299 to 234, in a test vote November 27. The House of Lords, however, on December 2 censured the Government's conduct of the Imperial Conference by a vote of 74 to 10. That the Liberals would continue to support Labor on the tariff issue was promised by Lloyd George in a speech before the Liberal candidates for Parliament on December 5. He declared that a general election at that time would shackle Britain for a generation with "a disastrous protectionist policy." In return for Liberal support, the Government indicated its intention of introducing an electoral reform measure satisfactory to the Liberals early in 1931. Foreign Minister Henderson asserted

that the bill would probably enable Labor to remain in office for an additional two years. The interim previous to the adjournment of the Commons on December 19 was marked by Sir Oswald Mosley's proposal of December 6 for the establishment of an emergency cabinet of five members, composed without regard to party affiliations, to extricate Britain from her economic slough. Late in November, the Government intervened in a dispute between miners and coal owners which threatened a nation-wide coal strike when the new Mines Act became effective December 1. The strike was confined mainly to the Scottish fields.

THE IMPERIAL CONFERENCE. The Labor government was forced to face the tariff problem at the quadrennial Imperial Conference, which convened in London October 1 and adjourned November 14. Premier Bennett of Canada proposed (October 8) that all members of the British Commonwealth of Nations raise by 10 per cent their tariffs on imports from non-British nations. His proposal was supported by the Premiers of Australia, New Zealand, the Irish Free State, Newfoundland, and South Africa, and by the Conservative leader, Mr. Baldwin, but was flatly rejected on November 12 by the Labor Government of Great Britain, due principally to the unyielding opposition of Mr. Snowden. A section of the Labor Cabinet was reported to have favored acceptance of Premier Bennett's scheme. Counter proposals of the MacDonald Government for bulk purchases abroad by Government boards were rejected by the Dominions as a basis for awarding preference to imports from the Mother Country.

A price stabilization scheme and a quota system for the distribution of British purchases of wheat among the Dominions in return for tariff concessions were discussed also, the wheat quota plan being provisionally approved by the Canadian delegation. The only immediate trade advantage offered the Dominions was a promise to extend by three years the existing tariff preferences accorded them by Britain—a heritage from the Baldwin government which Mr. Snowden had repeatedly threatened to repeal at the first favorable opportunity. This concession was considered of such trifling importance that only South Africa agreed to extend her existing tariff preferences to Britain for the same length of time. Some of the Dominions, however, concluded limited tariff agreements among themselves. Canada accorded preference to South African sugar. Further consideration of the Empire's economic policy was postponed to an Imperial Economic Conference to be held in Ottawa within the next 12 months.

Failure of the conference to achieve economic unity within the Empire was a serious blow to the prestige of the Labor government. The conference, however, initiated far-reaching changes in the political relations between the United Kingdom and the Dominions, placing all on a basis of complete equality. It was agreed that the Governor-Generals of the Dominions, theretofore appointed by the King on recommendation of the British government, were henceforth to be appointed by the King in consultation with the Dominion governments alone. This left the way open for the appointment of native-born subjects of the respective Dominions, if desired. New legislation, to be known as the "statute of Westminster," was to give legal effect to the independent status of the Dominions won in 1926.

Thus the only remaining legal bond between the Dominions and the United Kingdom was a common allegiance to the throne. Sir Muhammad Shafiq, spokesman for the Indian delegation, voiced the hope that India would soon be admitted to a similar status. See AUSTRALIA under *History*.

The extension of complete equality to the Dominions was made in response to the demands of South Africa and the Irish Free State. Premier Hertzog, the Nationalist leader in South Africa, asked that as a primary condition of all relationship with the Empire, South Africa should be accorded the unqualified right to secede at will. He did not advocate secession, but recognition of the right to do so. No formal recognition of this right was made by the conference, the general opinion being that it was implied in the recognition of the equality of the Dominions by the Imperial Conference of 1926. Speaking for the Labor Government, J. H. Thomas, Minister for the Dominions, declared in an interview September 29 that "nobody questions that right."

Foreign Minister Patrick Gilligan of the Irish Free State, addressing the opening session of the conference, said that for his country "the recognition of our position as a free and sovereign state comes before all other considerations." "While certain elements of the old system of imperial control were maintained," he continued, "even though it was only in form, the will to co-operate was correspondingly weakened. We most earnestly urge upon the present conference the need of removing finally those last obstacles to harmonious and easy intercourse."

No decision was reached on the Irish demand for abolition of appeals from the Dominions to the Privy Council in Great Britain. It was agreed, however, that justiciable disputes between members of the Commonwealth might be submitted, if desired, to *ad hoc* tribunals of five qualified persons, instead of to the Privy Council. Other decisions of the conference were listed in press reports as follows: (1) an act giving Dominion Parliaments full equality with the British Parliament was to supersede the 1865 colonial laws validity act; (2) Consent of all seven Parliaments of the Commonwealth must precede any change in the succession to the British throne or in royal titles; (3) Common British citizenship remained unaffected, but all Dominions were to enjoy the right, already exercised by Canada, of determining their own nationals; (4) The Dominions received full authority to legislate over all ships in their territorial waters as well as over their own ships in extraterritorial waters; (5) Acceptance of amendments to the League of Nations Covenant discussed at the 1930 Assembly were recommended, with the stipulation that their effectiveness be conditioned on the entry into force of a general treaty for reduction and limitation of armaments. See LEAGUE OF NATIONS.

Agreement was reached at the Imperial Conference also on the completion of the Royal Air Force airbase at the Singapore naval base, the completion of existing work on the new Singapore dockyard, and the postponement of additional work on the purely naval projects at Singapore for five years. The Admiralty announced that up to July, 1930, \$12,500,000 had been spent on the base out of an estimated total expenditure of \$43,000,000 needed to complete the project.

COLONIAL GOVERNORS' CONFERENCE. While the relations of the larger units of the Empire were thus drastically readjusted, the link between the various British colonial possessions was drawn closer by recommendations adopted at a conference of colonial governors held in London during July. These included proposals for the creation of a colonial service, corresponding to the diplomatic service, from which administrators were to be drawn; the establishment of a film censorship, particularly in the colonies of tropical Africa; and the inauguration of an Empire broadcasting scheme.

LONDON NAVAL CONFERENCE. The five-power conference for the limitation of naval armaments, called by the British government following the conversations between Premier MacDonald and President Hoover in Washington in 1929, convened in the British capital Jan. 21, 1930. Three months later (on April 22) a treaty was signed which terminated, temporarily at least, the naval building rivalry between the United States, Great Britain, and Japan. France and Italy, the other Powers represented, could not agree upon the limitation of the main categories of naval vessels involved and signed only four of the five parts of the treaty, which was signed in full by the delegates of the other three Powers. For details of the treaty, see NAVAL PROGRESS.

Despite the opposition of Winston Churchill and ranking naval officers, the naval treaty was ratified by the House of Commons on July 24 and by the House of Lords July 29. Ratifications by the United States and Japan were deposited in London early in the autumn, bringing the three-power pact into effect. A British White Paper on the results of the Naval Conference issued April 15 estimated that the treaty would save the country about £67,000,000 from 1930 to 1936. Of this £50,000,000 represented the cost of new battleships authorized by the Washington Treaty, £4,000,000 the economy due to immediate reduction of the battleship fleet to 15 vessels; and £13,000,000 the saving on cruisers, destroyers, and submarines, as compared with the final British proposals at the unsuccessful naval conference held in Geneva in 1927.

OTHER EVENTS. On June 5 Premier MacDonald announced that the Government had decided against the channel tunnel project, which had been approved earlier in the year by the Government's economic committee and later rejected by the committee of Imperial defense on "strategic grounds." Despite the Ministry's opposition, a resolution favoring construction of the tunnel failed of passage in the House of Commons by only nine votes.

The desperate economic situation brought about in the British West Indian possessions and in British Guiana by the low world prices for sugar resulted in an appeal for financial assistance to the Labor Government. The Government extended aid through the Colonial Development Fund but in amounts considered inadequate by the various colonies. See TRINIDAD, BRITISH GUIANA, BARBADOS, WINDWARD ISLANDS, LEEWARD ISLANDS, and JAMAICA. Reports reaching Washington during the year that Great Britain was seeking to buy Greenland from Denmark were denied by the Danish Premier.

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GREECE. A republic in southeastern Europe, comprising the lower Balkan peninsula and many islands in the Aegean Sea; formerly a constitutional monarchy. King George II was forced to leave Greece, Dec. 18, 1923, and the Republic was established Apr. 13, 1924, as the result of a plebiscite. In continental Greece are included Southern Macedonia, Western Thrace, and Epirus; the chief island possession is Crete. Capital, Athens.

AREA AND POPULATION. Greece increased her area by 20,730 square miles as a result of the Balkan Wars of 1912-13 and by an additional 3182 square miles under the Treaty of Lausanne (1923), the total area in 1930 being 49,912 square miles. The population at the census of May 15, 1928, was 6,204,684, as compared with 5,021,790 on the same territory in 1920. About 1,400,000 Greek refugees from Turkey were finally established in industry and agriculture by 1930. The chief cities, with their populations in 1928, are Athens, 452,919; Peiraeus (Piræus), 251,328; Saloniki, 236,524; Patras, 61,278.

EDUCATION. School attendance for children between the ages of 7 and 12 is nominally compulsory. In 1927-28, there were 344 infant schools, with 16,728 pupils; 8277 primary schools, with 645,353 pupils; 690 high schools, with 100,663 pupils; 27 commercial schools, with 3215 pupils; and 15 agricultural schools, with 534 pupils. There were three universities (two at Athens and one at Saloniki), with 133 professors and 6491 students in 1928. At the census of 1921, 37 per cent of the males and 70 per cent of the females were illiterate.

PRODUCTION. Primarily an agricultural country, Greece is mainly dependent for her prosperity upon her two main export crops—tobacco and currants. Only about 11 per cent (3,440,710 acres) of the total area was cultivable in 1928, of which 2,813,330 acres were devoted to cereals. The production, in quintals, of the cereal crops in 1929 was: Wheat, 3,805,000; barley, 1,753,000; oats, 1,041,000; maize, 1,561,000. Preliminary returns for the other crops in 1929, with comparative figures for 1928, were: Tobacco, 176,000,000 pounds (129,000,000); currants, 250,000,000 Venetian pounds (280,000,000). The almond, walnut, and filbert crops were larger than in 1928. Rice, grapes, and cotton are other products. Livestock in the country in 1928 included 6,920,361 sheep, 4,919,118 goats, 910,203 cattle, 419,524 swine, 290,306 horses, 342,870 asses, and 149,610 mules. Rapid progress on the

Republic's extensive land reclamation, drainage, and irrigation programme was reported in 1929. Completion of the first stage of the Saloniki Plain scheme reclaimed 15,000 acres of arable land. A similar project for the Struma River Valley was initiated.

There are more than 4,000,000 acres of publicly-owned and almost 2,000,000 acres of privately-owned forests. The production of timber in 1928 was valued at \$697,750, according to the Forestry Bureau. Mineral and metallurgical production in 1927 was valued at 266,855,857 drachmas. Iron ore, iron pyrites, lead, magnesite, chromites, emery, zinc, lignites, and salt are the principal minerals worked.

The value of industrial production in 1929 was estimated at about 5,716,105,000 drachmas (1 drachma equalled about \$0.013 in 1929), as compared with 6,640,000,000 drachmas in the previous year. Olive-oil production was estimated at 90,000 metric tons (107,000 metric tons in 1928). The rug industry experienced a difficult year and conditions of industry were generally less favorable than in 1928. Wine, textiles, leather, and soap are other industrial products.

COMMERCE. As compared with 1928, imports in 1929 showed an increase of 7 per cent in value and exports an increase of 11.2 per cent. Nevertheless, the adverse balance increased slightly to 6,290,335,000 drachmas, as against 6,127,047,000 drachmas in 1928. The total value of imports was 13,275,531,000 drachmas (\$171,254,000) and of exports 6,985,196,000 drachmas (\$90,109,000). Corresponding figures for 1928 were: Imports, 12,409,122,000 drachmas (\$161,319,000); exports, 6,282,075,000 drachmas (\$81,667,000). Shipments of tobacco, olive oil, raisins, olives, and figs increased in value, while exports of currants decreased. In 1930, imports declined to 10,851,000,000 drachmas, exports to 5,918,000,000, and the excess of imports to 4,933,000,000.

The United States was again the principal source of imports, furnishing 15.8 per cent of the total (15.8 in 1928). Great Britain followed with 12.5 (14.5); Germany, 9.4 (8.6); France, 6.8 (7.0); Italy, 5.6 (5.2); and Canada, 5.4 (7.1). Exports went principally to Germany, which took 23.1 per cent of the total in 1929 (25.9 in 1928); Italy, 18.3 (16.5); United States, 15.9 (20); United Kingdom, 11.8 (13.2). Imports from the United States were valued at 2,090,933,000 drachmas (\$26,973,000) in 1929 and 1,957,454,000 drachmas (\$25,447,000) in 1928. Exports to the United States totaled 1,114,048,000 drachmas (\$14,371,000) in 1929 and 1,256,219,000 drachmas (\$16,331,000) in 1928.

FINANCE. The budget for the fiscal year ended Mar. 31, 1930, anticipated receipts of 9,855,000,000 drachmas and expenditures of 10,437,000,000 drachmas. Preliminary returns indicated a substantial increase in actual receipts and expenditures over the estimates. For 1930-31, revenues were estimated at 10,534,378,073 drachmas and expenses at 10,525,652,925 drachmas. Of the revenues, 4,446,182,000 drachmas were to come from indirect taxation. The chief item of expenditure was an appropriation of 3,156,025,500 drachmas for the service of the public debt. The International Financial Commission reported that the gross returns from Greek mortgaged revenues in the calendar year 1929 totaled 4,231,302,300 drachmas, as compared with 4,063,836,200 drachmas in 1928. Tobacco-tax receipts increased by 64,238,000 drachmas and customs returns

by 112,407,300 drachmas over 1928 returns.

The public debt on Jan. 1, 1930, stood at 38,139,124,147 drachmas, of which 32,340,932,889 drachmas represented the funded debt, 3,403,863,410 drachmas the floating debt, and 2,394,327,848 drachmas the railway debt. On Jan. 1, 1929, the total debt amounted to 36,783,938,000 drachmas (\$478,191,000), or about \$80 per capita. The foreign debt was held chiefly in Great Britain, the United States, and France. In 1930, the Swedish match firm of Kreuger & Toll loaned the Hellenic government £1,000,000 at 85 with 6 per cent interest, repayable in 24 years. The proceeds were to be used for the erection of public school buildings. A total of 425,000,000 drachmas of new token coins were issued in 1930.

COMMUNICATIONS. There were nine railway systems with an aggregate length of 1991 miles of line in 1929, of which 884 miles were operated by the state. A deficit of 19,522,349 drachmas was incurred by the state railways in 1928. In 1929 there were about 8611 miles of highway in Old and New Greece and 570 miles were under construction. The Greek merchant marine in September, 1929, consisted of 535 steamships of 1,304,844 tons, including 115 passenger vessels of 78,276 tons. In 1928, a total of 25,776 steamers of 17,232,521 tons and 6692 sailing vessels of 352,729 tons entered the ports of the republic. Telegraph and telephone systems are owned by the Government. A new Ministry of Aeronautics, combining supervision of both military and civil aviation, was established in December, 1929. In the same year a regular weekly air service for mail and passengers was inaugurated by an Italian company between Brindisi, Patras, Athens, and Istanbul (Constantinople).

FOR ARMY AND NAVY, see MILITARY PROGRESS AND NAVAL PROGRESS.

GOVERNMENT. The Republic of Greece was established by a plebiscite on Apr. 13, 1924. The constitution, published on Sept. 22, 1926, was revised by the Chamber elected on Nov. 7, 1926. The new constitution proclaimed on June 3, 1927, provides, among other things, that a second House (Senate) consisting of 120 members shall be established, that Parliament shall be elected by direct, universal, and secret voting, and that the Senate shall be elected partly by the people, partly by the Parliament and Senate in a common meeting, and partly by the corporations of the different professions. President in 1930, Alexander Zaimis (elected Dec. 14, 1929). The Cabinet constituted June 7, 1929, was composed at the beginning of 1930 as follows: Premier, Minister of Health, and Minister of Air, Eleutherios Venizelos; Foreign Affairs, Andreas Michalakopoulos; War, Themistocles Sophoulis; Marine, V. Botzaris; Interior, G. Sideris; National Economy, P. Vourloumis; Agriculture, D. Spyrides; Social Insurance, E. Emmanouelides; Justice, C. Digas; Finance, George Maris; Communications, B. Karapanyotis; Education, A. Papandreou.

HISTORY

THE GRECO-TURKISH ENTENTE. While Greece on Mar. 25, 1930, celebrated the 100th anniversary of liberation from Turkish rule, negotiations were under way which a few months later terminated the long-standing enmity between the two nations, confirmed the *status quo* in the eastern Mediterranean, and settled the difficult problems arising from the Anatolian War of 1921. Significant of the changed attitude of the two

nations was the participation of the Turkish Minister to Greece and his staff in the anniversary celebration. The official Turkish attitude was that the Turkey of 1930 was a different country from that of 1830 and that the modern Turkey proclaims liberty instead of repressing it.

A preliminary Greco-Turkish accord, replacing the unsatisfactory agreement of December, 1926, was signed June 10, 1930, and ratified by the Turkish Grand National Assembly on the last day of its summer session. It provided for the final liquidation of the large-scale exchange of populations between the two countries arranged at the Lausanne Conference of 1923. The new agreement stipulated that Greece was to pay \$2,100,000 to the League of Nations Mixed Commission to be distributed in part to Turks who formerly owned property in Western Thrace, in part to Greeks whose property in Anatolia was confiscated, and the remainder to Greeks who left Turkey before the Treaty of Lausanne and who owned property in Istanbul. The Commission was authorized also to settle the question of the property left behind by Turks and Greeks who were exchanged, both Governments having agreed to compensate their respective nationals. The treaty recognized as established residents of Istanbul some 20,000 Greeks whose status had been in doubt for seven years.

The signing of the accord brought immediate protests from representatives of Greek refugees from Turkey, but Premier Venizelos on June 15 declared that his Government was determined to ratify the treaty. He announced that he would carry the issue to the country and call new elections, if opposition became serious. The agreement proved to be a preliminary to the still more important developments to follow. In the last days of October, Premier Venizelos and Foreign Minister Michalakopoulos paid an official visit to Istanbul and to the Turkish capital, where they signed two additional agreements with Turkey. One of these was a Convention pertaining to commerce, navigation, and Consular representation. The other was a treaty of friendship and arbitration, providing for the neutrality of either of the contracting parties in the event of the other being attacked by a third Power. A protocol attached to the arbitration pact provided for the maintenance of the existing naval equilibrium between the two countries, requiring each to give the other six months' warning of its intention to construct any new warship. Details of the naval agreement were to be worked out by Greek and Turkish naval experts. Only the question of the Turkish minority in Western Thrace and of the Greek minorities in Istanbul and the islands of Imbros and Tenedos remained as a possible cause of friction. The Greek Ministry of War on November 10 ordered the disposal at auction of a number of destroyers, two torpedo boats, one mine layer, one mine-sweeper, three gunboats, and two naval training ships.

While the healing of Greco-Turkish enmity was attributed in large part to the statesmanship of the veteran Premier of Greece, the conclusion of the pact of arbitration and friendship was proclaimed an Italian triumph in the struggle with France for predominance in the eastern Mediterranean. The Greco-Turkish entente was considered by Italy an indispensable preliminary to an Eastern Mediterranean compact including all three Powers and having for its object the maintenance of peace and of the *status quo* in that

region. Italy had previously concluded similar treaties of non-aggression and friendship with both Turkey and Greece. Turkish and Greek statesmen acknowledged publicly their indebtedness to Premier Mussolini for assistance in the conclusion of the new pact. In some circles, however, the Greco-Turkish pact was viewed as an effort to resist Italian pressure on both countries and Russian pressure on Turkey. The agreement was ratified by the Greek Chamber of Deputies on December 20.

THE BALKAN CONFERENCE. Preliminary steps toward greater economic unity and peace in the Balkans were taken during a conference held the first weeks in October in Athens. The conference was attended by unofficial representatives of Greece, Albania, Bulgaria, Rumania, Turkey, and Jugoslavia, and each delegation was accompanied by the Foreign Minister of its respective country. The United States, Russia, and the League of Nations were represented by observers. A plan for the union of Balkan states was adopted in principle October 9. Approximating in form the German Confederation previous to 1870, the proposed union would constitute an alliance of sovereign states within the League of Nations. The confederation was to be based on the unconditional exclusion of war among the members, economic coöperation, and cultural union. Minorities were to enjoy satisfactory protection.

Another resolution adopted by the conference requested the Foreign Ministers of Balkan states to meet annually to discuss means of promoting Balkan solidarity. The Balkan governments were urged to consider the proposals for mutual outlawry of war, peaceful settlement of all disputes, and mutual assistance in case of violation of the obligation to abstain from war. Provision was made for a special committee to examine the proposed pact and report at the next conference.

OTHER EVENTS. The absence of Premier Venizelos in Turkey was seized upon by adherents of the former dictator and President, Gen. Theodore Pangalos, to attempt a military *coup d'état* in Athens. The police discovered the conspiracy in time and arrested General Pangalos along with some 200 army officers and numerous civilians on October 29. The conspirators ascribed their plot to resentment at the conclusion of the Greco-Turkish pact. Shortly before, General Pangalos had been sentenced by a special court of the Chamber and Senate to two years' imprisonment and the loss of civil rights for five years on a charge of violating the law of Ministerial responsibility during his régime as dictator. The entire Cabinet resigned on December 21 and was reorganized the next day on a strictly Venizelist basis.

Russian and Bulgarian monks on Mount Athos complained to the League of Nations during the year that Greece had confiscated the greater part of the ecclesiastical property on the mountain.

See **TURKEY** and **ITALY** under *History*, and **CYPRUS**. Consult Eliot G. Mears, *Greece Today* (Stanford University Press, 1929).

GREEK ARCHÆOLOGY. See **ARCHÆOLOGY**.

GREEK STUDIES. See **PHILOLOGY**, **CLASSICAL**, for summary of recent work.

GREENE, FRANK LESTER. A United States Senator, died Dec. 17, 1930, in St. Albans, Vt., where he was born Feb. 10, 1870. After working with the Central Vermont Railway, he became reporter (1891), assistant editor (1892), and editor (1899-1912) of the *St. Albans Daily Mes-*

senger. In the Spanish-American War he recruited Company B, 1st Regiment, Vermont Volunteer Infantry, and at the close of the war was commissioned colonel and aide-de-camp on the staff of the Governor of Vermont. He was a member of a commission to prepare and propose amendments to the Vermont Constitution, delegate-at-large to the Republican National Convention (1908), and chairman of the Republican State Convention (1914). Sent to Congress in 1912 from the 1st Vermont District to fill the unexpired term of David J. Foster, he was reelected for five terms (1913-23). In 1922 he was elected to the U. S. Senate and reelected in 1928 for the term ending Mar. 3, 1935. Norwich University conferred the honorary M.A. degree on him in 1908 and the LL.D. degree in 1915. In 1917-23 he was a regent of the Smithsonian Institution in Washington.

GREENLAND. Exceeded in size only by Australia among the islands of the world, Greenland is situated in the North Atlantic to the north and east of Canada. The total area is estimated at 839,782 square miles and the population in 1928 of the settled area (46,740 square miles) was 15,660, including 310 Europeans, mostly Danes. The settled area along the southern coasts, which constitutes the only Danish colonial possession, is divided into the provinces of North, South, and East Greenland, with 6640, 8206, and 814 inhabitants, respectively. In 1917, Denmark extended its sovereignty over the whole of Greenland, but this claim is not recognized by Norway. The interior is largely unknown and consists of a plateau from 6000 to 9000 feet above sea level, covered with a thick layer of ice and snow.

Syðproven, with 901 inhabitants, is the largest settlement. Godthaab and Godhavn are the centres of administration for South and North Greenland, respectively. Trade, which is chiefly in seals, sealskins, fox skins, and oil, is a monopoly of the Danish government. In 1927 it amounted to 8,960,000 kroner (about \$2,392,320), of which 6,910,000 kroner were exports to Denmark and 2,050,000 kroner, imports from Denmark. Administration of the colony is in the hands of a director, who resides in Copenhagen. Director in 1930, J. Daugaard-Jensen. See *POLAR RESEARCH*, and *DENMARK* under *History*.

GRENADEA, gre-nā'dā. An insular possession of Great Britain in the Windward group of the West Indies. Area, 133 square miles; population at the census of 1921, 66,302; estimated in December, 1928, 75,214. Grenada includes half the Grenadine Islands, the other half being administered from St. Vincent. The capital is St. George with a population of about 5000. The chief products, which are also the chief exports, are cacao, spices, lime juice, cotton, and cottonseed. The production of sugar was rapidly increasing. In 1928, the revenue was £153,870 and the expenditure, £134,184; public debt, £252,809; imports, £429,279; exports, £445,266. A total of 558,902 tons of shipping, mostly British, entered the ports (1928). The colony is under the Governor of the Windward Islands, whose headquarters are at St. George, but has its own institutions. Governor and Commander-in-Chief of the Windward Islands in 1930, Sir Frederick Seton James; Colonial Secretary for Grenada, H. Ferguson.

GRINNELL COLLEGE. A coeducational, non-sectarian institution of higher learning in Grinnell, Iowa; founded in 1846. The enrollment for

the autumn of 1930 was 661, while that for the summer session was 150. There were 65 faculty members. The productive funds amounted to \$1,400,000, and the income for the year, exclusive of dormitories, was \$315,000. The library contained 85,000 volumes. President, John Hanson Thomas Main, Ph.D., LL.D.

GRISWOLD, THE RT. REV. SHELDON MUNSON. Protestant Episcopal Bishop of the Diocese of Chicago, died in Chicago Nov. 28, 1930. He was born in Delhi, N. Y., Jan. 8, 1861, and was graduated from Union College in 1882 and from the General Theological Seminary in 1885. On ordination, he served as rector in Ilion (1885-88), Little Falls (1888-90), and Hudson, N. Y., (1890-1902). In 1902 he was elected, and the following year consecrated, first missionary Bishop of Salina, founding in western Kansas one of the strongest missionary districts of the Protestant Episcopal Church. He was made suffragan Bishop of the Diocese of Chicago in 1917, and Bishop in February, 1930, on the death of the Rt. Rev. Charles Palmerston Anderson (q.v.). The D.D. degree was conferred on him by Union College in 1900 and by the General Theological Seminary in 1903.

GUADELOUPE, gu'dā-lōōp'. A French insular possession in the Lesser Antilles in the West Indies, consisting of two islands separated by a narrow channel, the one on the west being Guadeloupe proper or Basse-Terre, and the one on the east, Grande-Terre. Total area, including five small dependent islands, 688 square miles; population in 1926, 243,243. Basse-Terre is the capital, with a population of 8379; chief town and port, Pointe-à-Pitre, with 26,455 inhabitants.

The chief products for export are cacao, coffee, sugar, and rum. Bananas, sweet potatoes, maize, tobacco, manioc, and various vegetables are grown also. Imports (1927) totaled 157,590,795 francs and exports, 182,299,044 francs. The budget for 1929 balanced at 39,510,275 francs; the public debt on Jan. 1, 1928, was 499,078 francs. There is communication with France by means of two steamship companies, and a wireless station at Destrellan. At the head of the government are a governor and an elected council. The colony sends to the French Parliament at Paris one senator and two deputies. Governor in 1930, M. Tellier, appointed in 1927.

GUAM, gwām. An insular possession of the United States, situated at the southern end of the Mariana, or Marianne, Islands in mid-Pacific about 1500 miles from Manila and 5053 miles from San Francisco. The largest and most populous island of the Mariana group, it has an area of 210 square miles. The native population at the census of 1930 was 17,592, as compared with 9675 in 1901. Including the military establishment, the 1930 population was 18,509. Capital, Agaña, with about 8500 inhabitants.

The public-school registration in 1930 numbered 3753 pupils. Education is compulsory between the ages of 7 and 12. Spanish and English are spoken in addition to the native Chamorro. Cacao, coffee, copra, corn, rice, sugar, sweet potatoes, and timber are the chief products of the island, but only copra and coconut oil are exported. The trade of the island is principally with the United States and Manila. For the year ended June 30, 1930, imports totaled \$603,260 and exports, \$200,593. The harbor of Apra is closed to foreign naval and commercial vessels, except in special cases. Piti is the port of entry

Guam is a United States naval station, of which the governor, who is appointed by the President, is commander. Medical care for the entire population is provided by the Navy, as there are no private hospitals or doctors in private practice. Governor in 1930, Commander Willis W. Bradley, U. S. N.

GUATEMALA, gwä'tä-mälä. A republic of Central America lying between the Caribbean Sea and the Pacific Ocean, south of Mexico, west of British Honduras, and north of Salvador and Honduras. Capital, Guatemala City.

AREA AND POPULATION. Guatemala has an approximate area of 42,353 square miles. The population totaled 2,004,900 at the census of 1920 and was estimated at 2,177,255 in 1929. About 60 per cent are pure Indian, the remainder being largely mestizos. The chief cities, with their populations in 1928, were: Guatemala City, 120,707; Quezaltenango, 30,125; Coban, 26,774; and Zacapa, 18,094.

EDUCATION. About 80 per cent of the population are illiterate. The school age is nominally from 5 to 17 years. There were 2632 schools of all kinds in 1928, with 118,986 pupils registered, including 1042 rural schools, with 24,298 pupils, and 1491 city schools, with 87,348 pupils.

PRODUCTION. Agriculture is the principal industry and coffee is the chief crop cultivated, furnishing about 80 per cent of the value of all exports. Sugar and bananas are other leading export crops, while wheat, corn, potatoes, and rice are produced for domestic consumption. The continued decline in the world price of coffee led to a depression in the middle of 1929 which grew worse during 1930. The coffee crop for 1928-29 was estimated at 110,000,000 pounds, and the sugar crop at 33,400 metric tons. Bananas exported in 1928 were valued at \$3,096,333, clean coffee at \$22,349,220, and coffee, in parchment, at \$713,313.

Guatemala is the leading source of chicle, used in chewing gum. The forests, covering 1,316,482 acres, are rich in mahogany and dye woods. Silver, gold, copper, iron, and lead are mined in comparatively small quantities. There were 140 manufacturing plants in 1929, representing a capital investment of about \$18,600,000. Investments by United States citizens in the country in 1930 were estimated by the U. S. Department of Commerce at \$69,979,000. Germans control nearly 40 per cent of the coffee plantations.

COMMERCE. According to the Guatemalan Customs Service, imports during 1929 were valued at 24,458,632 quetzales (1 quetzal equals \$1), or 313,359 quetzales (1.3 per cent) greater than in 1928. Exports were valued at 24,928,229 quetzales, a decrease of 3,283,343 quetzales (11.6 per cent) from the previous year. Imports exceeded exports in value for the first time in many years in 1929. In 1930, both imports and exports experienced a decided slump. Both the United States and Germany increased their share of the import trade in 1929, furnishing 57 and 14.2 per cent of all imports, respectively, as compared with 55 and 13.8 per cent in 1928. Imports from Great Britain and France remained at practically the same level.

Imports from the United States in the fiscal year ended June 30, 1930, fell off 25 per cent, from \$12,930,599 in 1928-29 to \$9,761,809, while exports to the United States declined 3.33 per cent, from \$8,315,768 in 1928-29 to \$8,038,391.

FINANCE. For the fiscal year ended June 30,

1929, preliminary figures placed Government revenues at 15,398,824 quetzales and expenditures at 16,370,747 quetzales, leaving a deficit of 971,923 quetzales, despite an increase in revenues over 1927-28 of 1,133,073 quetzales. Expenditures had shown a steady increase in previous years, the total for 1923-24 being 8,095,573 quetzales. The budget as enacted for 1929-30 provided for expenditures of 15,554,614 quetzales. A deficit was forecast by the Minister of Finance in his report of March 1, 1930. The preliminary expenditure budget for 1930-31 amounted to 13,628,786 quetzales.

The total outstanding debt at the end of 1929 was 15,556,018 quetzales, according to the President's message of March 1, 1930. A new 7 per cent loan of \$2,500,000 was obtained from the Swedish Match Company in 1930 in return for a 30-year monopoly of the match business of the country. Of the proceeds of the loan, \$2,000,000 was to be set aside for the formation of a mortgage bank for farmers and the rest was to be spent on public works. A National Mortgage Bank was established at Guatemala City by executive decree of Dec. 4, 1929.

COMMUNICATIONS. Official opening of the link of the International Railways of Central America connecting the Guatemalan and Salvadorean railway systems and affording Salvador direct access to the Caribbean through Puerto Barrios, Guatemala, took place Dec. 28, 1929. The International Railways had 498 miles of line in operation in Guatemala in 1928. An electric railway linking Quezaltenango, the second city in size in the Republic, with San Felipe, a junction point on the International Railways of Central America, was placed in operation March 30, 1930. The total cost was about 4,992,500 quetzales for 33 miles of line. There were 1396 miles of highway in 1929, affording access by motor to nearly all parts of the republic during nine months of the year. Air-mail and passenger service connects Guatemala City with Quezaltenango, La Libertad, Mexico City, Zacapa, and Puerto Barrios, lines to the latter two points having been inaugurated June 10, 1930. The government-owned telegraph and telephone systems in 1929 had 4430 and 4960 miles of wire, respectively.

GOVERNMENT. The executive power is vested in the President elected for six years and legislative power in the National Assembly, consisting of representatives elected for four years, and the Council of State of 13 members, part of whom are elected by the National Assembly and part appointed by the President. President in 1930, General Lázaro Chacón, elected December, 1926, for a term expiring Mar. 15, 1933. A convention signed by the Foreign Ministers of Guatemala, Honduras, and Salvador on May 27, 1927, bound the three countries to a unified foreign policy.

THE REVOLUTION. Unrest in Guatemala due to economic depression and charges of corruption leveled against the alleged dictatorship of President Lázaro Chacón produced the expected uprising when the President was suddenly stricken with a cerebral hemorrhage on Dec. 12, 1930, and confined to his bed. A statement signed by eight physicians declared him to be incapacitated for his official duties. On December 13, Baudillo Palma, Second Designate (vice president), was appointed President by the Council of Ministers pending General Chacón's recovery and confirmed by the National Assembly. On December 15, President Hoover cabled his felicitations to Acting

President Palma, thereby implying recognition. On the following day Palma's new Government was overthrown by a military *coup d'état* in Guatemala City led by Gen. Manuel Orellana. Fifty-seven persons were killed or wounded in street fighting, before the diplomatic corps arranged a truce between the rival factions and brought the brief revolution to a close.

General Orellana, named Acting President by the Assembly, immediately assumed control of the government and formed a new cabinet, in which Foreign Minister Alfredo Skinner Klee remained the sole holdover from the previous Ministry. On December 30, General Orellana was notified by the American Minister in Guatemala City that he would not be recognized by the United States. The following day he resigned, and José María Reyna Andrade, a Liberal member of Congress, was appointed Provisional President. Former President Lázaro Chacón resigned his claim to the office at the same time as General Orellana. Indications were that a presidential election would be held early in 1931.

Upon the constitutional question involved, the United States took the stand that Orellana had illegally ousted Baudillo Palma from the Presidency. Orellana, in turn, charged that Palma had usurped the office from the former First Designate, Gen. Mauro de León. The latter, who was Minister of War in the Lázaro Chacón Cabinet, was killed in the fighting. Since the Constitution prohibited the First Designate from holding office in the administration, the State Department at Washington held that de León could not legally have succeeded Lázaro Chacón. The United States adheres to an agreement among the Central American states not to recognize governments which obtain power in that region by revolution or other unconstitutional methods.

The revolt caused little property loss or interruption of business. Banks and business houses in Guatemala City opened a day or so afterward, constitutional guarantees were maintained, and the various garrisons and civil authorities throughout the republic accepted the new régime peacefully. The political upheaval, however, was expected to have an unfavorable effect upon Guatemala's efforts to negotiate a loan in New York.

OTHER EVENTS. Arbitration of the 90-year-old boundary dispute between Guatemala and Honduras was agreed upon by a treaty signed by representatives of the two countries at Washington July 17, 1930, after six months of negotiation. The treaty contained a supplementary convention providing for the delimitation of the boundary in accordance with the decision to be handed down by the arbitral commission. Chief Justice Charles Evans Hughes of the United States was named chairman of the arbitral commission. The texts of both the treaty and the supplementary convention were withheld from publication at the request of the negotiators.

The region under dispute, known as the Montagua Valley, lies on the Atlantic slope of the southeastern border of Guatemala. A rich banana-growing region, it became an active source of contention after 1915 when rival American banana companies, one operating under a concession from Guatemala, which held actual possession, and the other under Honduran authority, besought the support of the respective governments for their claims. Armed clashes ensued in 1915 and again in 1927, but in each case the

United States mediated to prevent the outbreak of what threatened to become a general war.

Relations between Mexico and Guatemala were strained as a result of an attack by Guatemalan forest guards upon a chicle plantation at La Fama, in the Mexican State of Chiapas, late in February. Three Mexicans were killed and six others taken prisoner. The Guatemalan Government expressed its regrets, stating that the forest guards thought La Fama was on Guatemalan territory and that the Mexicans operating there were chicle smugglers. The Mexican Foreign Office announced June 1, 1930, that the invasion of Mexican territory had been satisfactorily explained. Claims for the loss of life and property damage were presented.

For reasons not stated, the collective resignation of the Cabinet was presented to President Lázaro Chacón on Aug. 30, 1930. The President accepted only three resignations. He appointed Dr. Alfredo Skinner Klee as Foreign Minister, succeeding Aguirre Velazquez; Gen. Federico Aguilar Valenzuela as Minister of Commerce, Agriculture, and Public Works, succeeding Col. Daniel Hernandez; and Dr. Castillo Monteroso, Minister of Interior and Justice, succeeding Dr. Rodolfo Sandoval. On Sept. 11, 1930, the state of siege instituted a year earlier was lifted and the Constitutional guarantees suspended at the same time were restored. A presidential decree issued during the year amplified the restrictions placed in 1927 upon immigration from Turkey, Palestine, Lebanon, Arabia, and Syria. Immigration restriction was made applicable to native or naturalized citizens of Armenia, Egypt, Afghanistan, Poland, Greece, Bulgaria, Rumania, Russia, Persia, Yugoslavia, India, the nations formerly part of the Russian Empire, and immigrants from the northern shore of Africa.

GUGGENHEIM, DANIEL. An American capitalist, died near Port Washington, Long Island, N. Y., Sept. 28, 1930. He was born in Philadelphia, Pa., July 9, 1856, and entered upon his business career at the age of 17, being in charge from 1873 to 1884 of the Swiss branch of the lace concern developed by his father in Philadelphia. When the elder Guggenheim became interested in mining, the son transferred his activities to that field. He was a member of the firm of Guggenheim Brothers, which was engaged in development of copper mines in Alaska, Mexico, and Chile, and in the improvement of the nitrate industry of Chile. They were also interested in the development of tin mining in Bolivia and of diamond mining and forestry in the Congo region of Africa. Later on the merging of the Guggenheim firm with the American Smelting & Refining Co., he became president, holding that office or acting as chairman of the board over a period of 20 years. He was also on the directorates of many mining, smelting, banking, and mercantile concerns. In 1919 he received the decoration of Commander of the Order of the Crown of Belgium, and in 1930 the honorary degree of Doctor of Commercial Science from New York University. His most notable philanthropy was his contribution to the development of aviation, establishing in 1925 the school of aeronautics at New York University and in 1926 the \$2,500,000 Daniel Guggenheim Fund for the Promotion of Aeronautics. He also endowed in 1924 the Daniel and Florence Guggenheim Foundation to promote "through charitable and benevolent activities the well-being of mankind throughout the world."

GUGGENHEIM FOUNDATION. See AERONAUTICS; UNIVERSITIES AND COLLEGES.

GUIANA. See under DUTCH GUIANA; BRITISH GUIANA; FRENCH GUIANA.

GUTHRIE, SIR JAMES. A Scottish painter, died in Row, Dumbartonshire, Sept. 6, 1930. He was born in Greenock, near Edinburgh, June 10, 1859. After attending the University of Glasgow he studied painting, first in Edinburgh and later in London under John Pettie. His trend towards realism evinced his sympathy with the French impressionists and Whistler, and it was in Paris that he first attained recognition. He later received awards at the salons in Munich and Berlin. After 1890 he abandoned genre painting to devote himself to portraiture, becoming one of the most distinguished portrait painters of the twentieth century and leader of the Glasgow school. The most significant of his portraits are those of his mother, Archbishop Eyre, Professor Jack, Major Hotchkiss, Mrs. Fergus, and Mrs. Watson. Important among his gallery exhibitions are: "Mid-Summer," in the Edinburgh Museum; "A Burial in the Scottish Highlands," in the Glasgow Gallery; "Schoolmates," in the Ghent Gallery; "Charles Barrie," in the Museum of Victoria, Australia; and the group, "Some British Statesmen of the War," in the National Portrait Gallery. In the United States he was known chiefly through his contributions to the exhibitions of the Carnegie Institute in Pittsburgh. He was elected an associate of the Royal Scottish Academy in 1888 and a member in 1892, and served as president of this society from 1902 to 1919. He was also a trustee for the National Galleries of Scotland from 1906 to 1920; secretary of the Société Nationale des Beaux Arts in Paris; and honorary member of the royal academies of London, Dresden, and Munich. He received the LL.D. degree from the University of Glasgow (1906), Edinburgh (1913), and St. Andrews (1922), and was knighted in 1903.

GYMNASTICS. The outstanding gymnast in the United States in 1930 again was Alfred Jochim, of the Swiss Turn Verein of Union City, N. J., who won the all-around title for the sixth successive year at the National A. A. U. competition in Los Angeles. Jochim also finished first on the long horse, in free calisthenics, and on the horizontal bar. The Los Angeles Athletic Club was awarded the national team title. The intercollegiate all-around title was annexed by Herman Witzig, of New York University, and the intercollegiate team title by the U. S. Naval Academy.

GYPSUM. The quantity of gypsum mined in the United States in 1929, according to the U. S. Bureau of Mines, was 5,016,132 short tons, a decrease of 86,118 tons, or 2 per cent, compared with 1928, but greater than that of any year prior to 1924 and more than twice as large as that of 1919. The total value of the calcined and uncalcined gypsum sold by producers was \$31,292,969, a decrease of \$743,194, or 2 per cent, compared with 1928. The quantity of gypsum sold by producers without calcining in 1929 was 1,065,697 short tons, an increase of 66,285 tons, or 7 per cent, over 1928, and was valued at \$2,096,779, or \$1.97 per ton, an increase of \$194,745, or 10 per cent, in value and of 7 cents per ton; the quantity of calcined gypsum sold by producers was 3,361,580 tons, a decrease of 279,805 tons, or 8 per cent, and was valued at \$29,196,190, a decrease of 3 per cent in total value compared with 1928. The production of crude gypsum in New

York in 1929 was 1,254,338 tons, a decrease of 15 per cent from that of 1928, but 26 per cent of the entire quantity, mined in the United States. New York, marketed 298,793 tons without calcining, or 28 per cent of the United States total, and 859,147 tons calcined, or 26 per cent of the total. These figures represent an increase of 11 per cent in the uncalcined and a decrease of 20 per cent in the calcined gypsum compared with 1928. Other important States in the production of crude gypsum in 1929 in tons were Michigan, 898,547; Iowa, 718,503; Texas, 520,519; Ohio, 374,008; Oklahoma, 369,433; and Nevada, 225,514.

In 1929 eight importers with 13 plants in 10 States, namely, California, Connecticut, Massachusetts, New Hampshire, New Jersey, New York, Pennsylvania, Vermont, Virginia, and Washington, reported to the Bureau of Mines that they imported 1,017,791 short tons of crude gypsum, an increase of 7 per cent compared with 1928.

In 1930 gypsum industry continued to be affected by business depression, which, began in 1929. With both production and imports below those of the previous year, the latter coming mainly from Canada and amounting to 801,377 tons, valued at \$916,663 suffering comparatively less than the production of the United States. Imports in 1929 were 925,344 tons. About 1,000,000 tons of gypsum were used in the manufacture of cement as a retarder, so that this side of the industry held up through the use of cement on road construction.

HADLEY, ARTHUR TWining. An American educator and economist, former president of Yale University, died in Kobe, Japan, Mar. 6, 1930, while on a cruise around the world. He was born in New Haven, Conn., Apr. 23, 1856. After his graduation from Yale College in 1876 he took post-graduate courses in political science at Yale and at the University of Berlin, receiving the Ph.D. degree from the latter institution in 1879. Upon his return to the United States, he became tutor at Yale College and served in that capacity until 1883, when he became university lecturer on railroad administration. In 1886 he was appointed professor of political science in the graduate department, and in 1891 professor of political and social economy in the academic department. From 1885 to 1887 he served as commissioner of labor statistics for Connecticut and published two reports which established for him a reputation as a statistician and a careful student of the labor problem. He was elected president of Yale in 1899, being the first layman to hold that office. His administration was considered the most successful, from the standpoint of growth and material gain, that the university had ever enjoyed, the resources being more than quadrupled, the endowment doubled, and educational policies reconstructed so as to make for the widest intellectual expansion. During 1907-08 he was Theodore Roosevelt Professor of American History and Institutions at the University of Berlin, and in 1914 lectured at Oxford University. He resigned from the presidency in 1921 to devote himself still further to the study of economic problems and to writing and lecturing.

Aside from his educational administrative work Dr. Hadley's main contribution to the intellectual life of the United States was in the field of economics, particularly in railroad organization and transportation where, with the publication of *Railroad Transportation: Its History and Its Laws* in 1885, he became a recognized

authority. The same year he was summoned as expert witness before the Cullom Senate Committee which drafted the Interstate Commerce Law. He also acted as associate editor of the *Railroad Gazette* from 1887 to 1889, and was appointed director of the New York, New Haven & Hartford Railroad and of the Atchison, Topeka & Santa Fe Railway to represent the interests of the general public. In 1910 President Taft named him chairman of the commission which investigated the propriety of bringing future issues of railway securities under the regulation of the Interstate Commerce Commission. He was president of the American Economic Association, 1898-99, and was a member of the American Academy of Arts and Letters. His other publications include: *Economics: An Account of the Relations between Private Property and Public Welfare* (1896); *The Education of the American Citizen* (1901); *The Relations between Freedom and Responsibility in the Evolution of Democratic Government* (1903); *Baccalaureate Addresses* (1907); *Standards of Political Morality* (1907); *Some Influences in Modern Philosophic Thought* (1913); *Undercurrents in American Politics* (1915); *The Moral Basis of Democracy* (1919); *Economic Problems of Democracy* (1923); and *The Conflict between Liberty and Equality* (1925).

HADRAMAUT, THE. See ARABIA.

HAFFKINE, häf'kin, WALDEMAR MORDECAI WOLFF. A Russian bacteriologist, died in Lausanne, Switzerland, Oct. 27, 1930. He was born in Odessa, Russia, Mar. 15, 1860, and was educated at the Berdiansk Classical College and at the University of Odessa. After research work at the zoölogical museum in Odessa (1883 to 1888), he was assistant professor of physiology in the medical school of the University of Geneva (1888-89) and later assistant to Pasteur in Paris during 1889-93. In 1893 he began his important bacteriological studies under the auspices of the government of India, founding three years later in Bombay the Government Research Laboratory (later known as the Haffkine Institute). During 1893-94 he used the method of inoculation against cholera which he had discovered, treating 42,000 persons in 28 months with no bad effects. In 1897 he introduced into India an effective and successful system of inoculation against plague, the prophylactic fluid being a culture of the *bacillus pestis* rendered virulent by special methods. He retired from the Indian service in 1915. His publications consisted of articles on general microbiology in Russian and French periodicals (1885-90), on cholera in French and English periodicals (1892-1913), and on plague, cholera, typhoid fever, and pneumonia in English periodicals and pamphlets (1897-1915).

HAGEN, hä'gen, JOHANN GEORG. An Austrian astronomer, died in Vatican City, Italy, Sept. 6, 1930. He was born in Bregenz, Austria, Mar. 6, 1847, and attended the University of Münster and Bonn. He became a member of the Society of Jesus, and from 1880 to 1888 taught mathematics and physics at Prairie du Chien, Wis. He then became director of the Georgetown University observatory, where he remained until 1906 when he was called to Rome to take charge of the Vatican observatory. His publications include: *Synopsis der höheren Mathematik* (3 vols., 1891-1905); *Index Operum Leonardi Euleri* (1896); *Atlas Stellarum Variabilium* (6 series, 1899-1908); *Beobachtungen veränderlicher Sterne*

von Heis und Kruger (1903); *La rotation de la terre* (1911); *Die veränderlichen Sterne* (vol. i, 1912-21; vol. ii, 1924).

HAGUE REPARATION CONFERENCE.

See REPARATIONS, and GERMANY under *History*.

HAGUE TRIBUNAL. See ARBITRATION, INTERNATIONAL.

HAITI, hä'tê. A West Indian republic, comprising the western third of the island of Haiti, the other part forming the Dominion Republic, or Santo Domingo (see DOMINION REPUBLIC). Capital, Port-au-Prince.

AREA AND POPULATION. The area has been variously estimated at from 10,204 to 11,072 square miles; population, estimated, 1927, 2,550,000, excluding 3000 foreign white residents and the military and naval forces of the United States. The capital, Port-au-Prince, had a population of approximately 80,000 in 1929, excluding suburbs; Cape Haitien, about 12,500; Aux Cayes, 12,500; Gonaives, 10,000; St. Marc, 8000; Jacmel, 7500; and Port-des-Paix, 5000. The inhabitants are Negroes and mulattoes. The language is a dialect known as Creole French.

EDUCATION. Primary instruction is free and has been nominally compulsory since 1910. In 1927-28 there were 1179 schools with 107,551 pupils enrolled. Of the total school enrollment, about 10,000 were in the American-directed agricultural and vocational schools in 1929, and 95,000 in Haitian-controlled schools which offer the usual academic education. In recent years, the rural schools have been much improved. Secondary education is provided by national lycées and by private institutions. The University of Haiti was established in 1921.

PRODUCTION. A preponderantly agricultural country, Haiti produces coffee, cotton, tobacco, logwood, sugar, and cacao for export. The national prosperity is dependent mainly, however, on coffee production and prices. Of total exports amounting to \$16,723,833 in 1928-29, coffee shipments were valued at \$12,898,781, cotton at \$2,070,709, and logwood at \$502,216. The depression resulting from declining coffee prices, which commenced in 1929, continued throughout 1930. The cultivation of sisal and pineapples has been introduced with some success in an effort to reduce the republic's dependence upon the coffee crop.

Mineral resources are considerable although undeveloped. They include copper, coal, and iron, for the working of which some concessions have been granted; also gold, silver, antimony, tin, sulphur, kaolin, limestone, porphyry, nickel, and gypsum. In 1928 there were two sugar mills, a logwood factory, a cottonseed-oil plant, and a number of smaller manufacturing plants supplying local requirements. The per capita circulating wealth in December, 1929, was estimated at \$1.09, as compared with \$1.46 in December, 1928.

COMMERCE. For the fiscal year ended Sept. 30, 1930, Haiti's foreign trade totaled approximately \$26,986,000, as compared with \$33,962,000 in 1928-29. The visible favorable balance of trade in 1929-30 was \$1,303,000, as against an unfavorable balance of \$514,089 in 1928-29, but the excess of exports over imports was offset by the current mercantile debt, as well as ocean freights and profits on foreign investments. Exports in 1929-30 were valued at \$14,144,600 (\$16,723,833 in 1928-29) and imports at \$12,842,000 (\$17,238,000). Leading exports were coffee, \$10,406,400; cotton, \$1,571,800; cacao, \$395,000; logwood, \$488,300; and sisal, \$42,900. The volume of each

of these exports was greater than in 1928-29 but prices received were considerably lower.

France remained Haiti's best customer, taking 49.7 per cent of all exports. Italy was second, with over 9 per cent; United States, third, with 9 per cent; followed by Belgium, 7.5 per cent; Germany, 7 per cent; Denmark, 6.9 per cent; and the United Kingdom, 4.6 per cent. The United States supplied 70 per cent of all imports; the United Kingdom, 7.3 per cent; France, 6.6 per cent; Germany, 4.3 per cent; and Curacao, 3.2 per cent.

FINANCE. The ordinary budget for the fiscal year ended Sept. 30, 1930, as passed in July, 1929, calculated revenues and expenditures at 40,100,000 gourdes and 40,090,990 gourdes, respectively (1 gourde was equivalent to \$0.20). Actual receipts fell below the estimates and early in 1930, the Government took steps to reduce expenditures below the budget figures.

In the fiscal year 1928-29, actual receipts totaled 42,521,528 gourdes and expenditures were 44,119,504 gourdes, leaving a deficit of 1,597,976 gourdes. Customs receipts in 1928-29 declined 21.81 per cent, as compared with 1927-28, Government revenues dropped 15.66 per cent, and expenditures increased 7.66 per cent. The gross public debt was reduced from 94,438,115 gourdes at the end of September, 1928, to 88,677,396 gourdes on Sept. 30, 1929. At the end of February, 1930, the gross public debt had been further reduced to 83,880,000 gourdes.

COMMUNICATIONS. In 1929 there were 135 miles of railway line, all privately owned. A highway system of 930 miles connected almost all of the principal towns and production centres and provided the leading means of transportation. Much of the system is suitable for automobile travel. A Government telegraph system of 1490 miles of wire connects the principal towns. Telephone cables extend 1200 miles. An air-mail line connecting Haiti and other Caribbean countries with the United States was inaugurated in January, 1929.

GOVERNMENT. The Constitution adopted June 12, 1918, provided for a national assembly, consisting of a senate and house of representatives. The National Assembly was elected for the first time on Oct. 14, 1930 (see below under *History*), legislative functions having been carried on in the interim by a council of state of 21 members appointed by the President. As amended in 1928, the Constitution vested executive power in a President elected for six years and ineligible for reelection. The President at the beginning of 1930 was Louis Borno, who was elected Apr. 10, 1922, and reelected in 1926. Under a treaty between the United States and Haiti concluded in November, 1915, the constabulary, finances, public health, public works, and agriculture of the Republic are supervised by American advisers appointed by the President of Haiti on recommendation of the President of the United States.

HISTORY

The year 1930 witnessed a drastic reorientation of American policy in Haiti, the outstanding results of which were the restoration of constitutional government, the elimination of President Borno from the political scene, and the replacement of the American High Commissioner by an American Minister and a military attaché. First steps also were taken toward the gradual withdrawal of American marines and the progressive

replacement of Americans by Haitians in all branches of the government.

On March 20 an Assembly of People's Delegates, 34 in number, met in Port-au-Prince and nominated Eugene Roy, a nonpartisan banker of that city, as temporary President. On April 21 M. Roy was elected successor to President Borno by the Council of State and on May 15 he was inaugurated temporary President, under the pledge that he was to call popular elections for members of the Senate and the Chamber of Deputies. M. Roy fulfilled his pledge by calling a national election for October 14. The Haitian Parliament of 15 Senators and 36 Deputies, elected on that date, was composed for the most part of those opposed to a continuance of the American occupation. Some 200,000 registered voters were reported to have taken part in the election. American forces remained neutral, the 800 marines in Haiti being confined to their barracks on election day by order of Secretary of State Stimson. Order was maintained by the Garde d'Haiti.

The newly-elected Parliament convened at Port-au-Prince November 10. Its anti-American attitude was demonstrated by the election on November 18 of Stenio Vincent, a leading opponent of the occupation, to succeed M. Roy as permanent President. A few days previous, Joseph Holibois Jr., a leader of the Labor party who had denounced the American occupation during a tour of Latin America in 1929, was named president of the House of Deputies. A lawyer who had seen service as President of the Senate, Minister of Interior, and Minister to Paris, Berlin, and The Hague, M. Vincent was editor of the anti-American *Haiti Journal* and during the Borno régime was a member of the extreme opposition. He was inaugurated as President on the same day as his election, M. Roy retiring amid the acclamations of the excited populace.

The platform on which M. Vincent was elected to the Senate, previous to his selection as President, named as immediate objectives the termination of the American occupation, education, and material progress. Other planks called for the gradual elimination of foreign enterprises from Haiti, stimulation of agriculture by means of long-term loans, irrigation of the plains, and restoration of the gourde to its "true value."

Gen. John H. Russell, the American High Commissioner in Haiti, terminated his work previous to the election of the new Parliament and his office was abolished. Dr. Dana Munro was appointed American Minister to Haiti, taking over much of the work formerly handled by the High Commissioner. These developments and the establishment of constitutional government in Haiti were in line with recommendations submitted to President Hoover by a commission appointed by him Feb. 8, 1930, to study the problem of how and when to terminate the military occupation of Haiti. Acceptance of the commission's recommendations by the Hoover Administration as "the basis of its policy in Haiti" was announced by the President March 28, in making public the report.

In addition to those put into effect, the commission's recommendations included: The addition of at least one year to the existing three-year detail of naval and marine officers assigned to Haitian services, adoption of a continuing appropriation for road work by the Haitian Government, the granting of American consent to moderate reduction of customs duties and internal

revenue taxes when the condition of the Treasury warranted, employment of an American adviser in each Haitian administrative department, and the construction of an adequate American legation building in Port-au-Prince. The first of these suggestions was designed to build up a force of American doctors, engineers, and police officers, who would be familiar with the language and conditions of Haiti and who would "be available for continued assistance to the Haitian Government" at the expiration of the treaty with the United States in 1936.

With regard to immediate steps to be taken to relieve the tense situation in Haiti, the commission recommended that only American officials free of strong racial antipathies be retained for duty there, that the United States recognize the temporary and permanent Presidents if legally elected in accordance with the plan formulated by the commission, that the United States limit its intervention to affairs specifically provided for by treaty or agreement, and that the new American Minister be charged with the negotiation of further modifications of the existing treaty.

President Hoover had recommended the dispatch of a commission of inquiry to Haiti in his regular message to Congress of Dec. 4, 1929. On December 7, following outbreaks at Port-au-Prince and Aux Cayes (see 1929 YEAR BOOK), he urgently requested a \$50,000 appropriation from Congress for that purpose. This was authorized by Congress in January and on February 8 the President announced the appointment of a commission including W. Cameron Forbes, former Governor-General of the Philippines, chairman; Henry P. Fletcher, former Ambassador to Mexico, Chile, Italy, and Belgium; Elie Vezina, James Kerney, and William Allen White.

Advised that the election of a new president by President Borno's hand-picked Council of State, scheduled for Apr. 14, 1930, would probably result in new rioting and bloodshed, the commission sailed almost immediately for Haiti. Hearings were begun on March 1. On March 15, through the mediation of the commission, an agreement for the reestablishment of representative government was signed by President Borno and leaders of the factions opposed to his régime. That night the commission sailed for home, having completed its labors in an unprecedentedly short time.

During its stay in Haiti the commission heard numerous members of the Haitian "élite" denounce the American occupation as destructive of the republic's distinctive civilization and as the main support of the Borno dictatorship. Witnesses admitted the material benefit of American intervention, but expressed the view that the deprivation of such self-government as had formerly existed was too great a price to pay. The Roman Catholic hierarchy in Haiti, largely of French nationality, urged the restoration of Haitian independence.

The commission also heard Gen. John H. Russell, the American High Commissioner, and other American officials in defense of the intervention. The treaty officials were convinced that order depended upon immediate termination of the electoral impasse.

While praising many of the accomplishments of the intervention, the commission in its report deplored the fact that acts and attitudes of treaty officials had given the impression that the occupation would continue indefinitely and that

measures for the preparation of Haitians for the political and administrative responsibilities of government had been inadequate. The commission ascribed Haitian antagonism to the intervention mainly of the "élite," or upper 5 per cent of the population, who saw their leadership menaced by American efforts to create an influential middle class and to "broaden the base of the articulate proletariat." It pointed out that the government before American intervention "was more democratic and representative in name than in fact" and added: "Until the basis of political structure is broadened by education—a matter of years—the government must necessarily be more or less unstable and in constant danger of political upheavals."

The visit of the Forbes Commission to Haiti was followed in June and July by that of a second commission, appointed by President Hoover in February to study and recommend changes in the Haitian educational system. The educational commission was headed by Dr. R. R. Moton, principal of Tuskegee Institute, and included Dr. Mordecai W. Johnson, president of Howard University; Professor Leo M. Favrot, field agent of the General Education Board; B. F. Hubert, president of Georgia State Industrial College; and Dr. W. T. B. Williams, dean of Tuskegee College. Its report, made public by Secretary of State Stimson November 30, declared that there was substantial ground for Haitian complaints against the "service technique," or separate vocational school system established during the American occupation. It recommended articulation of the "service technique" with the national school system of Haiti and the extension of financial and administrative aid by the United States in developing an adequate system of education.

A reminder of the rôle of the "service technique" in Haitian politics was given August 14, when the provisional Cabinet resigned, ostensibly in protest against the nomination by President Hoover of Carl Colvin as director of the service to succeed Dr. George F. Freeman. The Ministers said the agreement with the United States called for the appointment of an agricultural engineer to the post and that Mr. Colvin did not qualify. In a statement issued the following day, the State Department announced that its official reports indicated the resignation of the Cabinet had been forced by the Haitian press in connection with the political campaign then under way. A new Cabinet was appointed by President Roy on August 20. A military training school for the development of native officers to replace Americans in the Garde d'Haiti was opened at Port-au-Prince September 20. The commandant was Maj. Oscar R. Cauldwell, a graduate of the U. S. Naval Academy and an officer in the Marine Corps.

The cost of the military intervention of the United States in Haiti from 1915 to 1930 was placed at more than \$23,000,000 by American officials, according to an Associated press dispatch of Apr. 2, 1930.

Consult Henry Prather Fletcher, "Quo Vadis, Haiti?" in *Foreign Affairs* (July, 1930).

HALL, ASAPH, JR. American astronomer, died in Philadelphia, Pa., Jan. 12, 1930. Born in Cambridge, Mass., Oct. 6, 1859, he graduated from Harvard in 1882, and was assistant at the U. S. Naval Observatory in Washington, where his father was professor of mathematics. From 1885

to 1889, he was at the Yale Observatory, the university conferring on him the Ph.D. degree in the latter year. He then returned to the Naval Observatory and remained until 1892, when he went to the University of Michigan as professor of astronomy and director of the observatory. In 1905 he was appointed assistant astronomer at the Naval Observatory and became professor of mathematics, in 1908. On his retirement in 1929, he became professor of astronomy at the University of Pennsylvania.

HALL, THE RT. REV. ARTHUR CRAWSHAY ALLISTON. Protestant Episcopal Bishop of the Diocese of Vermont, died in Rockpoint, Vt., Feb. 26, 1930. He was born in Binfield, Berkshire, England, Apr. 12, 1847, and was graduated from Christ Church College, Oxford, in 1869. After his ordination in the Church of England as deacon in 1870 and as priest in 1871, he became a licensed preacher in the diocese of Oxford as a member of the Society of St. John the Evangelist (Cowley Fathers). In 1873 he was sent to Boston to help establish the American branch of the order, and three years later became a naturalized American citizen. He served as assistant rector of the Church of the Advent in Boston from 1874 to 1882 and as rector of the mission church, St. John the Evangelist, in Boston from 1882 to 1889. The year 1889-90 was spent in mission work among the miners and lumbermen of Manitoba. The following year he returned to England in response to a summons from his superiors in the Society of St. John the Evangelist. In 1893 he was elected Bishop of Vermont and was consecrated Feb. 2, 1894. He was considered a conservative Anglo-Catholic, being opposed to the adoption of the doctrine of transubstantiation and the substitution of the term Mass for the service of Holy Communion. The D.D. degree was conferred on him by Oxford University in 1893 and by Trinity College in 1894; the University of Vermont honored him in 1904 with the LL.D. degree and Columbia University in 1916 with the S.T.D. degree. Bishop Hall was one of the most eloquent preachers in the Protestant Episcopal Church. His published works include numerous lectures and other writings mainly of a devotional character.

HALPERT, SAMUEL. An American painter, died in Detroit, Mich., Apr. 5, 1930. He was born in Russia, Dec. 25, 1883, and was brought to the United States as a child. From 1899 to 1902 he attended the National Academy of Design in New York City and then studied for a year at the École des Beaux-Arts in Paris, after which he traveled extensively in Europe. He belonged to the post-impressionistic school, placing emphasis in his work on form rather than on light and color. Among his representative paintings are: "Boats, St. Tropez" (1914); "A Town in Portugal" (1915); "Trees" (1917); "Madison Square" (1919); "Interior" (1920); and "Her First Book of Lessons" (1921). He was a member of the faculty of the Master Institute of United Arts in New York City and a vice-president and director of the Society of Independent Artists.

HAMILTON COLLEGE. A nonsectarian institution for the higher education of men in Clinton, N. Y., founded in 1812. A total of 450 students was registered for the 1930 autumn session. There were 43 members of the faculty for the year 1930-31. The productive funds of the college were approximately \$4,320,000, and the income for the year 1929-30 was \$400,349. The

library contained 135,896 volumes and 30,600 pamphlets. The most important item of the building activity during 1930 was the enlargement and equipment of the chemistry building at a cost of \$275,000. President, Frederick C. Ferry, Ph.D., Sc.D., LL.D.

HAMPTON NORMAL AND AGRICULTURAL INSTITUTE. An institute founded in 1868 in Hampton, Va., for the education of Negroes and Indians. The enrollment for the autumn term of 1930 was 1060, while that for the summer school was 1007. The faculty numbered 149. The endowment for the fiscal year ending June 30, 1930, was \$9,500,324, from which the income was \$469,583. Gifts to the endowment and investment funds amounted to \$131,184. There were 57,000 volumes in the library. During the year Du Pont Hall, a science building, the gift of Coleman du Pont, was opened for use. The President during the year 1930 was Arthur Howe.

HANDBALL. Alfred Banuet, National A. A. U. four-walls singles champion, successfully defended his title in 1930, defeating George Nelson of Baltimore in the final round of the tournament, which was held in St. Louis, Mo. Banuet and A. Woodman Paynter, also of the Olympic Club, won the doubles championship. Squash handball title holders: Singles, Harold Hooper, Hollywood A. C., Cal.; doubles, Fred Keller and Mort Kline, Los Angeles.

HARBORS. See PORTS AND HARBORS.

HARDING, WILLIAM P. G (OULD). An American banker and first governor of the Federal Reserve Board, died in Boston, Mass., Apr. 7, 1930. He was born in Greene Co., Ala., May 5, 1864, and was graduated from the University of Alabama in 1880. After a year of graduate study he entered the bank of J. H. Fitts & Co. in Tuscaloosa, Ala., and from there went, in 1886, to the Berney National Bank in Birmingham. In 1896 he became associated with the First National Bank of Birmingham as vice-president, and in 1902 was made president. Under his direction this bank became the largest banking institution in the State of Alabama, actively identified with the commercial revival of the South. In 1914 he was appointed a member of the newly-organized Federal Reserve Board to represent the banking interests of the Southern States, and two years later was elevated to the position of governor of the board by President Wilson. Through his wise management the Federal Reserve system was successfully established and carried through its critical early years, but he was later severely criticized for the deflation policy which he adopted during the post-war period. On the expiration of his term as a member of the board he became, in 1923, governor of the Federal Reserve Bank of the First District, in Boston. He also was managing director of the War Finance Corporation during 1918-19.

In 1922 Governor Harding visited Cuba and advised the Cuban government as to the reorganization of its finances. Two years later he declined an offer by the League of Nations to be financial receiver of Hungary, but he visited that country unofficially and assisted in an advisory capacity. He also visited Poland unofficially in 1926 and advised the financial leaders of that country in regard to floating a large loan in an effort to stabilize the currency. The LL.D. degree was conferred on him by the University of Alabama in 1916 and by Harvard and Columbia uni-

versities in 1922. He was the author of *The Formative Period of the Federal Reserve System* (1925).

HARDY, ARTHUR SHELBURNE. An American author and diplomat, died in Woodstock, Conn., Mar. 13, 1930. He was born in Andover, Mass., Aug. 13, 1847. On his graduation from the U.S. Military Academy in 1869, he was commissioned second lieutenant to the 3d Artillery stationed at Dry Tortugas Island off the Florida coast, then used as a military prison. In 1871 he resigned from the Army to become professor of civil engineering at Iowa (later Grinnell) College, which awarded him the M.A. degree the following year. In 1873 he received the same honor from Dartmouth College, and the Ph.D. degree from Amherst College. During 1873-74 he studied at the *École des Ponts et Chaussées* in Paris, and on his return to the United States was appointed professor of civil engineering at Dartmouth College. In 1878 he became professor of mathematics at that institution, remaining there until 1893 when he accepted the editorship of the *Cosmopolitan Magazine*. His diplomatic career began in 1897 with his appointment as Minister and Consul-General to Persia. From 1899 to 1901 he was Minister to Greece, Rumania, and Serbia; from 1901 to 1903, Minister to Switzerland; and from 1903 to 1905, Minister to Spain. He resigned from the diplomatic service in 1905 on account of a disagreement with President Roosevelt, and devoted most of his time thereafter to travel and writing.

Dr. Hardy's publications of a technical nature include: *Elements of Quarternions* (1881); *Imaginary Quantities* (1881); *New Methods in Topographical Surveying* (1883); *Elements of Analytic Geometry* (1889); and *Elements of Calculus* (1890). He was better known, however, for his fiction, including *But Yet a Woman* (1883); *Wind of Destiny* (1886); *Passe Rose* (1889); *His Daughter First* (1903); *Aurèle* (1912); *Diane and Her Friends* (1914); *Helen* (1916); *No. 13, Rue du Bon Diable* (1917); and *Things Remembered* (1923). He was also the author of two poetical works, *Francesca of Rimini* (1878) and *Songs of Two* (1900), and of the *Life and Letters of Joseph II. Nescima* (1891).

HARNACK, här'nák, ADOLF VON. A German theologian, died in Heidelberg, June 10, 1930. He was born in Dorpat, Estonia, May 7, 1851, and was graduated from the University of Dorpat in 1872. After serving as lecturer at the University of Leipzig for two years, he was appointed professor extraordinary of church history there in 1876. Three years later he accepted the position of ordinary professor of church history at the University of Giessen. In 1886 he was called to the University of Marburg and in 1889 to the University of Berlin, where he held the chair of church history until his resignation in 1924. A man of strong and inspiring personality, his lectures at Berlin were attended by hundreds of students from both Europe and America. He was also general director of the Prussian State Library from 1905 to 1921, chairman of the Evangelical-Social Congress from 1902 to 1912, and president of the *Kaiser Wilhelm Gesellschaft* from 1911 until his death. He was a member of the Prussian Academy of Sciences, of which he was the historian, and was the recipient of honorary degrees from the Universities of Glasgow, Oslo, and Athens. In 1914 he was raised to the Prussian hereditary nobility by Kaiser Wilhelm II.

Dr. von Harnack was dean of the modern German school of theology, founded by Albrecht Ritschl. His great contribution was to disassociate Christianity from Greek philosophy and other alien subject matter and to show that its eternal substance, as set forth in the Gospels, was independent of any ecclesiastical structure. He developed these ideas in *Lehrbuch der Dogmengeschichte* (3 vols., 1886-90; trans., *History of Dogma*, 1894-99), an encyclopedia on Christian dogma from the first century to the Reformation, and *Das Wesen des Christentums* (1900; trans., *What Is Christianity?* 1901), considered one of the notable books of the century in the position which it defined for the Christian religion.

Dr. von Harnack was the author of more than 1500 books, pamphlets, and treatises, outstanding titles among which are: *Zur Quellenkritik der Geschichte des Gnosticismus* (1873); *Die Zeit des Ignatius* (1878); *Das Mönchtum, seine Ideale und seine Geschichte* (1881; trans., *Monasticism, Its Ideals and Its History*, 1895); *Martin Luther in seiner Bedeutung für die Geschichte der Wissenschaft und der Bildung* (1883); *Grundriss der Gogmengeschichte* (1889; trans., *Outlines of the History of Dogma*, 1893); *Das apostolische Glaubensbekenntnis* (1892; trans., *The Apostles' Creed*, 1901); *Geschichte der altchristlichen Literatur bis Eusebius* (3 vols., 1893-1904); *Das Christentum und die Geschichte* (1895; trans., *Christianity and History*, 1896); *Die Mission und Ausbreitung des Christentums in den ersten drei Jahrhunderten* (1902; trans., *The Expansion of Christianity in the First Three Centuries*, 1904); *Beiträge zur Einleitung in das Neue Testament* (4 parts, 1906-11; trans., *New Testament Studies*, 1907-11); *Entstehung und Entwicklung der Kirchenverfassung und des Kirchenrechts in den ersten drei Jahrhunderten* (1910; trans., *Constitution and Law of the Church in the First Three Centuries*, 1910); *Der Kirchengeschichtliche Ertrag der exegetischen Arbeiten des Origenes* (1918); *Marcion: das Evangelium von fremden Gott* (1921); and *Die Briefsammlung des Apostel Paulus* (1926). He joined Oskar von Gebhardt and Theodore Zahn in bringing out *Patrum Apostolicorum Opera* (3 vols., 1867-78) and edited, with Emil Schürer, the *Theologische Literaturzeitung* from 1881 to 1910 and, with Oskar von Gebhardt and Karl Schmidt, the *Teste und Untersuchungen zur Geschichte der altchristlichen Literatur* from 1882 to 1930.

HARNES RACING. See RACING.

HARRIS, J(AMES) ARTHUR. An American botanist and statistician, died in Minneapolis, Minn., Apr. 24, 1930. He was born Sept. 20, 1880, in Plantsville, Ohio, and was graduated from the University of Kansas in 1901 and from Washington University, with the Ph.D. degree, in 1903. In 1908-09 he studied biometry at the University of London. He was botanical assistant at the Missouri Botanical Garden of St. Louis in 1901-03 and librarian there in 1904-07. During 1903-07 he was also instructor in botany at Washington University and, from 1907 to 1924, botanical investigator at the Station for Experimental Evolution, Carnegie Institution, at Cold Spring Harbor, Long Island, N. Y. After 1924, he was head of the department of botany at the University of Minnesota. Dr. Harris engaged in experimental work in Jamaica, W. I., in South Florida, and in the cotton experimental fields of the Southwest. After 1918, he collaborated with

the Bureau of Plant Industry of the U. S. Department of Agriculture. He was awarded the Weldon Medal and Memorial Prize by the University of Oxford in 1921.

HARRISON, HENRY SYDNOR. An American novelist, died in Atlantic City, N. J., July 14, 1930. He was born in Sewanee, Tenn., Feb. 12, 1880, and was graduated from Columbia University in 1900. From 1900 to 1910 he was successively book reviewer, columnist, and chief editorial writer on the *Richmond Times-Despatch*. He saw service during the World War as an ambulance driver in France and Belgium in 1915 and with the United States Naval Reserve Force during 1917-19. In 1913 an honorary M.A. degree was conferred on him by Columbia University, and the following year he was elected a member of the National Institute of Arts and Letters. He published his first novel, *Captivating Mary Carstairs*, under the pen name "Henry Second" in 1910. With *Queed* the following year he achieved great popularity, and repeated his success with *V. V.'s Eyce* in 1913. His other novels are: *Angela's Business* (1915); *When I Come Back* (1919); *Saint Teresa* (1922); and *Andrew Bride of Paris* (1925).

HARRISON, (THOMAS) ALEXANDER. An American genre and landscape painter, died in Paris, France, Oct. 13, 1930. He was born in Philadelphia, Pa., Jan. 17, 1853, and studied at the Pennsylvania Academy of Fine Arts and later under Gérôme at the Ecole des Beaux-Arts and under Bastien-Lepage, but was most strongly influenced by the works of Cazin and Bernard. Although frequently visiting the United States, he took up his residence in Paris, where he came to rank among the highest of the colony of American artists. He was made Officer of the Legion of Honor in 1901 and Officer of Public Instruction by the French Government. He was also a member of the National Academy of Design, the Société Nationale des Beaux-Arts, National Institute of Arts and Letters, and the Royal Institute of Painters in Oil Colors. His work was characterized by grace of line and by luminous color, delicate in its effect. He was especially noted for his marines, which were rendered with broad surfaces that well expressed the transparency of the ever-changing color of water and sky. Among his chief works are: "L'Arcadie" and "Solitude" in the Luxembourg Museum, Paris; "The Wave" in the Pennsylvania Academy of Fine Arts, Philadelphia; "Crepuscle" in the St. Louis Museum and in the Corcoran Gallery, Washington; "Sables et Lune" in the Quimper Museum, France; "Les Amateurs" in the Art Institute of Chicago; "Nude" in the Royal Gallery, Dresden; "A Festival Night," "Boys Bathing," "East Hampton," "Le Grand Miroir," and "Marine" in the Wilstach Gallery, Philadelphia; and "Castles in Spain" in the Metropolitan Museum of Art, New York City.

HART, JULIUS. A German poet and critic, died July 7, 1930. Born in Münster Apr. 9, 1859, he was educated there and in Berlin. In addition to translations from English, American, Spanish, and Persian poets, his publications include two volumes of poems, *Samsara* (1878) and *Homo Sum* (1896), and the dramas, *Don Juan Tenorio* (1881), *Der Rächer* (1884), and *Der Sumpf* (1885). In collaboration with his brother Heinrich he wrote: *Die neue Gemeinschaft* (1901), *Geschichte der Weltliteratur und des Theaters* (1894-97), and *Die neue Welterkenntnis* (1897).

HARVARD UNIVERSITY. A nonsectarian institution of higher education for men in Cambridge, Mass.; founded in 1636. The number of students enrolled for the year 1930-31 was 8442, distributed as follows: College, 3240, including 600 seniors, 723 juniors, 839 sophomores, 1005 freshmen, and 73 out of course. Graduate schools: Arts and sciences, 1051; business administration, 1074; education, 283. Professional schools: Engineering (under-graduate and graduate), 260; theology, 98; law, 1590; medicine, 517; dentistry, 119; public health, 31; architecture, 68; landscape architecture, 42; city planning, 7; special students, 44; Bussey Institution (agriculture and horticulture), 12. For the summer session of 1930, the registration was 2409.

The officers of instruction for 1930-31 numbered 1592, of whom 272 were professors, 90 associate professors, and 148 assistant professors. Among those who assumed permanent chairs during the year were: John Franklin Ebersole, professor of finance; Truman Lee Kelley, professor of education; Otto Oldenberg, professor of physics; Alexander Hamilton Rice, professor of geographical exploration; Sumner Huber Slichter, professor of business economics; P'itirim Alexandrovich Sorokin, professor of sociology; Willard Cole Rappleye, associate professor of medical economics; and Frank DeWitt Washburn, associate professor of real estate. Harry Ellsworth Clifford, Gordon McKay professor of electrical engineering, became dean of the engineering school; John Livingston Lowes was elected Francis Lee Higginson professor of English literature; and Ralph Barton Perry was elected to the chair of Edgar Pierce professor of philosophy.

Visiting professors and lecturers during the year included Edmond Joachim Vermeil, professor of German literature at the University of Strassburg, who came as exchange professor from France for the second half-year; Arthur Mayger Hind of the British Museum, who came as Charles Eliot Norton professor of poetry for the entire year; Oliver Elton, King Alfred professor of English literature, emeritus, at the University of Liverpool, who came as lecturer on English for the academic year; Ivor Armstrong Richards, university lecturer in English and fellow of Magdalene College, Cambridge, who was visiting lecturer in English for the second half-year; Adolph Goldschmidt, professor at the University of Berlin, who served as Kuno Francke professor of German art and culture for the year; Josef Alois Schumpeter, professor of political economy at the University of Bonn, who was lecturer on economics throughout the academic year; and Karl Menger, professor of mathematics at the University of Vienna, who was lecturer on mathematics during the first half-year. Norway was represented by Halvdan Koht, professor of history at the University of Oslo, as lecturer on history for the first half-year; Holland by Jan Arnoldus Schouten, professor of mathematics and mechanics at the Technische Hoogeschool of Delft, as lecturer on mathematics during the first half-year; China by Philippe de Vargas, associate professor of church history at Yenching University, as lecturer on Chinese for the second half-year; and Estonia by Ernest Julius Opik, astronomer at the astronomical observatory in Tartu University, as lecturer on astro-physics for the entire year.

Among the lecturers from American colleges and universities were: Raymond Clare Archibald

of Brown University, in mathematics; Alfred Newton Richards of the University of Pennsylvania, as visiting professor in the school of public health; David Wight Prall of the University of California, in philosophy; Howard Rollin Patch of Smith College, in English; Frederick Binkerd Artz of Oberlin College, in history; Roswell Magill of Columbia University, in law; and John Dewey of Columbia University, as William James lecturer in philosophy. Rufus Matthew Jones, professor of philosophy at Haverford College, was William Belden Noble lecturer in the field of religion; and Julius Seelye Bixler, chairman of the department of religion and Biblical literature at Smith College, was Ingersoll lecturer on the immortality of man.

The Western exchange professors from Harvard, chosen for the second half-year of 1930-31, were Oliver D. Kellogg, professor of mathematics, to lecture at Carleton and Knox Colleges and at the University of Colorado, and Gustavus H. Maynard, assistant professor of English, to Beloit, Grinnell, and Pomona Colleges. Charles Hall Grandgent, professor of romance languages, was chosen as exchange professor to France for the second half-year.

The total productive funds of the university in June, 1930, were \$108,087,463; and the total income for the year, including gifts for immediate expenditure, was \$13,927,402. The operating expenses for the year ending June 30, 1930, were \$12,248,176 and were budgeted from the following sources of income: Funds and gifts, \$5,406,216 and operating receipts, \$6,841,959, including tuition fees, \$3,130,617; dormitory rentals, \$773,840; income of dining halls and Harvard Union, \$862,749; income from athletic sports, \$1,189,948; and other operating income, \$884,804.

Building activity during the year included the completion of two units of the Harvard House Plan, Dunster and Lowell Halls, bearing the names of the earliest and latest Harvard presidents; a biological laboratory; a third building to complete the physics laboratories; three freshman dormitories in the Harvard Yard; an addition to the Vanderbilt Hall medical dormitories; a faculty club; and the Dillon Field House. A building to house the newly-founded school of geography, under the directorship of Dr. A. Hamilton Rice, was also under construction. The object of the school was the teaching of the fundamentals of geographical science, emphasizing the central position geography occupies among the sciences concerned with the study of the earth and those sciences having to do with life and man. In 1930 graduation from college with distinction was made the criterion for admission to the Harvard graduate school of arts and sciences. The change was made because of the rapid increase in enrollment in the graduate school in recent years. The library contained 2,971,600 volumes and pamphlets. President, Abbott Lawrence Lowell, LL.B., LL.D.

HARVEY, SIR ROBERT. An English mining engineer, died in Falmouth, Cornwall, Mar. 14, 1930. He was born Oct. 2, 1847, at Truro in Cornwall and was educated there. From 1875 to 1881, he was an engineer for the nitrate works in Peru and engineer-in-chief and inspector-general of the nitrate fields in Tarapaca, Chili, for Peruvian and Chilean governments. He then became a partner in the firm of North and Harvey, manufacturer of nitrate of soda and iodine. He was also, at one time, chairman of the Nitrate Railways

Co., the Tarapaca Water Works Co., vice chairman of the Anglo-South American Bank, and director of the Antofagasta and Bolivia Railway Co. In addition to contributions to the Institute of Chemical Engineers on the manufacture of iodine and of nitrate of soda, he wrote *Nursing Homes, a Warning and Short History of Peru and Its Inscribed Stones*. He was knighted in 1901. He had been high sheriff of Cornwall.

HAVEMEYER COLLECTION. See ART EXHIBITIONS; ART MUSEUMS.

HAVERFORD COLLEGE. An institution of higher education under the control of the Society of Friends in Haverford, Pa.; founded in 1833. Registration for the autumn term of 1930 totaled 300 students. There were 37 members on the faculty. The productive funds of the institution amounted to \$3,912,691 (book value), and the total income for 1929-30 was \$528,762. The library contained 118,283 volumes. President, William Wistar Comfort, Ph.D., Litt.D., LL.D.

HAWAII, hā-wī'ē. A territory of the United States, consisting of a group of islands in the north central Pacific Ocean; formally annexed, Aug. 12, 1898. The nine inhabited islands with their respective areas in square miles are as follows: Hawaii, 4015; Maui, 728; Oahu, 599; Kauai, 547; Molokai, 261; Lanai, 139; Niihau, 97; Kahoolawe, 69; Midway, 2.7. Capital, Honolulu, on the island of Oahu. The population according to the census of 1930 was 368,336, as compared with 255,912 in 1920. On June 30, 1929, the Board of Health estimated the population at 357,649, of whom 236,577 were American citizens and 121,072 aliens. The population was divided by race and nationality as follows: American, British, German, Russian, 38,006; Japanese, 137,407; Filipino, 63,869; Portuguese, 29,717; Chinese, 25,211; Hawaiian, 20,479; Caucasian-Hawaiian, 16,687; Asiatic-Hawaiian, 10,598; Porto Rican, 6923; Korean, 6993; Spanish, 1851; others, 508. In the fiscal year ended June 30, 1930, there were 10,873 births and 3976 deaths. The population of Honolulu at the census of 1930 was 137,582 (83,327 in 1920); that of Hilo, 19,468 (10,431 in 1920). To perpetuate the Hawaiian race, the Federal government in 1930 approved a second appropriation of \$1,000,000 to establish natives on farms on the Island of Molokai.

EDUCATION. The public-school system is under the direction of a superintendent of education and commissioners appointed by the Governor. In 1930, there were 181 public schools, with 2563 teachers and 73,180 pupils, of whom 39,115 were Japanese. In the school year 1928-29, there were 11,075 students in private schools, and 1994 in the University of Hawaii. English is the language of instruction.

PRODUCTION. Agriculture and cattle raising are the chief industries of the islands. Raw sugar and canned pineapples are the chief exports, although considerable quantities of molasses, fresh pineapples, bananas, honey, coffee, tallow, and beeswax are shipped annually. For the crop year 1929-30, raw sugar production was estimated at 930,000 short tons (913,670 in 1928-29) and pineapple production at 11,000,000 cases of 24 cans each (9,000,000 cases in 1928-29). With the market for canned Hawaiian pineapples constantly expanding, new areas are being brought under cultivation. Shipments of molasses to the United States in 1929 totaled 23,370,000 gallons, valued at \$1,016,000; of pineapple alcohol, 52,391 gallons (25,459 in 1928). The coffee crop in 1929-

30 amounted to 7,000,000 pounds. Livestock on the islands in 1928 included 140,000 cattle, 23,000 swine, 24,000 sheep, and 23,000 horses, mules, and asses.

Manufacturing is confined largely to the processing of pineapples and sugar. Other manufactured products include meats, tin cans, iron and steel, machinery, and ice. A business recession became evident in 1930, causing considerable unemployment among white collar workers. Important Federal projects and local construction provided employment for skilled and unskilled labor.

COMMERCE. Commerce is mainly with continental United States. In 1929, exports from Hawaii to the mainland totaled \$106,312,833, as compared with \$116,950,090 in 1928. The recession was due to falling price levels, especially in sugar, rather than to a decline in volume. Imports from continental United States increased in 1929 to \$82,661,424 from \$77,762,940 in the preceding year. The more important articles imported are vegetable food products, beverages, textile products, lumber, nonmetallic metals, oils, machinery, automobiles, and chemicals. In the same year, imports from foreign countries amounted to \$9,752,667 (\$10,361,293 in 1928) and exports to foreign countries, chiefly canned pineapples, were valued at \$2,126,270 (\$2,523,745 in 1928).

FINANCE. For the fiscal year ended June 30, 1930, revenues totaled \$12,530,357 and expenditures \$11,666,956, as compared with revenues of \$11,927,000 and expenditures of \$11,310,000 in the previous fiscal year. Capital outlays in 1928-29 were reduced to \$628,000 from the 1927-28 total of \$3,130,000. The public debt on June 30, 1929, was \$29,760,000, as against \$28,585,000 on the same date in 1928. Bond issues for public improvements caused the increase.

COMMUNICATIONS. For the fiscal year ended June 30, 1929, a total of 1321 vessels of 10,142,000 tons called at Hawaiian ports, an increase of 54 vessels and 434,000 tons over the preceding fiscal year. Steamship arrivals at Honolulu in the calendar year 1929 numbered 865 of 7,180,000 gross tons, a decline of approximately 136,700 tons from 1928. All the principal islands have railway lines, the traffic on 374 miles of line in operation in 1928-29 totaling 2,233,000 tons of freight and 891,000 passengers. In addition there are many miles of private plantation lines. Besides 1717 miles of public highways, there were in 1928, 1377 miles of improved plantation highways open to the public. Of the public highways, 804 miles were paved. There were 72,353 miles of telephone wire (1929) and 22,738 instruments, operated by four companies. Interisland steamship and airplane services are maintained. Nawiliwili Harbor, on the island of Kauai, was formally opened in 1930.

GOVERNMENT. The Governor and Secretary of the Territory are appointed for four years by the President of the United States. There is a legislature of two houses, the Senate of 15 members, elected for four years, and the House of Representatives of 30 members, elected for two years. A delegate, elected biennially, represents the Territory in the Congress of the United States. Governor in 1930, Lawrence M. Judd, appointed in 1929; Secretary, Raymond C. Brown.

In the general election of Nov. 4, 1930, the Republicans captured 95 and the Democrats 5 of the 100 offices filled. The composition of the new Territorial Senate was: Republicans, 14; Demo-

crats, 1; of the Assembly, Republicans, 28; Democrats, 2. Victor S. K. Houston was reelected delegate to Congress. See AGRICULTURAL EXPERIMENT STATIONS.

Consult Littler, *The Governance of Hawaii, A Study in Territorial Administration* (Stanford University Press, 1929).

HAWTHORNE, CHARLES WEBSTER. An American genre and portrait painter, died in Baltimore, Md., Nov. 29, 1930. Born in Maine, Jan. 8, 1872. He studied at the National Academy of Design and at the Art Students' League in New York and under William M. Chase. His winters were spent in Paris and New York, his summers in Provincetown, Mass., where he owned the Cape Cod School of Art. He was a member of the National Institute of Arts and Letters, the American Water Color Society, the National Society of Portrait Painters, and Société Nationale des Beaux-Arts. His technical facility was remarkable, and his interpretations of sitters and types showed unusual ability to analyze character. Among his works are: "The Trousseau" in the Metropolitan Museum of Art, New York City; "Mother and Child" in the Syracuse (N. Y.) Museum of Fine Arts; "Fisherman's Daughter" in the Corcoran Gallery, Washington; "The Family" in the Buffalo Fine Arts Academy; "Refining Oil" in the Detroit Institute of Arts; "Madonna of the Fishermen" in the City Art Museum, St. Louis; "Little Sylvia," "The Three Selectmen of Provincetown," and "Motherhood Triumphant" in the Art Institute of Chicago; "The Mother" in the Boston Museum of Art; "The Children" in the Cincinnati Museum; and "Madonna of the Harbor" in the High Museum, Atlanta.

HAY. The United States produced a short hay crop in 1930 as a result of reduced acreage and low yields due in part to dry weather in the late summer of 1929 but mainly to the long and severe drought in many sections during the growing season of the year. The Department of Agriculture estimated the 1930 hay crop at 94,767,000 tons and the area at 72,609,000 acres, the average yield being 1.31 tons. The production of 1929 was 113,658,000 tons, the area 74,203,000 acres, and the average yield 1.53 tons per acre. The production of tame hay of all kinds in 1930 was estimated at 82,656,000 tons compared with 100,893,000 tons the year before, and the production of wild hay from prairie, marsh and other native or wild grasses at 12,111,000 tons compared with 12,765,000 tons in 1929. The average farm price of all hay on Dec. 1, 1930, was \$11.98 per ton, or 20 cents above the price on Dec. 1, 1929, and computed at these prices the total value of the 1930 crop was \$1,135,294,000 and of the preceding crop \$1,336,946,000.

The crop of alfalfa hay produced largely outside of the drought area was reported as only 4 per cent below the production of 29,745,000 tons the preceding year. (See ALFALFA.) Clover hay produced largely in the Central States suffered severely from the dry season and gave a crop of only 8,005,000 tons as compared with 13,784,000 tons in 1929. The mixed clover and timothy crop was also short, the yields for 1930 and 1929 being 19,335,000 tons and 26,581,000 tons respectively. The timothy hay crop was 7,669,000 tons in 1930 and 10,028,000 tons in 1929 and the sweet clover hay crop was estimated at 1,895,000 tons compared with 2,368,000 tons the year before. Due to the short hay crop larger acreages of small

grain were used for hay. In 1930, 4,023,000 acres were cut to produce 5,315,000 tons of hay while in the previous year this acreage was 3,420,000 acres and the hay production 4,410,000 tons. Soy beans, cowpeas and peanuts also were used to a greater extent, the acreage being increased from 4,056,000 acres in 1929 to 4,365,000 acres in 1930. The yield, however, was only 3,864,000 tons in 1930 while in the preceding year 4,290,000 tons were produced on the smaller acreage. For 1930 the production of hay from millet, sudan, red top and other sources was estimated at 7,712,000 tons compared with 9,265,000 tons in 1929. The production of sweet sorghum grown largely for hay and forage in the Southern States but not included in the hay estimates was reported at 3,876,000 tons in 1930 and 4,395,000 tons in the preceding year.

The leading tame hay-producing States reported the following yields: California, 5,729,000 tons; Wisconsin, 5,672,000 tons; New York, 5,584,000 tons; Iowa, 4,986,000 tons; Nebraska, 3,818,000 tons; and Illinois, 3,752,000 tons. The yields of the more important wild hay-growing States were given as follows: Nebraska, 2,616,000 tons; Minnesota, 2,010,000 tons; South Dakota, 1,631,000 tons; and North Dakota, 1,105,000 tons. In response to an increased demand for hay inspection the Department of Agriculture during the year entered into agreements for such service with the State departments of agriculture of California and Nebraska and the Arizona Farm Bureau Federation.

HAYTI. See HAITI.

HAZEN, ALLEN. An American civil engineer, died in Miles City, Mont., July 26, 1930. He was born in Hartford, Vt., Aug. 28, 1869, and attended the New Hampshire College of Agriculture and Mechanic Arts and the Massachusetts Institute of Technology. From 1888 to 1893 he was in charge of the experimental station of the Massachusetts State Board of Health in Lawrence, Mass., where, as a result of severe typhoid epidemics in Lawrence and vicinity, he studied the application of filter sands to water filtration. He was engaged in private practice in Boston with Albert F. Noyes from 1894 to 1897, and in New York City with George C. Whipple, George W. Fuller, and others from 1897 until his death. In 1900 he was chief engineer in the construction of the Albany water filtration plant, which was the first slow sand filter plant with continuous filtration in the United States. He served other municipalities and States in a similar capacity, his last important appointment being as hydraulic expert to the Commission of Flood Control in New Jersey. The Sc.D. degree was conferred on him by Dartmouth College and the New Hampshire College of Agriculture and Mechanic Arts. He was the author of *The Filtration of Public Water Supplies* (1895); *Hydraulic Tables* (with Gardner S. Williams, 1905); *Clean Water* (1907); and *Meter Rates for Water Works* (1917).

HEATON, AUGUSTUS GOODYEAR. An American historical and portrait painter, died in Washington, D. C., Oct. 11, 1930. He was born in Philadelphia, Pa., Apr. 28, 1844, and was the first student from the United States admitted to the ateliers of painting of the École des Beaux-Arts, Paris (1864). He studied under Cabanel there, and afterward became a pupil of Bonnat (1878-80). Among his historical works are: "Washington at Fort Duquesne" (1881), owned by the

Union League, Philadelphia; "The Recall of Columbus," which was bought by Congress for the Capitol in 1883 and was engraved on the 50-cent World's Fair stamp in 1893; "Hardships of Emigration," which was engraved on the 10-cent stamp celebrating the Trans-Mississippi and International Fair in Omaha in 1898; and "Baron Steuben at Valley Forge," which was exhibited at the Jamestown Exposition in 1907. His best-known portraits include those of Bishop Bowman (Cornell College) and Paul Tulane (Tulane University). He wrote *The Banner of Freedom* as a national anthem and published *The Heart of David—The Psalmist King* (1900); *Coinage of the United States Branch Mints* (1893); and *Fancies and Thoughts in Verse* (1904).

HEIMWEHR. An Austrian private military organization, composed of monarchist, Fascist, and conservative Roman Catholic elements. See AUSTRIA, under *History*.

HEJAZ or HEDJAZ. See ARABIA.

HENDRICK, ELLWOOD. An American chemist, died in New York City, Oct. 20, 1930. He was born in Albany, N. Y., Dec. 19, 1861, and attended the University of Zurich, Switzerland, studying chemistry under Victor Meyer. On his return to the United States in 1881 he became manager of the Albany Aniline and Chemical Works. In 1884 he turned his attention to fire insurance, and in 1900 became engaged in stock brokerage in New York City. He resumed his interest in chemistry in 1917, when he became a member of the staff of the industrial research establishment of Arthur D. Little, Inc., in Cambridge, Mass. In 1924 he was appointed curator of the Chandler Chemical Museum at Columbia University. The Sc.D. degree was conferred on him by Franklin and Marshall College in 1921, and during 1922-23 he was president of the American section of the Société de Chimie Industrielle. Besides many articles on scientific and philosophical subjects in popular magazines, he was consulting editor from 1918 to 1923 of *Chemical and Metallurgical Engineering* and published *Everyman's Chemistry* (1917); *Opportunities in Chemistry* (1919); *Percolator Papers* (1919); *Life of Lewis Miller* (1925); and *Modern Views of Physical Science* (1925).

HENRY FORD SCHOLARSHIPS. See UNIVERSITIES AND COLLEGES.

HENSHAW, HENRY WETHERBEE. An American ornithologist, died in Washington, D. C., Aug. 1, 1930. He was born in Cambridge, Mass., Mar. 3, 1850. During 1872-79 he was a member of the Wheeler Survey, in the West. He then became associated, in an administrative capacity, with the Bureau of Ethnology until 1893, part of which time he was editor of the *American Anthropologist*. From 1894 to 1904 he was engaged in a study of the biology of the Hawaiian Islands, and then became administrative biologist in 1905 and chief in 1910 of the Biological Survey of the U. S. Department of Agriculture. In addition to numerous papers on ornithology and ethnology, he was the author of a report on *Ornithology of Nevada, Utah, California, Colorado, New Mexico, and Arizona* (1875); *Animal Carvings from Mounds of the Mississippi Valley* (1883); *Birds of the Hawaiian Islands* (1902); and, among other bulletins of the U. S. Department of Agriculture, *The Mammals of Bitterroot Valley, Mont.* (1911).

HERCULANEUM. See ARCHAEOLOGY.

HEREDITY. See ZOOLOGY.

HERSCHEL, CLEMENS. An American engineer, died in Glen Ridge, N. J., Mar. 1, 1930. Born in Boston, Mass., Mar. 23, 1842, he was graduated in 1860 from the Lawrence Scientific School of Harvard University and, in 1863, from the Karlsruhe Technical School, Germany, after studying three years there and in France. He first turned his attention to bridge building, during which time he served as railroad commissioner of Massachusetts (1881-83). In 1875 he published *Continuous Revolving Drawbridges*. From 1879 to 1889, he was hydraulic engineer for the Holyoke (Mass.) Water Power Company, and during these years, rebuilt the Holyoke dam across the Connecticut River, put the sale of water for power to the local mills on a scientific basis, constructed and operated the Holyoke testing flume, and devised the Venturi meter for measuring the flow of water in conduits of any conceivable size. For designing this meter, named in honor of the Italian who established the principle on which it is based, Mr. Herschel was awarded the Elliott Cresson Gold Medal of the Franklin Institute of Philadelphia, and his paper on the subject, in 1888, won the Rowland Prize of the American Society of Civil Engineers. In 1889 he became engineer and superintendent of the East Jersey Water Company and built works to provide an additional water supply for Newark and adjoining New Jersey municipalities. After 1900 he practiced privately with offices in New York City. He worked with power companies at Niagara Falls (1884-1904) and was consultant on the deep-pressure tunnel which continued the Catskill aqueduct beneath New York City, as well as for many other projects. He contributed to engineering journals and, in 1897, published *115 Hydraulic Experiments*. Mr. Herschel's translation of *Two Books on the Water Supply of the City of Rome*, by Sextus Julius, the manuscript of which he found in an Italian monastery, appeared in 1899. In his will he established a trust fund of \$50,000 for the construction of a hydraulic research laboratory at Harvard University.

HETCH HETCHY. See CALIFORNIA under *Political and Other Events*; **WATER WORKS AND PURIFICATION.**

HICKSITE FRIENDS. See **FRIENDS.**

HIDES. See **LEATHER.**

HIGH SCHOOLS. See **EDUCATION IN THE UNITED STATES.**

HIGHWAYS, HIGHWAY BRIDGES. See **ROADS AND PAVEMENTS; BRIDGES.**

HILL, FREDERICK TREVOR. An American lawyer and author, died in Yonkers, N. Y., Mar. 17, 1930. Born in Brooklyn, N. Y., May 5, 1866, he was graduated from Yale University in 1887 and from the law school of Columbia University in 1889. Commissioned a captain in the Quartermasters' Reserve Corps in February, 1917, he went to France with the staff of General Pershing, serving in the A. E. F. until 1919. He was promoted to major to the Quartermasters' Reserve Corps in December, 1917, and to lieutenant-colonel in the U. S. army in 1918. In July, 1919, he was re-commissioned lieutenant-colonel in the Reserve Corps and, in 1920, was appointed on the General Staff of the U. S. Army, initial eligibility list. He was cited by General Pershing for exceptionally meritorious service (1919) and was awarded membership in the Legion of Honor by France. Mr. Hill wrote articles and books on legal subjects, and essays, novels, stories, and plays. His works include *Miniatures of Balzac*,

with S. P. Griffin (1893); *The Case and Exceptions*, short stories (1900); *The Care of Estates* (1901); *The Minority* (1902); *The Web* (1903); *The Accomplice* (1905), all novels; *Lincoln the Lawyer* (1906); *Decisive Battles of the Law* (1907); *The Story of a Street* (1908); *On the Trail of Washington* (1909); *Lincoln's Legacy of Inspiration*, essays (1909); *On the Trail of Grant and Lee* (1911); *Washington in Action* (1912); *The Thirteenth Juror*, novel (1913); *Tales out of Court*, short stories (1920); *High School Farces*, plays (1920).

HISPANIC SOCIETY OF AMERICA, THE. An international organization founded in New York City in 1904 to establish a public library and museum designed to be a link between the English-, Spanish-, and Portuguese-speaking peoples, and to advance the study of the Spanish and Portuguese languages, literature, and history, and the study of the countries wherein Spanish and Portuguese are or have been spoken languages. Since 1904, when a collection of paintings, manuscripts, maps, and coins, and a library of about 40,000 volumes were placed in charge of the society, valuable additions have been made to this collection, and a number of temporary exhibitions have been held of the works of noted Hispanic artists. Membership in the society is limited to 100, is honorary, and includes specialists and scholars of all nationalities distinguished in the Hispanic field. The society has published more than 200 catalogues, reprints of old manuscripts, and monographs. The president for 1930 was Archer M. Huntington and secretary, George Bird Grinnell. The museum and headquarters of the society are at 156th Street, West of Broadway, New York City.

HISTORICAL ASSOCIATION, AMERICAN. A society for the promotion of historical studies and writings, formed in 1884 by a group of American scholars and chartered by Congress in 1889. Under provision made by the United States Government, it publishes annual reports and is charged with the office of communicating its proceedings and its information on the state of historical study and writing to the secretary of the Smithsonian Institution, for transmission to Congress. In 1930 the Association had a membership of 3700, who represented not only every State of the Union but also Canada and many European and South American countries. It invites to membership not only those who are engaged in historical work and teaching but all who feel a sufficient interest in historical science to prompt them to join.

The forty-fifth annual meeting was held in Boston, Mass., Dec. 29-31, 1930. The conferences dealt with the following subjects: "The French Revolution"; "Hispanic-American History—Simón Bolívar"; "New England in the Eighteenth Century"; "Organized Religion in American Life"; "Social Studies in the Schools"; "Modern European History"; "Problems of the Young Scholar"; "The Far East"; "English History—A Survey of the Most Important Tasks Still to be Completed"; "Europe in Africa"; "New Viewpoints in Southern History"; "Opportunities for More Effective Research in Colleges"; "Medieval Science"; "The Archaeology of Hellenistic-Roman Cities"; "American Maritime History"; "Feudalism and Serfdom." Meeting with the society for joint sessions were the National Council for Social Studies, American Society of Church History, Agricultural History Society, Business Historical So-

ciety, and Mississippi Valley Historical Association.

The official organ of the association is the *American Historical Review*, a quarterly. The *Annual Report* contains proceedings, important papers read at the annual meetings, texts of significant documents, reports on American archives, reports on history teaching, and papers on agricultural history. The officers for 1930 were: President, Evarts B. Greene, Columbia University, New York City; first vice-president, Ephraim Douglass Adams, Stanford University, Calif. (died Sept. 1, 1930, q.v.); second vice-president, Carl L. Becker, Cornell University, Ithaca, N. Y.; secretary, Dexter Perkins, University of Rochester, Rochester, N. Y.; treasurer, Charles Moore; assistant secretary-treasurer, Patty W. Washington; editor, Lowell Joseph Ragatz, George Washington University, Washington, D. C. Headquarters are at 40 B Street, S.W., Washington, D. C.

HISTORY. See LITERATURE, ENGLISH AND AMERICAN; FRENCH LITERATURE; GERMAN LITERATURE; ITALIAN LITERATURE; SCANDINAVIAN LITERATURE; SPANISH LITERATURE; PHILOLOGY, MODERN.

HITLER, ADOLPH. German Fascist leader. See GERMANY, under *History*.

HOBART COLLEGE. An institution for the higher education of men in Geneva, N. Y.; founded chiefly under the auspices of the Protestant Episcopal Church in 1822 and permanently chartered by the Regents of the University of the State of New York in 1825. William Smith College, a coordinate institution for the separate instruction of women, administered by the Hobart College corporation, and with instruction given by the Hobart College faculty, was established in 1908. The student enrollment in Hobart College for the autumn of 1930 was 331, while the enrollment in William Smith College was 135. The combined faculty of the two colleges numbered 40. The endowment amounted to \$1,403,000, and the income for the year was approximately \$270,000. There were 89,000 volumes in the library. During 1930 the dormitory Medbery Hall was enlarged and refurnished at a cost exceeding \$35,000. An endowment campaign was also conducted to raise \$1,000,000 for new buildings and \$1,000,000 for instruction. President, Murray Bartlett, D.D., S.T.D., LL.D.

HOBOKEN, N. J. See CELEBRATIONS.

HOCKEY. Ice hockey continued to gain in popularity in the northern part of the United States and in Canada during the 1929-30 season. Not including post-season play-offs, a total of 1,682,915 persons attended the games of the National Hockey League, or 79,389 more than in 1928-29. The Stanley Cup, emblematic of the world's professional hockey championship, was captured by the Montreal Canadiens from the Boston Bruins, the Canadiens winning two straight games by scores of 3 to 0 and 4 to 3, respectively. The Canadiens qualified for the final by defeating the Chicago Black Hawks and the New York Rangers. The Boston Bruins, victors in the National Hockey League series, gained the finals by defeating the Montreal Maroons, winners of the regular international series, in three out of four spectacular contests. The Canadian Amateur hockey title was won by the Montreal A. A. A.

Yale had probably the outstanding sextet among the college teams, winning 16 consecutive games previous to the annual series with Harvard. The Harvard team won 3 to 2 in the first game,

lost the second match by 3 to 1, and the third game resulted in a tie.

HOFFSTEDE DE GROOT, CORNELIUS. A Dutch art critic and historian, died at The Hague Apr. 14, 1930. He was born in 1863. He served for many years as director of the prints collection in the Rijks-Museum in Amsterdam and was also a member of the commission of the leading museums of Haarlem and The Hague. Through his study of the work of Rembrandt and other masters of the seventeenth century, he established an international reputation as an authority on Dutch art. He also discovered the works of the painters Pieter Yanssen and Judith Leyster, the latter a pupil of Hals. In 1893 he wrote a book on Dutch paintings in British private collections, and in 1896 issued an extensive classification of Dutch and German paintings. The *Catalogue Raisonné of the Works of the Most Eminent Dutch Painters of the Seventeenth Century* (8 vols., 1908-27), which he compiled with W. R. Valentiner, is considered the standard work on that subject. His other publications include: *Zeichnungen von Rembrandt in Lichtdruck nachgebildet* (with Friedrich Lippmann, 10 vols., 1888-1910); *Rembrandt, Beschreibendes Verzeichnis seiner Gemälde*, with Wilhelm Bode (English trans., 8 vols., 1897-1905); *Meisterwerke der Porträtmalerei auf der Ausstellung im Haag* (1903); *Die Urkunden über Rembrandt* (1906); *Die Handzeichnungen Rembrandts* (1906); and *Isack Koedijck* (1927).

HOG CHOLERA. See VETERINARY MEDICINE.

HOGS. See LIVESTOCK.

HOLLAND. See NETHERLANDS, THE.

HOLLIS, IRA NELSON. An American mechanical engineer and educator, died in Cambridge, Mass., Aug. 15, 1930. He was born in Mooresville, Ind., Mar. 7, 1856. On graduating from the U. S. Naval Academy in 1878, he rose to the rank of assistant engineer in the United States Navy, but resigned in 1893 to become professor of engineering at Harvard University. While at Harvard he directed the building of the stadium, which was the first structure of its kind in the United States. In 1913 he was elected president of Worcester Polytechnic Institute, holding this office until his retirement in 1925. He was president of the American Society of Mechanical Engineers in 1917. The A. M. degree was conferred on him by Harvard University (1899); the L.H.D. degree by Union College (1899); and the Sc.D. degree by the University of Pittsburgh (1912). He was the author of *War College Lectures on Naval Ships* (1892) and *History of the Frigate Constitution* (1900).

HOLM, hólmi, FRITS (VILHELM). A Danish explorer and journalist, died in New York City, Mar. 9, 1930. Born in Copenhagen in 1881, he was educated at Copenhagen University and in the Danish Royal Navy. During the Russo-Japanese War (1904-05), he was correspondent in the Far East for Danish newspapers. In 1907-08 he commanded a scientific expedition into the interior of China, bringing with him on his return to the Western World the only existing monolithic replica of the famous Nestorian Monument of 781 A.D. This replica was first lent to the Metropolitan Museum of Art in New York City (1908-16) and then put in the Lateran Palace in Rome. He was a correspondent and a Red Cross commissioner during the World War, receiving many decorations for his work. In 1923 he published a volume entitled *My Nestorian Adventure in China*.

HOLY CROSS, COLLEGE OF THE. A Roman Catholic College for men, under the Society of Jesus, in Worcester, Mass.; founded in 1843. The enrollment for the autumn of 1930 totaled 1039, with a distribution as follows: Arts course, 783; science courses, 77; philosophy course, 164; and graduate school of chemistry, 4. The faculty numbered 79. The library contained 75,000 volumes. President, the Rev. John M. Fox, S.J.

HOME DEMONSTRATION WORK. See AGRICULTURAL EXTENSION WORK.

HOME ECONOMICS. See AGRICULTURAL EXTENSION WORK; FOOD AND NUTRITION.

HOME MANAGEMENT. See AGRICULTURAL EXTENSION WORK.

HOMICIDE. See CRIME.

HONDURAS, hōn-dōō'rās. A Central American republic, bounded on the north and east by the Caribbean Sea, on the west by Guatemala, Salvador, and the Pacific Ocean, and on the south by Nicaragua. Capital, Tegucigalpa.

AREA AND POPULATION. The estimated area is 44,275 square miles; population, according to the census of 1926, about 760,560, mostly Indians with a strain of Spanish blood. The chief towns with their populations in 1926, are Tegucigalpa, 26,713 (40,049 on June 29, 1930); San Pedro Sula, 16,881; La Ceiba, 12,136; Choluteca, 10,444; Santa Rosa de Copán, 9795; Comayagua, 9413; Juticalpa, 8591. The chief ports are Amapala on the Pacific and Porto Cortez and Omoa on the Atlantic. The population in 1929 was estimated at 800,000. In the fiscal year 1928-29, there were 29,292 births and 16,222 deaths.

EDUCATION. Elementary education is nominally free and compulsory between the ages of 7 and 15. Government statistics for 1928-29 showed 1250 primary schools, with 41,854 enrolled pupils and 1637 teachers; 14 secondary schools, with 973 enrolled students and 267 teachers; and an enrollment in the university of 167 students.

PRODUCTION. The economic importance of Honduras is due mainly to its large banana production, exports of this fruit comprising approximately 85 per cent of all foreign shipments. The production of sugar is increasing and coffee and coconuts are also grown. The country is well adapted to cattle raising, but stock breeding is neglected. Mineral resources consist of gold, silver, lead, copper, iron, zinc, antimony, and coal; only the first four minerals named are exported in commercial quantities. Bituminous coal resources are estimated at 1,000,000 and lignite resources at 4,000,000 metric tons, all undeveloped. Water-power resources, also undeveloped, are equivalent to about 1,000,000 horse power. Manufacturing is confined largely to sugar refining.

COMMERCE. The total foreign trade for the fiscal year ended July 31, 1929, amounted to \$39,430,097, of which \$14,860,931 represented imports and \$24,569,166 were exports. In 1927-28, the total foreign trade was \$35,716,333, imports were valued at \$12,573,595 and exports at \$23,142,738. The favorable trade balance for 1928-29 was \$9,708,235, as compared with \$10,569,143 for the preceding year. Of the total exports \$20,869,328 represented the value of banana shipments (\$18,670,637 in 1927-28); sugar, \$575,492 (\$1,451,929); coffee, \$525,750 (\$829,054). Textile manufactures, petroleum products, iron and steel manufactures, lumber, and flour were the leading imports.

The United States increased its share of the imports trade in 1928-29 to \$11,563,364 from \$10,-

028,998 in the preceding year. Other chief sources of imports, in the order named, were the United Kingdom (\$837,807), Germany, Central America, Curaçao, and France. The United States was again the principal customer of Honduras, taking goods to the value of \$18,273,189 in 1928-29, as against \$17,646,649 in 1927-28. Values of shipments to other countries were: Germany, \$2,947,246; United Kingdom, \$1,978,784; Central America, \$696,293; the Netherlands, \$283,881; and Canada, \$231,842. For the year ended June 30, 1930, imports from the United States were valued at \$12,126,580 and exports to that country at \$13,531,743.

FINANCE. Revenues and expenditures during the fiscal year 1928-29 totaled 13,728,388 pesos (1 peso equals \$0.50) and 12,863,625 pesos, respectively, according to the Minister of Finance. The surplus of 804,763 pesos, added to that carried over from 1927-28, left a Treasury balance of 1,691,059 pesos. The budget for the fiscal year 1929-30, as adopted by Congress, calculated both revenues and expenditures at 13,101,923 pesos; for 1930-31 the budget balanced at 15,109,628 pesos. The public debt on July 31, 1928, stood at about 28,364,000 pesos (\$14,182,000), of which 11,200,000 pesos were held abroad. Exchange difficulties occurred early in 1930, and the Government, through an arrangement with American bankers, took steps to stabilize the currency at the rate of two pesos to \$1.

COMMUNICATIONS. Railways in 1929 extended about 1065 miles, all except 66 miles being owned by fruit companies. Purchase of the National Railway and the dock at Puerto Cortez was authorized by a decree signed by the President Mar. 18, 1930, and passed by Congress the previous day. At the end of 1929, there were 258 miles of highway and 958 miles additional under construction. For the fiscal year ended July 31, 1929, there were 1035 telephones, with 1550 miles of wire, and 262 telegraph offices, with 5301 miles of wire.

GOVERNMENT. According to the Constitution as amended in 1924, executive power is vested in the President nominated and elected by popular vote, and holding office for four years; legislative power is in the Congress of Deputies consisting of 43 members chosen for four years directly by popular vote. A permanent commission of five members transacts the routine business for Congress while that body is not in session. President in 1930, Dr. Vicente Meira Colindres, who assumed office Feb. 1, 1929, for a four-year term.

HISTORY. An agreement for the settlement by arbitration of the long-standing boundary dispute between Honduras and Guatemala was reached in 1930, following negotiations between representatives of both countries at Washington (see GUATEMALA, under *History*). Negotiations for the appointment of a commission to demarcate the boundary under dispute with Nicaragua were carried on during the year, but without reaching a conclusion acceptable to the delegations of both countries.

Continuance of alleged Communist propaganda, which resulted in the restriction of immigration in 1929, led the Government on June 29, 1930, to declare martial law in the four departments forming the Atlantic coast region. A number of foreigners were arrested and 40 were deported. According to the Government, Communist workers had planned a "strike of seditious character" for July 4. The resignation of Minister of Finance Diaz Chavez in March, 1930, was followed on

April 25 by the presentation of resignations by the Ministers of Education, Foreign Affairs, War, Interior, and Public Works. The President refused to accept the resignations of the latter five. On May 13, however, the Minister of Education was succeeded by Ricardo Alduvin, Minister to Mexico, while Céleo Davila was named Minister of Finance. Congressional elections held in October, 1930, resulted in the selection of an equal number of Conservative and Liberal representatives, an outcome which testified to the fairness of the election. Each party demanded the right to name the president of Congress, under threat of abstention. At the end of the year a compromise was reached under which the two parties were to draw lots for the control of Congress. The withdrawal of either party would have forced President Mejía Colindrez, who was elected by a Liberal coalition, to declare a dictatorship for lack of a quorum in Congress.

A treaty providing for free exchange between Honduras and Nicaragua of natural products and articles manufactured from natural products went into effect Aug. 23, 1930. Tobacco and alcohol, which are Government monopolies, were excluded from the agreement. *Commerce Reports* for May 12, 1930, stated that President Mejía Colindrez had signed a decree imposing a tax of \$1 a month on all lands surveyed and to be surveyed under railway concessions and agricultural and agrarian laws relating to the alternate lots. If effective, the decree would require American interests in Honduras to pay several million dollars annually or abandon most of the alternate lots held in fee simple and under lease.

HONDURAS, BRITISH. See **BRITISH HONDURAS.**

HONG KONG. A possession of Great Britain at the mouth of the Canton River, about 90 miles to the south of Canton, China; comprising an island, with an area of 32 square miles, and the opposite Peninsula of Kowloon, separated from it by a strait about a half-mile wide. Total area, 391 square miles. In addition, considerable land in Kowloon Bay has been reclaimed from the sea. At the end of 1929 the total civil population was estimated at 1,143,510, of which 18,150 were non-Chinese. In 1928, 257,162 Chinese left Hong Kong and 187,847 immigrants entered. Deaths exceeded births by 5400 in Victoria and Kowloon. Victoria, the chief business centre, is on Hong Kong Island and had a population of 577,500 in 1929. Pupils enrolled in the schools in 1928 numbered 56,301. The British University of Hong Kong is attended mostly by Chinese students.

The principal industries are sugar refining, shipbuilding, rope making, the manufacture of tobacco, cement, and knit goods, and tin refining. Hong Kong is a free port, the trade being chiefly with Great Britain, India, Ceylon, Australia, the United States, China, and Japan. In 1928, 52,278 vessels of 37,640,694 tons entered and cleared in the foreign trade. Due to disturbed conditions in China, trans-Pacific freight shipped into Hong Kong showed a 40 per cent decrease in the first half of 1930, as compared with the same period of 1929. Revenue for 1928 totaled £2,496,839 and expenditure, £2,123,024. The colony is under a governor aided by executive and legislative councils. Governor and Commander-in-Chief in 1930, Sir William Peel (appointed 1930).

HOOVER DAM. See **DAMS.**

HOPS. The production of hops in 1930 in most of the hop-growing countries of Europe and in the

United States suffered a marked decline as compared with the yield of the preceding year. Good prices in Europe for several years past had given rise to an increase in acreage and this coupled with good yields led to overproduction and the consequent fall in prices making the culture of the crop less profitable. The production of five countries including the United States reporting to the International Institute of Agriculture, Rome, was placed at 103,517,000 pounds as against 133,936,000 pounds the year before. The area devoted to the crop was 113,000 acres or 20,000 acres less than in 1929. Belgium reported a production of 2,271,000 pounds and Czechoslovakia of 25,097,000 pounds. A later official estimate placed the crop of Germany at 24,366,000 pounds or 5,708,000 pounds less than in 1929. In some European sections owing to low prices part of the crop was not harvested. The International Hop Congress, meeting at Saaz, Czechoslovakia, advised picking only hops in perfect condition in 1930 and urged the curtailing of the present acreage by one-third. In England also growers were advised to harvest only best-quality hops to sustain prices.

The hop production of the United States in 1930 according to estimates published by the Department of Agriculture was 23,447,000 pounds compared with 33,220,000 pounds in 1929, a reduction of over 28 per cent and nearly 20 per cent below the five-year average of 1924-1928. The area was reduced from 24,900 acres in 1929 to 19,500 acres in 1930. The average yield per acre was 1202 pounds in 1930 and 1334 pounds the year before. The farm price about December 1 averaged 14.8 cents per pound in 1930 and 11.4 cents in 1929 and at these prices the total value of the crops was \$3,462,000 and \$3,788,000 respectively. As heretofore the commercial production of hops was confined largely to the Pacific Coast States. Of these Oregon produced 14,350,000 pounds, California 5,445,000 pounds, and Washington 3,652,000 pounds, the average yield per acre being 1025 pounds, 1650 pounds and 1660 pounds respectively. The hop exports of the United States for the fiscal year ended June 30, 1930, were 6,792,000 pounds valued at \$1,050,000, while the preceding year they were 8,836,000 pounds valued at \$1,827,000. The imports for the same periods were 926,000 pounds and 649,000 pounds and valued \$145,000 and \$200,000 respectively.

HORMONES. See **CHEMISTRY** under *Biological Chemistry.*

HORNEBLENDE, CHANGES IN. See **GEOLOGY.**

HORSE RACING. See **RACING.**

HORTICULTURE. Although affected by the general depression in business, horticulture as a whole did not suffer in 1930 in proportion to several other branches of agriculture, a fact which spoke well for the stability of the industry. Disastrous spring frosts in the Central States practically eliminated the peach crop in that area and cut deeply into cherry yields and the long-continued drought took a heavy toll of fruits and vegetables in the Central and Atlantic seaboard States. Yet the horticultural industry is so widely scattered throughout the whole United States that regional failures did not greatly affect the whole, and total productions of practically all fruits and many vegetables were higher in 1930 than in 1929. Overproduction of peaches and grapes in 1930 gave evidence that the need of the industry is not greater quantity but rather better quality with more efficient methods of handling and marketing horticultural products.

PRODUCTION. According to data released on December 17, 1930, by the U. S. Department of Agriculture, all important fruit crops were larger in 1930 than in the preceding year, a fact which should, however, be qualified by the statement that 1929 crops were generally below the average of the preceding five years. A total of 163,543,000 bushels of apples were produced in 1930 as compared with 142,788,000 bushels in 1929; peaches, 53,286,000 bushels in 1930, 45,789,000 bushels in 1929; pears, 25,703,000 bushels in 1930, 22,063,000 bushels in 1929; grapes, 2,368,557 tons in 1930, 2,098,547 tons in 1929; cherries, 108,100 tons in 1930, 84,930 tons in 1929; fresh plums, 143,750 tons in 1930, 116,300 tons in 1929; dried prunes, 254,215 tons in 1930, 160,380 tons in 1929; oranges, 47,691,000 boxes in 1930, 33,839,000 boxes in 1929; grapefruit, 14,153,000 boxes in 1930, 10,718,000 boxes in 1929; lemons, 7,020,000 boxes in 1930, 5,900,000 boxes in 1929; cranberries, 570,500 barrels in 1930, 546,000 barrels in 1929; pecans, 37,250,000 pounds in 1930 and 38,005,000 in 1929; strawberries, 229,336,000 quarts in 1930 and 327,975,000 quarts in 1929. Only two of these crops, namely, cherries and pecans, gained in total value at the farm, thus making it evident that as a rule increased yields were not economic gains to the producers.

As might be expected, vegetable production was much more affected by the drought and was hence much more variable. White potato production in the two years was practically equal, 361,090,000 bushels in 1930 and 359,048,000 bushels in 1929. Sweet potatoes, on the other hand, being largely produced in drought-ridden States, showed a sharp decline from 84,521,000 bushels in 1929 to 71,154,000 bushels in 1930; asparagus production increased from 9,766,000 crates in 1929 to 10,403,000; cabbage declined from 1,116,300 tons in 1929 to 1,035,500 tons in 1930; cantaloupes declined from 16,982,000 crates in 1929 to 15,391,000 crates in 1930. Other crops to lose in 1930 were cauliflower from 6,500,000 crates in 1929 to 5,595,000 crates in 1930; canning corn from 704,400 tons to 661,700 tons; lettuce from 20,180,000 crates to 19,849,000 crates; spinach from 226,400 tons to 138,000 tons. Vegetable crops to gain in 1930 were carrots from 10,957,000 bushels in 1929 to 10,994,000 bushels in 1930; celery from 8,872,000 to 10,043,000 crates; cucumbers from 8,639,000 to 11,740,000 bushels; eggplant from 713,000 to 857,000 bushels; onions from 25,470,000 to 26,124,000 bushels; green peas from 300,000 to 347,000 tons; peppers from 4,160,000 to 4,381,000 bushels; tomatoes from 1,896,000 to 2,132,400 tons; and watermelons from 69,579,000 to 74,751,000 individuals.

Not only do the above figures show the seasonal changes in the crops but depict very clearly the tremendous magnitude of fruit and vegetable production in the United States.

EXPORTS AND IMPORTS. According to the Monthly Summary of Foreign Commerce of the United States, October, 1930, published by the U. S. Department of Commerce and covering the twelve months ended Dec. 31, 1930, there was a notable decline in the value of horticultural products exported from the United States in 1930 as compared with 1929. In exports the total value of fruits, nuts, vegetables, vegetable preparations and nursery stock declined from \$163,010,775 for the twelve months of 1929 to \$130,593,445 for the corresponding period of 1930. In imports the change in total value of these items was from

\$142,498,555 in 1929 to \$118,839,277. Thus the greatest change was in value of exports, a condition undoubtedly due to the world-wide depression in markets as well as the decline in unit value of various United States products offered for sale.

The most notable declines in individual export items were in canned vegetables from \$9,453,758 in 1929 to \$6,721,324 in 1930; oranges \$18,745,561 to \$11,467,500; apples \$4,633,108 to \$3,066,787; and raisins \$8,390,051 to \$6,310,035. Conspicuous changes in import values were canned tomatoes from \$9,005,164 in 1929 to \$2,737,956 in 1930; figs from \$1,833,299 to \$1,141,876; shelled almonds from \$6,437,129 to \$3,967,450; and walnuts from \$5,689,674 to \$4,455,624. Certain import items increased in value to offset the decline in others, notably white potatoes from \$4,304,757 in 1929 to \$5,093,397 in 1930; onions from \$3,555,856 to \$3,618,840; lemons from \$1,064,366 to \$2,080,283. Changes in import values were naturally considerably influenced by the new tariff ratings, which tended to increase unit values. Bananas, entering free of duty, showed but little change from 1929 to 1930, the import values being, respectively, \$36,047,969 and \$34,794,184. Incidentally the report shows that bananas are by far the leading single item in horticultural imports, being in substance over one quarter of the total value and thus concretely testifying to the magnitude of the banana industry.

COÖPERATIVE MARKETING. The Federal Farm Loan Board proved of great assistance to co-operative marketing associations during the year by making important loans to effect needed reorganizations and stabilize the marketing of large crops.

Material loans were made by the Farm Board to the Florida Citrus Exchange to finance the construction of facilities for treatment of citrus fruit, to insure the destruction of possible Mediterranean fruit-fly larvae, and generally to strengthen their business. Loans were also made to fig growers of Texas, raisin growers of California, cherry growers of Michigan and Wisconsin, pecan producers of the South and other groups, all with a view to placing these organizations on a strong, self-sustaining basis.

Strong, well-established organizations, such as the California Walnut Growers and the California Fruit Growers' Exchange, again rendered material service to their members, successfully marketing their respective 1930 crops in the face of generally unfavorable conditions. The general manager of the California Fruit Growers' Exchange, in his annual report for the year ended Oct. 31, 1930, states that this organization handled 46,377 cars of citrus, practically 78 per cent of the entire citrus production of the State. This vast quantity of citrus fruits, oranges, lemons and grapefruit, netted the growers substantial returns of over 104 million dollars. To facilitate marketing, this California exchange spent over \$1,300,000 in advertising in the United States and Canada. Again it was evident that strong, well-managed coöperatives are a great necessity in the handling of the larger fruit crops.

PLANT QUARANTINES. The victory of federal and State entomologists over the Mediterranean fruit fly in Florida was so complete and astounding as to mark 1930 definitely as a banner year in the history of the plant quarantine service. Complete eradication of this potentially

destructive insect at the end of the year was confidently expected as only two minor outbreaks were discovered in 1930. As a result practically all restrictions on the movement of Florida fruits and vegetables were removed in the late autumn, greatly to the relief of the producers in that State.

Efforts to stop the spread of Japanese beetle and gipsy moth were not as successful, both insects continuing their advance into new territory. The so-called "Phony Peach disease," an infectious disease of the roots of peach and nectarine trees widely scattered through the southern States, was subjected to quarantines limited to the movement of possibly infected nursery stock, a measure which, coupled with eradication of diseased mature trees, promised to check this destructive pest quickly. Domestic and foreign quarantines imposed more or less hardship on certain producers but accomplished vast good for the American horticultural industry as a whole.

HORTICULTURAL RESEARCH. No record of the year's accomplishments would be quite complete without mention of research activities which, although lacking in manifestations, really form the basis for the present high standards in horticultural production. The Maryland Agricultural Experiment Station (*Amer. Soc. Hort. Sci. Proc.*, 26, 1929, pp. 191-196), found in a study of various factors affecting the color of apples that sugar in the form of cerelese applied to the soil materially enhanced red coloration, especially when used in connection with spring applications of nitrate of soda. Such a treatment developed to a point of practical usage would greatly add to the marketability of apples of the red varieties. The Ohio Agricultural Experiment Station (*Amer. Soc. Hort. Sci. Proc.*, 26, 1929, pp. 167-173) failed to find that nitrogen fertilizers had any direct influence on the keeping quality of apples, thus controverting the somewhat common thought that nitrogenous materials lessen the storage life of fruits. The New York Agricultural Experiment Station, finding that differences in the yielding capacity of apple trees of a single variety were maintained year after year, reached the conclusion that such differences are due to inherent qualities in the trees or underlying soil and not to pruning or other managerial practices.

The date that apple leaf buds transform into flower buds was found at the New Hampshire Agricultural Experiment Station (*N. H. Sta. Sci. Contrib.*, 26, 1930, pp. 255-260) to vary sharply from year to year. For instance, in the Baldwin apple the change was first noted on Aug. 7, 1928, and in 1929 on July 19. A prolonged drought was the factor concerned in earlier appearance in the second year. The fact that certain apple varieties require cross pollination and others are self-fruitful is now well known. The Missouri Agricultural Experiment Station (*Missouri Sta. Research Bul.*, 138, 1930) presented evidence that the degree of self-fruitfulness is not constant but varies from year to year or tree to tree with differences in nutrition, vigor of tree, etc. Working with Tokay grapes, the California Agricultural Experiment Station (*California Sta. Bul.* 492, 1930, pp. 22) found that thinning out some of the berries resulted in more uniform coloring and ripening of the remaining grapes and hence a higher

quality and more marketable product. The same station (*Botanical Gazette*, 89, 1930, No. 4, pp. 410-413) found that orange trees need a small amount of boron in their nutrition although at one time boron was considered purely a toxic substance in plant growth.

The advisability of using garden peas promptly after harvest was shown in chemical studies conducted by the New York Agricultural Experiment Station (*Plant Physiology*, 5, 1930, No. 3, pp. 399-412). The loss in sucrose was very rapid, followed by a corresponding increase in alcohol insoluble materials.

These few random examples illustrate the substantial grade of work that was being carried on by horticultural research workers.

THE SITUATION IN OTHER COUNTRIES. Large crops of fruit in various parts of the world competed strenuously with those of the United States for the valuable European market. Australia and New Zealand exported 5,423,000 boxes of apples to Europe in 1930, exceeding their hitherto record crop of 1928 by 480,000 boxes. The Canadian apple crop, according to the Fruit Branch of the Canadian Department of Agriculture, declined sharply in 1930, being estimated at 3,166,000 barrels as compared with 3,940,000 barrels in 1929. British Columbia produced 42 per cent more apples, but all other provinces showed losses. Almonds in Mediterranean countries were 88 per cent of 1929 production but filberts showed a distinct gain. The immensity of nut production in this area is shown in estimates of 73,600 tons of shelled and 7750 tons of unshelled almonds and 94,500 tons of filberts on an unshelled basis.

A broad review of the world citrus situation in *Foreign Crops and Markets*, Mar. 24 and 31, 1930, published by the U. S. Department of Agriculture, asserted that there was an increasing production of oranges and grapefruits, especially notable in South Africa and Brazil, potential competitors of the United States for the prized European market.

To offset increased production there was a significant increase in utilization of citrus in north-western Europe, grapefruit especially showing an increased demand in Great Britain. Japan, the third largest citrus producing country in the world, grew over 10,000,000 boxes of oranges in 1930 but this crop was largely used at home. Palestine and Syria with an export crop of 2,700,000 boxes of oranges in 1930, figured somewhat in the citrus deal.

There was a considerable increase in imports into the United States of fresh vegetables from Mexico, Cuba, and Bermuda in 1930 over 1929, green peas from Mexico showing a heavy increase. Bahama shipments of tomatoes were way below average due to the September, 1929, hurricane which destroyed the plantations.

MISCELLANEOUS. The Ninth International Horticultural Congress was held in London, England, Aug. 7-15, 1930, with delegates assembled from all over the world. Asexual propagation of plants received major consideration because of the many problems involved and also on account of the notable advances made in the subject by British horticulturists. Dr. E. C. Auchter, head of horticultural investigations in the U. S. Department of Agriculture, and Dr. W. T. Macoun, occupying a similar position in Canada, were elected permanent representatives on the international committee charged with arrangements for future horticultural congresses.

The passage by the United States Congress of an amendment to the United States Patent Law to include the recording of new plants capable of being asexually propagated, i.e. by cuttings, buds, bulbs, etc., was considered a notable step in stimulating the breeding of improved varieties of economic plants. Under the provisions of this law the originators may be protected for a period of years, thus allowing them opportunity to reap some of the rewards of their endeavors.

NECROLOGY. Dr. Ernest H. Wilson, director of the Arnold Arboretum, Boston, and world-famous plant explorer, was killed in an automobile accident near Worcester, Mass., on Oct. 15, 1930. The Regal lily, discovered by Dr. Wilson in a remote region of China, is a wonderful monument to his memory. He was author of many notable books including *Plant Hunting*, *Romance of Our Trees*, *Aristocrats of the Garden*. G. P. Rixford (q.v.), famous California pomologist, died Oct. 27, 1930, as the result of a train accident. His aid in the discovery of the rôle of the fig wasp in the pollination of Asiatic varieties of the fig had much to do with the successful development of fig growing in California. Albert Dickens, head of the department of horticulture at Kansas Agricultural College since 1902, died Nov. 28, 1930, at the age of 62 years. F. L. Atkins, proprietor of the widely known nursery firm of Bobbink and Atkins, Rutherford, N. J., and president of the National Horticultural Society, died Nov. 10, 1930.

BIBLIOGRAPHY. The popular appeal of horticulture in its manifold phases was evident in the continued large number of books in this field. The list included: F. F. Rockwell, *Roses* (New York, 1930); A. D. Houghton, *The Cactus Book* (New York, 1930); L. S. Dickinson, *The Lawn* (New York, 1930); J. H. Nicolas, *The Rose Manual* (Garden City, N. Y., 1930); E. H. Wilson, *Aristocrats of the Trees* (Boston, 1930); J. C. Wister, *Bulbs for American Gardens* (Boston, 1930); Henry Correvon, *Rock Gardens and Alpine Plants* (New York, 1930); E. A. White, *The Chrysanthemum and Its Culture* (New York, 1930); David Fairchild, *Exploring for Plants* (New York, 1930); J. Coutts, A. Edwards, and A. Osborn, *The Complete Book of Gardening* (London and Melbourne, 1930); V. R. Gardner, *The Cherry and Its Culture* (New York, 1930); J. C. Wister, *Lilac Culture* (New York, 1930); J. E. Knott, *Vegetable Growing* (Phila., 1930); F. A. Waugh, *Everybody's Garden* (New York, 1930).

HOTELS. See ARCHITECTURE.

HOUSEHOLD ECONOMICS. See AGRICULTURAL EXTENSION WORK.

HOWARD, JAMES E. An American engineer-physicist and transportation engineer, died in North Conway, N. H., July 6, 1930. He was born in Palmer, Mass., June 26, 1851, and attended the Highland Military Academy in Worcester, Mass. He served as engineer of tests at the Watertown (Mass.) Arsenal from 1880 to 1910, and was connected with the Bureau of Standards in Washington, D. C., as engineer-physicist from 1910 to 1914. In 1914 he was appointed to the Interstate Commerce Commission's bureau of safety, where his work included notable studies of transverse fissures in rails.

HOWARD UNIVERSITY. A nonsectarian institution for the higher education of men and women in Washington, D. C.; incorporated by Act of Congress Mar. 2, 1867, "for the education

of youth in liberal arts and sciences," open to students without regard to race but principally for the education of Negroes. The registration for the summer school and autumn quarter of 1930 totaled 2530, distributed as follows: College of liberal arts, 538; college of education, 423; college of applied science, 55; school of music, 87; school of religion, 280; school of law, 67; school of medicine, 318; academic evening classes, 290; graduate students, 52; summer session, 429. The faculty numbered 231 members. The total endowment amounted to \$843,546; the endowment income for 1929-30 was \$43,478.

The United States Government appropriated \$510,000 toward salaries and other expenses for 1930-31, \$200,000 toward the completion of a college of education building to cost \$460,000, and \$539,000 for two dormitories for women, making the total Government appropriation for 1930-31, \$1,249,000. There were also reported three notable appropriations from private philanthropy, including \$200,000 from the Conrad Hubert Estate, \$211,900 from the General Education Board, and the availability of an additional sum of \$70,657 from the Julius Rosenwald Fund. These, with other smaller gifts, represented appropriations of approximately \$535,000 from private sources for the year 1929-30. The library contained 51,333 volumes. Administrative officers: Mordecai Wyatt Johnson, S.T.M., D.D., president; Emmett J. Scott, A.M., LL.D., secretary-treasurer.

HOWSE, SIR NEVILLE REGINALD. An Australian surgeon and statesman, died in London, England, Sept. 19, 1930. He was born in Stogursey, Somerset, England, Oct. 26, 1863. After qualifying in medicine at the London Hospital he went to Melbourne, Australia, to practice, and later served in the Boer War with the New South Wales forces. On the outbreak of the World War he went with the Australian Expeditionary Force to German New Guinea and the Pacific Islands, and on his return was appointed assistant director of medical services to the 1st Australian division in Egypt. He later became director of medical services to the Australian Imperial Force, seeing service in the Dardanelles. After the War he was for some time director general of the Australian Army Medical Services, but retired in 1922 with the rank of major general. In recognition of his war services he received the Victoria Cross in 1900 and was created a companion of the Bath in 1915, a knight commander of the Bath in 1917, and a knight commander of St. Michael and St. George in 1919. He was also a fellow of the Royal College of Surgery. In 1922 was elected a member of the House of Representatives of the Commonwealth of Australia, and in 1923 was one of the Australian representatives to the League of Nations' Assembly. He served as Minister for Defense and Health during 1927-28 and as Minister for Home and Territories in 1928, and at the time of his death was Minister of Health and Repatriation.

HUDSON RIVER BRIDGE. See BRIDGES.

HUMANISM. See LITERATURE, ENGLISH AND AMERICAN under *Criticism and Literary History*.

HUNGARY. A kingdom of central Europe, formerly constituting, with Austria, the Dual Monarchy of Austria-Hungary. Capital, Budapest. Regent in 1930, Nicholas Horthy de Nagybánya (elected Mar. 1, 1920).

AREA AND POPULATION. At the census of Dec. 31, 1920, Hungary had an area of 35,875 square miles and a population of 7,980,143. Thirty-six

square miles of additional territory, with 7000 inhabitants, were added after the census. The estimated population on Dec. 31, 1929, was 8,622,000, of which 90 per cent were Hungarians (Magyars), 6.8 per cent Germans, 1.7 per cent Slovaks, and the remainder Croatsians, Rumanians, Ruthenians, and Serbians. In 1928, there were 224,693 births, 146,496 deaths, and 79,634 marriages. The principal cities, with their populations in 1928, are: Budapest, 977,952; Szeged, 125,039; Debrecen, 108,816; Kecskemét, 79,418; Hódmezővásárhely, 62,445; Miskolc, 58,878; Ujpest, 58,703; Kispeszt, 52,728; Győr, 51,512.

EDUCATION. At the census of 1920, 15.2 per cent of the population over six years of age was illiterate. Attendance at day school is compulsory for children from 6 to 12 years of age, after which they must spend three years in continuation school. In 1927-28, there were 6618 elementary schools, with 747,686 pupils, and 160 secondary schools, with 60,426 pupils. Registration at the four universities in 1927-28 was as follows: Budapest, 5429; Szeged, 1268; Pécs, 1132; Debrecen, 1025.

PRODUCTION. A fertile, agricultural country, noted for the variety of products grown, Hungary in 1928 had 60 per cent of its total area under cultivation, 18 per cent permanent pasture, and the remaining area under wood and forest. Production of the chief crops, in quintals (1 quintal equals 220.46 pounds), in 1929, with comparative figures for 1928 in parentheses, was: Wheat, 19,241,009 (27,001,211); rye, 8,162,595 (8,277,641); barley, 6,185,959 (6,677,988); oats, 3,651,610 (3,995,898); maize, 19,623,521 (12,596,996); potatoes, 22,687,682 (14,705,052); sugar beets, 14,686,443 (14,377,906). Wine is an important product. Livestock in the country in 1929 included 1,819,354 cattle, 1,573,180 sheep, 2,582,255 swine, and 892,131 horses.

Hungary has important mineral resources, the bauxite deposits being among the largest known. Coal production in 1929 included 7,044,000 metric tons of brown lignite and 825 tons of black; iron ore, 136,100 metric tons; pig iron, 368,000 metric tons; steel, 513,000 metric tons. The production of metal industries in 1928 was valued at \$17,378,000 pengos (1 pengos exchanged at \$0.1744 in 1928); of textile industries, 377,811,000 pengos; of machine workshops, 236,713,000 pengos; of chemical industries, 202,929 pengos. Milling, distilling, and the manufacture of sugar, hemp, and flax are other important industries. In 1928, there were 3414 factories, employing 233,966 workmen, and with an output valued at 2,877,000,000 pengos.

The crisis in agriculture, due to overproduction and low prices, resulted in widespread agricultural unemployment and suffering in 1930. An official estimate of Aug. 7, 1930, placed the total of unemployed at 450,000.

COMMERCE. Due largely to unfavorable domestic conditions, which discouraged imports and stimulated exports, Hungary's adverse balance of trade declined to 22,800,000 pengos in 1929 from 370,265,000 pengos in 1928. Imports in 1929 totaled 1,065,000,000 pengos (1,188,976,000 in 1928) and exports were valued at 1,042,200,000 pengos (818,711,000 in 1928). Of the increase of 223,500,000 pengos in the value of exports, about 200,000,000 pengos was accounted for by larger shipments of agricultural products. Livestock, wheat, flour, sugar, poultry, and machinery were the leading exports, in the order named, and wood and wooden

products, coal, cotton cloth, paper goods, machinery, wool cloth, and wool the leading imports. The exports went principally to Austria, 322,900,000 pengos; Czechoslovakia, 168,600,000 pengos; and Germany, 119,700,000 pengos. Exports to the United States were \$1,908,065. The chief sources of imports were: Czechoslovakia, 234,400,000 pengos; Germany, 209,800,000 pengos; Austria, 142,200,000 pengos.

FINANCE. Budget estimates for the fiscal year commenced July 1, 1930, placed total revenues at 1,401,100,000 pengos and expenditures at 1,398,100,000 pengos, leaving an estimated surplus of 3,000,000 pengos. Comparative estimates for 1929-30 were: Revenues, 1,432,171,400; expenditures, 1,428,671,400; surplus, 3,500,000. Of the 1930-31 expenditure estimates, 47,400,000 pengos represented investments, making the actual estimated surplus 50,400,000 pengos. Actual ordinary revenue in 1928-29, according to preliminary figures, totaled 964,900,000 pengos and actual ordinary expenditures, 964,600,000 pengos. The total public debt on June 30, 1929, was 1,577,307,648 pengos, of which 100,058,056 pengos represented the internal funded debt, 1,279,192,488 pengos the external funded debt, and 198,057,104 pengos the floating debt. For the reparation settlement at The Hague in 1930 as it affected Hungary, see **REPARATIONS**; also below under *History*.

COMMUNICATIONS. The length of railways in 1928 was 5350 miles, of which 1897 miles were owned and 43/4 miles operated by the state. On May 1, 1930, there were 2311 miles of dirt and gravel roads, and 290 miles of surfaced highway. A total of 2534 flights, with 4229 passengers, were made over the three air lines operating in the country in 1928. The Government-owned telegraph and telephone systems (1928) had 5675 miles and 13,074 miles of line, respectively. During its first full working year in 1929, the free port established at Budapest late in 1928 reported shipments entering the port totaling 173,815 metric tons and loadings of 123,271 metric tons.

GOVERNMENT. Technically, Hungary is a constitutional monarchy with the throne vacant. The Horthy régime, which won control of the government on Aug. 7, 1919, decided that the question of who was to be chosen monarch would be postponed until the nation was liberated from external pressure. The Legislature has two Houses, the Lower House of 245 members, and the Upper House consisting of the six following groups: (1) elected representatives of the former hereditary members; (2) members elected by the county councils and municipalities; (3) heads of the various religious communities; (4) high dignitaries of the state; (5) representatives of scientific institutions and the chambers of commerce; (6) life members appointed by the head of the state. Following the elections of Dec. 20, 1926, the Lower House was constituted as follows: Party of National Unity, 171; Christian Social Union, 35; Socialists, 14; other parties, 25.

The ministry, originally formed on June 17, 1922, was reorganized Sept. 5, 1928, as follows: Prime Minister, Count Stephen Bethlen; Minister of Foreign Affairs, Dr. Louis Walkó; Interior, Dr. Béla de Scitovszky; Public Economy and Commerce, Dr. John Bud; Finance, Dr. Alexander Wekerle; Agriculture, John Mayer; Public Instruction, Dr. Count Kuno Klebelsberg; Justice, Dr. Tibor de Zsitvay (appointed Feb. 5, 1929); National Defense, Julius de Gömbös; Social Welfare, Mgr. Joseph Vass (see his biography).

HISTORY

The year 1930 was marked by important developments in all three of Hungary's outstanding problems, namely, reparations, revision of the Treaty of Trianon, and the succession to the throne. The long-standing reparation question and the allied controversy with Rumania over the compensation of Hungarian optants was finally settled at conferences at The Hague and at Paris early in the year (see REPARATIONS). A new problem arose to harass the Government, however, in the acute agricultural depression, which spread suffering and political unrest throughout Central and Southern Europe.

REPARATIONS SETTLEMENT. The Paris agreement on Eastern Reparations had important political bearings in southeastern Europe. It finally liquidated the Austro-Hungarian monarchy and ended a decade of dispute between the so-called Succession States on one hand and Austria and Hungary on the other. Under the Paris agreement, France, Great Britain, and Italy agreed to divert 13,500,000 gold crowns due them annually in Hungarian reparation payments into two funds for the indemnification of some 300 Hungarian land-owners, whose estates had been seized by Rumania. Hungary regained her financial freedom, becoming at liberty for the first time since the World War to float a foreign loan. Premier Bethlen announced immediately after the Paris settlement that Hungary would thereafter abandon her isolationist course for a policy of co-operation in southeastern Europe. At the same time, Foreign Minister Beneš of Czechoslovakia, asserting that friendly relations had now been made possible, hinted that the Little Entente was willing to hold out the olive branch to Hungary. Negotiations to settle Hungary's differences with Czechoslovakia, establish closer relations with Rumania, and conclude a non-aggression pact with Yugoslavia were reported under way in March.

THE REVISION AGITATION. These moves toward peaceful coöperation were nullified by the campaign for revision of the Treaties of Versailles, Trianon, and St. Germain, which under Italy's leadership emerged as the dominant political issue in Europe in 1930 (see ITALY and FRANCE, under *History*). The gradual alignment of the European powers into two groups supporting and opposing the treaty settlements of 1919 found Hungary among Italy's satellites in the revisionist camp. Yugoslavia, Rumania, and Czechoslovakia aligned themselves with France.

Premier Bethlen, in addressing the Hungarian Parliament May 16, pledged the unrelenting efforts of his Government in securing revision of the Treaty of Trianon, under which some 3,500,000 Hungarian subjects and their properties were incorporated in the Succession States. In an interview with a correspondent of the *New York Times* November 16 he stated for the first time Hungary's precise aims with regard to treaty revision. These were (1) the restoration of all her lost subjects of Hungarian nationality and (2) a plebiscite among her former subjects of other nationalities to determine whether they would return to Hungary or retain their existing connections. The Premier expressed the belief that the Slovaks of Czechoslovakia would be moved by economic reasons to declare for Hungary.

Although Count Bethlen repeatedly declared that the time was inopportune to press for treaty revision, his numerous visits to other European capitals during the year were regarded as evidence

that he was leaving no stone unturned to achieve his objective. His visit to Rome in April aroused much apprehension in the Little Entente states, particularly after the Fascist press hinted that he had secured Mussolini's support in behalf of revision of the more onerous clauses of the Trianon Treaty. Italy had previously shown its good will toward Hungary by supporting her claims at The Hague and Paris reparation conferences. It was definitely announced that the two Premiers had arranged increased transportation facilities for Hungarian wheat destined for Mediterranean markets by an Italo-Hungarian steamship line operating from Fiume.

In June, Count Bethlen paid a formal visit to London at the invitation of the MacDonald Government. He was in Angora in October at the same time Premier Venizelos of Greece visited the Turkish capital, and in November he aroused French fears by an official visit to Berlin. A statement issued by Count Bethlen in Budapest November 26 indicated the likelihood of a rapprochement between Soviet Russia and Hungary under Italian auspices.

RESTORATION MOVEMENT. The coming of age on Nov. 20, 1930, of Archduke Otto, chief pretender to the Hungarian throne, increased the agitation among Hungarian monarchists for the deposition of the Regent and the crowning of Otto as the legitimate heir. The eldest son of Emperor Charles and great-grand-nephew of Emperor Francis Joseph, Otto was attending Louvain University in Belgium. The activities of his adherents was countered by assurances from Foreign Minister Beneš of Czechoslovakia and Premier Maniu of Rumania that their governments would not permit the restoration of the Hapsburg monarchy in Hungary. Socialists, Communists, and other important groups in Hungary united also in actively opposing the plans of the monarchists.

Count Bethlen in 1929 had declared that the rule of Admiral Horthy was best for the nation and would not change "as long as he lives." Although contending that the question of dynastic succession was one for Parliament and not the Succession States to determine, the Bethlen Government in 1930 continued to turn a deaf ear to the Legitimist demands. Nevertheless, recurrent rumors of a monarchist plot kept Hungary in a state of suspense throughout the year, particularly following the successful *coup* made by Prince Carol of Rumania in June. At a huge monarchist demonstration July 1, the veteran Count Albert Apponyi gave assurances that the Legitimists would wait until Otto could be peacefully crowned without outside interference. On August 10, another great gathering of Hungarian monarchists swore fealty to Otto at a ceremony in Budapest in which an Austrian monarchist deputation participated. An order issued August 19 by Minister of War Gömbös for the arrest of former Empress Zita and Otto in connection with a rumored *coup d'état*, directed monarchist hostility toward the Minister, who was credited with aspiring to the Premiership. Archduke Albrecht, another leading aspirant to the Hungarian throne, withdrew his pretensions in favor of Otto early in the year.

SOCIAL UNREST. The crisis in Hungarian agriculture and industry, with its resulting unemployment and suffering, stimulated unrest and disorders, many of which were directly inspired by Communist agitation. A Communist-led demonstration against the Government's failure to

provide unemployment relief, resulted in street fighting in Budapest September 1, in which two persons were killed and 257 wounded. Hundreds of Communists were arrested during the following week to prevent a recurrence of the outbreak. A mass trial of Communists charged with conspiring to overthrow the Government was held in Budapest in June. Alarmed by the possibilities of a continued agricultural depression, Count Bethlen at a party conference on October 20 took steps toward the formation of a world wheat cartel. Hungary was represented also at the conference of Balkan states at Athens in October and the International Agrarian Conference at Bucharest later in the same month, where plans for relieving the farmers of the Balkans and Central Europe were discussed. A customs war between Hungary and Czechoslovakia appeared imminent with the failure on Dec. 11, 1930, of negotiations for an emergency trade agreement to replace the commercial treaty denounced by Czechoslovakia in 1927.

In September, J. Butler Wright, American Minister to Hungary, was succeeded by Nicholas Roosevelt. See YUGOSLAVIA, ITALY, and AUSTRIA, under *History*.

HUNTINGTON, WILLIAM EDWARDS. An American clergyman and educator, former president of Boston University, died in Newton, Mass., Dec. 6, 1930. He was born in Hillsboro, Ill., July 30, 1844. After serving during the Civil War as a first lieutenant with the 49th Wisconsin Infantry (1864-65), he attended the University of Wisconsin (A.B., 1870) and Boston University (B.D., 1873; Ph.D., 1882). Ordained to the ministry of the Methodist Episcopal Church in 1868, he held pastorates in Nahant, Roslindale, Newton, Cambridge, and Boston, Mass., until 1882. He then became dean of the college of liberal arts of Boston University, president in 1904, and dean of the graduate department from 1911 to 1917. After his retirement as president-emeritus, he devoted himself to religious and philanthropic activities. The S.T.D. degree was conferred on him by Syracuse and Wesleyan Universities in 1903 and the LL.D. degree by the University of Wisconsin in 1904, Tufts College in 1905, and Boston University in 1923.

HURRICANES; TYPHOONS. See DOMINICAN REPUBLIC and JAPAN under *History*.

HUTCHINS, HARRY BURNS. An American educator and former president of the University of Michigan, died in Ann Arbor, Mich., Jan. 25, 1930. He was born in Lisbon, N. H., Apr. 8, 1847, and was graduated from the University of Michigan in 1871. After a year of teaching at Owosso, Mich., he became instructor in history and rhetoric at the University of Michigan, being promoted later to the position of assistant professor. In 1876 he was admitted to the bar and practiced at Mt. Clemens, Mich., until 1884, when he became Jay professor of law at the University of Michigan. Three years later, he was called to Cornell University to aid in organizing the law college there and remained on the faculty until 1895 when he returned to Michigan as dean of the law school. He was elected president of the university in 1910, having served as acting head on two previous occasions, the first in 1897 and the second for the eight months preceding his election. As president, he adopted and promoted the policy of closer contacts between campus and alumni, with the result that during his administration former Michigan students raised

\$2,000,000 for the construction of new buildings. He retired as president-emeritus in 1920. The LL.D. degree was conferred on him by the University of Wisconsin in 1897, Wesleyan University in 1916, University of Notre Dame in 1917, University of California in 1918, and University of Michigan in 1920. He revised and annotated the *Michigan Supreme Court Reports* (5 vols., 1882-83) and edited the American edition of *Williams on Real Property*. He was also consulting editor for the *American and English Encyclopedia of Law and Procedure*.

HYDRAULIC-FILL CONSTRUCTION. See DAMS.

HYDROELECTRIC DEVELOPMENTS. See WATER POWER.

HYDROGENATION PROCESS OF OIL EXTRACTION. See CHEMISTRY, INDUSTRIAL.

HYDROMETALLURGY. See METALLURGY.

HYGIENE, CHILD. See CHILD WELFARE.

IALA. See PHILOLOGY, MODERN.

IBERO-AMERICAN EXPOSITION. See EXPOSITIONS.

IBSEN, Ib'sen, SIGURD. A Norwegian statesman and journalist, died in Freiburg, Germany, Apr. 14, 1930. He was born in Christiania (Oslo), Norway, Dec. 23, 1859, the son of Henrik Ibsen, Norwegian dramatist, and lived abroad with his parents from 1864 to 1884, receiving his education in Rome and in Munich. During 1885-89 he was in diplomatic service, an attaché in Stockholm, Washington, and Vienna. With his father-in-law, Bjornstjerne Björnson, Norwegian poet, he edited the *Nyt Tidsskrift* in 1892-95 and he was editor of the weekly paper, *Ringeren*, in 1898-99. He was appointed to a post in the Ministry of the Interior in 1899 and became a member of the State Council in Session at Stockholm in 1902. From 1903 to 1905, he was Minister of State at Stockholm in the Hagerup cabinet. He was appointed to The Hague Tribunal in 1906 and reappointed in 1912. He wrote *Unionen* (1891); *Mænd og Magter* (1894); *Menneskelig Kvintessens*, essays (1911; English translation, 1921); *Robert Frank*, drama (1914; German and English translation, 1914); *Tempel der Erinnerung* (1918).

ICE CAP. See GEOLOGY.

ICE CREAM. See DAIRYING.

ICE HOCKEY. See HOCKEY.

ICELAND. An island state united with Denmark by the Act of Union of Nov. 30, 1918. Situated to the northwest of Great Britain (to which it is next in size of European islands), and with its northern coast touching the Arctic Circle, Iceland has an area of 39,700 square miles; population according to the census of 1920, 94,690; estimated at the end of 1928, 104,812. The capital, Reykjavik, had a population of 25,217 in 1928. All other towns had populations of less than 4000. In 1928 there were 711 marriages, 2536 births (14.7 per cent illegitimate), and 1124 deaths. Despite complete religious freedom, only 463 were listed as dissenters from the national (Lutheran) Church in the census of 1920. In 1924-25, there were 182 elementary schools, with 322 teachers and 6540 pupils; also continuation schools and a university in Reykjavik.

Of the total area, about 68 per cent is highland; 12 per cent, glaciers; 10 per cent, lava; and 6 per cent, lowland. Only about one-fourth of 1 per cent of the area of the island is under cultivation, producing chiefly, hay, potatoes, and

turnips. Livestock in 1928 included 627,000 sheep, 30,000 cattle, 52,200 horses, and 28,000 goats. The value of the fisheries in 1927 was estimated at 33,729,000 crowns (1 crown equalled about \$0.22). Exports in 1929 were valued at 69,400,000 crowns (\$15,268,000), as compared with 74,300,000 crowns (\$16,346,000) in 1928. Chief export items in 1929 were: Prepared fish, 34,500,000 crowns; fresh fish, 10,800,000 crowns; and agricultural products, about 8,000,000 crowns. Imports totaled 60,500,000 crowns for the first 11 months of 1929 and 49,600,000 crowns for the same period in 1928. The bulk of the trade is with Denmark, Great Britain, Norway, Sweden, and Germany, in the order named. Revenue for 1930 was estimated at 11,929,600 crowns and expenditure at 11,907,425 crowns. The public debt on Dec. 31, 1928, stood at 13,582,714 crowns, much of it held in Denmark. There are no railroads and but 568 miles of highway, mostly in the southern lowlands. There were 2352 miles of telephone line in 1930. The merchant marine in 1929 consisted of 356 vessels of 33,915 gross tons.

Executive power is vested in the King of Denmark who acts through a responsible ministry; and legislative power in the King and Althing or Parliament, which consists of 42 members, of whom six are elected for eight years by proportional representation for the whole country, and 36 for four years by universal suffrage. The Althing is divided into two Houses, of which the upper has 14 members and the lower, 28. The right to vote is possessed by both men and women over the age of 25. King in 1930, Christian X; President of the Council and Minister of Trade and Communications, Tryggy Thorhallsson; Justice and Ecclesiastical Affairs, Jonas Jonsson; Finance, Einar Arnason.

HISTORY. Iceland in June, 1930, celebrated at Thingvellir the 1000th anniversary of the founding of the Althing, said to be the oldest Parliament in the world. The King and Queen of Denmark and official representatives of the other Scandinavian countries, Great Britain, and the United States, as well as numerous tourists, were present. A feature of the celebration was the signing on June 27 of a treaty of friendship and arbitration by representatives of Iceland, Denmark, Sweden, Norway, and Finland, pledging themselves to submit all disputes among themselves to arbitration.

Construction of a plant for the utilization of hot springs near the capital in heating public buildings was commenced in 1930. Ultimately, it was planned to furnish all heat required in Reykjavik from subterranean sources. See DENMARK; PHILOLOGY, MODERN.

IDAHO. POPULATION. According to the Fifteenth Census, the population of the State on Apr. 1, 1930, was 445,032. The population on Jan. 1, 1920, was 431,866. The capital is Boise.

AGRICULTURE. The accompanying table gives the acreage, production, and value of the principal crops in 1929 and 1930.

Farms in the State numbered 41,678 in 1930, as against 40,592 in 1925 and 42,106 in 1920.

MINERAL PRODUCTION. Ranking third among the States in 1928 in the production of lead, Idaho increased its output to 297,389,488 pounds for 1929, from 290,645,905 for 1928. An improvement of ½ cent a pound in the average price obtained for lead in 1929, as compared with 1928, made the results of lead mining, as reckoned by value, higher for 1929 by comparison with 1928

| Crop | Year | Acreage | Prod. Bu. | Value |
|-------------|------|-----------|------------|--------------|
| Hay | 1930 | 1,185,000 | 3,003,000* | \$25,157,000 |
| | 1929 | 1,196,000 | 2,872,000* | 30,752,000 |
| Wheat | 1930 | 1,027,000 | 28,228,000 | 14,676,000 |
| | 1929 | 1,088,000 | 25,515,000 | 24,858,000 |
| Potatoes | 1930 | 117,000 | 25,038,000 | 15,028,000 |
| | 1929 | 102,000 | 17,186,000 | 20,568,000 |
| Dry beans | 1930 | 115,000 | 2,415,000 | 4,347,000 |
| | 1929 | 92,000 | 2,116,000 | 5,819,000 |
| Apples | 1930 | ..... | 5,000,000 | 8,750,000 |
| | 1929 | ..... | 5,500,000 | 6,050,000 |
| Oats | 1930 | 143,000 | 6,149,000 | 1,968,000 |
| | 1929 | 151,000 | 6,040,000 | 2,899,000 |
| Barley | 1930 | 165,000 | 6,930,000 | 2,841,000 |
| | 1929 | 147,000 | 5,783,000 | 3,784,000 |
| Corn | 1930 | 59,000 | 2,301,000 | 1,611,000 |
| | 1929 | 54,000 | 1,944,000 | 1,827,000 |
| Sugar beets | 1930 | 48,000 | 486,000* | ..... |
| | 1929 | 48,000 | 492,000* | 3,530,000 |

* Tons.

(when they attained \$16,857,462) than was the total by quantity. There was also an increase in the mining of copper, to 5,131,438 pounds for 1929, from 2,072,165 pounds for 1928. The product of 1928 was valued at \$298,392. Silver production was active in 1929, largely from lead-silver ore, and increased to 9,414,303 fine ounces from 8,998,330 for 1928, as was natural in a period of more active lead mining. The value of silver mined in 1928 was \$5,204,023. Zinc, of which the production for 1928 attained the value of \$3,814,126, was much more actively mined in 1929, the quantity of that year being 91,350,807 pounds, as compared with 62,526,048 for 1928. The production of gold, secondary in point of yearly values, on the other hand tended to decline; there were mined 20,247 fine ounces in 1929, as against 20,980 in 1928, when the year's product was valued at \$433,703. The aggregate value of gold, silver, copper, lead, and zinc mined in 1929 was \$31,104,246; for 1928 the corresponding total was \$26,667,706. The only other mineral product of the State listed as exceeding \$1,000,000 in yearly total of value for 1928 was stone, of which were quarried in that year 851,540 short tons, in value, \$1,157,236. The aggregate value of the State's mineral product was \$28,589,221 for 1928; for 1927, \$29,183,929.

The value of the gold, silver, copper, lead, and zinc produced from ore mined in Idaho in 1930, according to estimates by the U. S. Bureau of Mines, was about \$21,645,400 as compared with \$31,104,246 in 1929. On account of the greatly decreased metal prices and the general depression of the metal market during the larger part of the year, decreases were recorded in all metals except gold. The decreases, however, in silver, lead, and zinc were small when compared with those of other western States. According to published reports, mining companies paid dividends amounting to approximately \$4,212,350, compared with \$5,000,000 paid in 1929. The mine output of gold in 1930 was valued at \$436,100 as compared with \$418,545 in 1929. The output of silver decreased slightly from 9,414,403 ounces in 1929 to about 9,260,260 ounces in 1930, and the value decreased from \$5,017,877 to about \$3,565,200 on account of a decided decrease in the average price of silver. In spite of this decrease the State became the second largest producer of silver in the United States, following Utah. In the Cœur d'Alene district, which produced at least 8,850,000 ounces of silver, about 75 per cent of the product was recovered from the ores of the four largest producers: the Sunshine, Bunker Hill & Sullivan, Hecla, and Morning mines, which ranked in the

order given. The output of copper decreased from 5,131,438 pounds in 1929 to about 2,574,600 pounds in 1930, and the value decreased from \$903,133 to about \$319,200 as the average price of the metal decreased 5.2 per cent a pound. The output of lead decreased from 297,389,488 pounds in 1929 to about 266,286,540 pounds in 1930, and the value from \$18,735,538 to about \$13,846,900, as a result of general curtailment of production and a sharp decline in the average price of the metal. The zinc recovered from ore and concentrates decreased from 91,350,807 pounds in 1929 to about 74,000,000 pounds in 1930, and the value from \$6,029,153 to \$3,478,000; the average price of zinc was nearly two cents a pound lower than that of 1929. About 75 per cent of the zinc output was recovered by roasting and leaching at the electrolytic plants at Great Falls and Anaconda, Mont., and most of the remainder was recovered at the new plant of the Sullivan Mining Company at Silver King.

In U. S. Geological Survey *Bulletin* 821-A the Federal Department of the Interior issued in 1930 a survey of the mining history of Idaho represented in graphs covering the period starting with 1860. As shown in these graphs the early boom in placer mining was followed by the development of lode mining, which reached successive stages of high activity in divers areas. The contemporaneous dominant area was shown as the Cœur d'Alene district.

FINANCE. State expenditures in the year ended September 30, 1928, as reported by the U. S. Department of Commerce, were: for maintenance and operation of governmental departments, \$4,946,209 (of which \$19,810 was for local education); for interest on debt, \$365,465; for permanent improvements, \$3,301,803; total, \$8,613,477 (of which \$4,122,287 was for highways, \$1,258,459 being for maintenance and \$2,863,828 for construction). Revenues were \$8,276,955. Of these, property and special taxes formed 30.4 per cent; departmental earnings and remuneration to the State for officers' services, 6.4; sales of licenses, 28.1 (including taxes of \$1,699,144 on sales of gasoline). The State's funded debt outstanding on Sept. 30, 1928, was \$5,282,500. Net of sinking-fund assets, it was \$4,500,073. On property bearing an assessed valuation of \$482,065,981 were levied in the year State taxes of \$2,910,361.

TRANSPORTATION. The total number of miles of railroad line under operation on Jan. 1, 1930, was 2938.98. No construction of additional line in 1930 was reported.

EDUCATION. The systematic supervision of the rural schools was reported to have been extended to cover every rural community in the State, and to give expectation of better standards of teaching and better adaptation of educational means to rural requirements.

The number of persons of school age in the State was stated in 1930 to be 141,273. There were enrolled in the public schools in that year 124,947 pupils. Of these, 97,775 were in common schools or elementary grades, and 27,172 were in high schools. The expenditures of the year for public-school education totaled \$11,650,814. Salaries of teachers averaged \$1426 for the year.

CHARITIES AND CORRECTIONS. The central State authority in administrative activities of public welfare rested in 1930 in the Department of Public Welfare. This body had as its head a Commissioner (C. K. Macey), who held also, ex-officio,

the post of State Health Officer. The department, in addition to managing three of the State institutions of care or custody, conducted extensive activities for the promotion of public health. Among these were food and drug inspection, public health advice, the work of the State bacteriological laboratory, and of the chemical laboratory, public sanitary engineering, child hygiene, vital statistics and the activities of a board of eugenics. The institutions under the department, with their populations as reported in December, 1930, were: State School and Colony for the Feeble-minded, Nampa, 400; Northern Idaho Sanitarium (for the insane), Orofino, 350; Idaho Soldiers' Home, Boise, 85. The Lava Hot Springs, a public curative resort under State authority, was also managed by the department. The State Penitentiary at Boise, separately managed, was directed by a board consisting of the Governor, Attorney-General, and Secretary of State. By an amendment of the State Constitution it was provided that another State institution, the State Insane Asylum, at Blackfoot, having in 1930 a population of about 350, be placed under the authority of the Department of Public Welfare on Mar. 15, 1931.

LEGISLATION. A brief special session of the State Legislature was held, adjourning on February 28. It enacted an increase in the rate of the tax on gasoline to 5 cents a gallon, from 4 cents. It also authorized the issue of \$1,000,000 of treasury notes, of which the proceeds were to be expended on highway construction and were to be redeemed in semiannual installments of \$200,000 from the receipts of the gasoline tax.

POLITICAL AND OTHER EVENTS. An unsuccessful application was made for the release from prison, on parole, of Harry Orchard, serving a life sentence for the murder of Governor Frank Steunenberg in 1905, during the Cœur d'Alene troubles. At Wallace the Mayor, a former Mayor and the chief of police, with 29 other defendants, were convicted in a Federal court of having used collusion in tolerating liquor traffic. They were charged with having imposed regular fines for liquor infractions, in such a manner as to furnish revenue to the town without checking the illicit traffic. An expedition to the Snake River Valley in Southeastern Idaho, sponsored by the Smithsonian Institution, furnished numerous fossil relics of the Pliocene period, including those of the *Plesippus*, an evolutionary ancestor of the horse.

ELECTIONS. Senator William E. Borah was re-elected on November 4 by 62,230 votes (unofficial total) to 23,444 for Joseph M. Tyler, Democrat, C. B. Rose, Democrat, however, was elected Governor by a moderate majority over John McMurray, Republican, while two Republican Representatives were chosen.

OFFICERS. Governor, H. C. Baldridge; Lieutenant-Governor, Oscar E. Hailey; Secretary of State, Fred E. Lukens; Auditor, E. G. Gallet; State Treasurer, Byron Defenbach; Attorney-General, W. D. Gillis; Superintendent of Public Instruction, Myrtle R. Davis; Inspector of Mines, Stewart Campbell.

JUDICIARY. Supreme Court: Justices, Alfred Budge, Raymond Givens, Bertram S. Varian, T. Bailey Lee, W. F. Naughton.

IDAHO, UNIVERSITY OF. A coeducational State institution of higher learning in Moscow, Idaho; founded in 1889, with a southern branch in Pocatello, established by act of the State Legislature and opened in the autumn of 1927. The

total enrollment at Moscow in the autumn of 1930 was 2067, distributed as follows: Letters and science, 274; agriculture, 164; engineering, 224; agricultural engineering, 6; law, 35; mines, 61; forestry, 103; education, 193; business, 132; junior college, 646; special courses, 36; and non-resident, 193. The total enrollment at Pocatello was 600. The enrollment for the 1930 summer session was 284 at the university and 41 at the southern branch. The faculty in 1930 numbered 163. The physical plant of the university was valued at \$2,850,000 and that of the southern branch at \$765,000, making a total of \$3,615,000. The productive funds of the university amounted to \$2,079,270, and the income for 1929-30 was approximately \$1,250,000. The library contained 90,000 volumes. The outstanding achievement of the year was the establishment of the William Edgar Borah Foundation for the Outlawry of War by Salmon O. Levinson, Chicago attorney and world peace worker. Mr. Levinson established the fund through a gift amounting to \$55,000 to honor the contribution of Idaho's senior senator to the cause of world peace. The pharmacy division of the university's southern branch was put on a degree-granting basis. President, Mervin Gordon Neale, Ph.D., who was inaugurated Sept. 18, 1930.

HERBERG, HERMANN VON. See **JHERING, HERMANN VON.**

ILLINOIS. POPULATION. According to the Fifteenth Census, the population of the State on Apr. 1, 1930, was 7,630,654. The population on Jan. 1, 1920, was 6,485,280. The capital is Springfield.

AGRICULTURE. The following table gives the acreage, production, and value of the principal crops in 1929 and 1930:

| Crop | Year | Acreage | Prod. Bu. | Value |
|------------|------|-----------|-------------|---------------|
| Corn | 1930 | 9,345,000 | 238,298,000 | \$147,745,000 |
| | 1929 | 8,900,000 | 311,500,000 | 224,280,000 |
| Hay | 1930 | 8,335,000 | 3,782,000* | 49,445,000 |
| | 1929 | 8,594,000 | 5,602,000* | 63,230,000 |
| Oats | 1930 | 4,569,000 | 153,062,000 | 44,388,000 |
| | 1929 | 4,231,000 | 141,738,000 | 56,695,000 |
| Wheat .. | 1930 | 2,296,000 | 41,952,000 | 28,772,000 |
| | 1929 | 2,451,000 | 36,537,000 | 40,493,000 |
| Barley ... | 1930 | 337,000 | 10,110,000 | 4,853,000 |
| | 1929 | 456,000 | 12,084,000 | 6,767,000 |
| Potatoes . | 1930 | 67,000 | 5,226,000 | 6,532,000 |
| | 1929 | 63,000 | 5,040,000 | 7,812,000 |

* Tons.

Farms in the State numbered 214,871 in 1930, as against 225,601 in 1925 and 237,181 in 1920.

MINERAL PRODUCTION. The tendency of coal mining, which provided about 60 per cent of the total yearly mineral production of the State, was upward in 1929. There were mined, in 1929, 60,657,641 net tons of coal, as against 55,948,199 in 1928, the first year after the period of labor difficulties at the mines. The value of coal mined was, for 1929, \$113,453,000; for 1928, \$112,095,000. The year 1929 was likewise marked by much higher coking activity. The by-product ovens of the State produced, in 1929, 4,204,116 short tons of coke, as against 3,240,964 in 1928; in value, \$26,036,197 for 1929 and \$19,967,463 for 1928. In correspondence with this increase the production of pig iron, from ore imported into the State, went up. The blast furnaces shipped 4,316,096 long tons of pig iron in 1929; in 1928, 4,094,514. The value of this product was \$79,672,295 for 1929; \$73,524,773 for 1928. After the coal-and-iron group in order of importance ranked clay products. These, for 1928, the year of the latest

reported official figures, totaled \$32,026,885; for 1927, \$34,452,605. Brick and tile made up \$26,328,670 of the total of 1928, pottery \$5,698,215. The cement industry was stable as to quantity of output, the mills of the State shipping 7,738,208 barrels in 1929 and 7,405,667 in 1928; as to value, \$11,134,538 in 1929 and \$11,602,848 in 1928. The State's production of petroleum continued slowly to fall in quantity, to 6,304,000 barrels for 1929, from 6,462,000 for 1928; but rose somewhat in value, to \$10,300,000 (estimated) for 1929, from \$9,980,000 for 1928. The production of stone, chiefly of the lower grades, was large, attaining \$8,098,390 for 1928; also that of sand and gravel, which exceeded \$10,000,000. Sulphuric acid was produced to the value of \$2,505,843 in 1928; fluorspar and lime each were produced in excess of \$1,000,000. The value of all minerals produced, with deduction for duplications and for pig iron made from imported ores, attained \$188,098,866 for 1928; for 1927, \$180,393,779.

TRANSPORTATION. The total number of miles of railroad line under operation on January 1, 1930, was 12,510.84. There were built, in 1930, 3.46 miles of first, 22.90 of third, and 12.32 of fourth track.

EDUCATION. Financial difficulties in Chicago, which had worked adversely to the advancement of the public-school system in that city, were apparently corrected in 1930 by the making of new provisions for the financing of the schools' activities and by the revision of the assessment of property for purpose of taxation. For the academic year 1928-29, the school population of the State was estimated as numbering 2,010,059 individuals, of ages from 6 to 21 years. There were enrolled in the public schools, 1,380,018 pupils. Of these, 1,099,440 were in the elementary and 286,578 in high-school grades. The year's expenditures (current, alone) for public-school education throughout the State totaled \$115,618,647. The salaries of teachers averaged, for the year, \$1675.

CHARITIES. The central administrative authority for the care and custody of persons rested in 1930 in the State Department of Public Welfare, as created by the enactment of the Civil Administrative Code of 1917. This department had as its head a Director (Rodney H. Brandon). Under him, a superintendent of charities administered the charitable institutions; a superintendent of prisons, the penal institutions; a fiscal supervisor, details of institutional and departmental business and finance. Matters of pardon and parole were handled by a Board of Pardons and Paroles, headed by a supervisor of paroles, a member of the departmental staff. Activities on behalf of dependent children were conducted by a division of child welfare. The department maintained an alienist and a criminologist in advisory capacities. The State institutions of care or custody, with the numbers of persons in their care, on July 1, 1930, were: Elgin State Hospital, Elgin, 3466; Kankakee State Hospital, Kankakee, 3909; Jacksonville State Hospital, Jacksonville, 3176; Anna State Hospital, Anna, 1920; East Moline State Hospital, East Moline, 1774; Peoria State Hospital, Peoria, 2718; Chester State Hospital, Chester, 410; Chicago State Hospital, Chicago, 3469; Alton State Hospital, Alton, 1440; Manteno State Hospital, Manteno, incomplete; Dixon State Hospital, Dixon, 2789; Lincoln State School and Colony, Lincoln, 2610; School for the Deaf, Jacksonville, 416; School for the Blind,

Jacksonville, 242; Institution for the Industrial Blind, Chicago, 90; Soldiers' Home, Quincy, 478; Widows' Home, Wilmington, 98; Orphans' Home, Normal, 643; Eye and Ear Infirmary, Chicago, 124; Research and Education Hospital, Chicago, 167; School for Boys, St. Charles, 812; School for Girls, Geneva, 523; State Penitentiary, Joliet, 4167; Southern Illinois Penitentiary, Menard, 2120; Women's Prison, Joliet, 132; Women's Reformatory, Dwight; Illinois State Reformatory, Pontiac, 2126; State Farm, Vandalia, 400. The number of all institutional wards was 40,219.

LEGISLATION. The fiscal difficulties of the State and of the City of Chicago required the attention of a special session of the Legislature, which was called by Governor Emmerson and convened on May 12. A proposal was adopted to amend the State constitution with regard to Article IX, by removing the limitation that taxation be equal with regard to all property, so as to render it possible to impose on intangibles a tax rate different from that on realty, and by empowering the legislature to levy a tax on incomes. The proposed amendment further stipulated that if an income tax should be imposed the State treasury should not retain from any county more than 15 per cent of the collections, unless the Legislature by a vote of at least two-thirds majority in each house should so direct. This stipulation was designed to protect the City of Chicago, as the locality likely to furnish the principal part of income taxes, from being exploited unduly for the advantage of the rest of the State. The proposed amendment was passed on to the voters at the November election in the form of a referendum.

In return for the concession made by Chicago on the subject of the amendment the Legislature passed a series of some 30 measures designed to provide a way out of the difficulties of the city. These relief measures included the setting of dates at which the overdue taxes should be payable and at which succeeding levies should become due. For the tax list of 1928 the date of July 1, 1930, was set, for that of 1929, Feb. 1, 1931; for that of 1930, Dec. 1, 1931; for 1931, Oct. 1, 1932; for 1932, Aug. 1, 1933; and for 1933, June 1, 1934. Thereafter taxes were to become delinquent after May 1 of each year. A group of 11 acts sought by the Chicago Citizens' Committee bestowed on corporate bodies of Cook County the authority to issue without sanction of a referendum, bonds for specific purposes. Governor Emmerson refused to sign the measures for these powers of issue. He explained that he held that the public should have a right of referendum on all bond proposals; but as the measures in question appeared indispensable to the relief of Chicago, he allowed them to become laws through default of action on his part.

SEE CHILD LABOR.

POLITICAL AND OTHER EVENTS. Like the city of Chicago the State government was financially affected by the deadlock that had occurred in 1929 in the Chicago tax situation and that continued into 1930. It was estimated that the city was in arrears of about \$30,000,000 to the State for the proceeds of taxes that were to have been collected for 1928 and 1929. Conversely, the State owed the city for educational aid that it could not pay. A portion of the State's soldier-bonus bonds was due moreover to mature on August 1. This situation made the adoption of remedial legislation by the legislative session called in May an emergency matter for the State as well as for the city.

Governor Emmerson declined in July a request from Secretary of War Hurley that Illinois advance \$2,000,000 to initiate the development of the Illinois canal, under Federal direction, as a part of the Lakes-to-Gulf Waterway. Work on the project was held in abeyance for a time, as Congress, although it had authorized \$7,500,000 therefor, had failed to make the money immediately available. The coal industry of the State was disturbed to some extent by a break in the State organization of the United Mine Workers of America. The seceding group met at Springfield in March and sought in alliance with a group of Kansas miners to form a separate national organization.

The financial situation of Chicago showed an improvement for the first time in some two years. This turn of affairs was due to the measures taken at the special legislative session and also in part to the completion of the reassessment of taxable property for 1928, for which the disputed tax payments, for the most part, had not been made. Prior to these developments it was reported at the outset of February that in spite of temporary financial shifts arrears of pay to 40,122 public employees had mounted to the total of \$11,275,500. The lesser municipalities of Cook County suffered likewise. Mount Prospect was reported as soliciting contributions from residents for the purpose of keeping schools going. Evanston and Cicero kept the schools going with money raised by the sale of tax warrants.

Facing the opposition of Mayor Thompson the city council passed in January, over his veto, a much reduced city budget; they later passed a tax-levy ordinance as a basis for the sale of anticipation warrants to be based on the taxes of 1930. The Strawn committee, a non-official group of financiers charged with getting Chicago out of its financial predicament, not only helped raise loans but helped promote the move of summoning the Legislature. The reassessment for 1928, taken in accordance with an order of the State Tax Commission nearly two years before, was completed late in March. It cut the total valuation for the city by about \$50,000,000 and that for the rest of the county by another \$50,000,000, approximately, and made it possible to send out tax bills by May 1. In the meanwhile the city's reduced budget had required the dismissal of some 1100 city employees. A portion of Chicago's tax-anticipation warrants coming due, on their face, on May 15, 1930, a move was made on the creditors' behalf to have these declared payable on that date. But an opinion was secured to the effect that these obligations, by their nature, would not fall due until the taxes against which they were issued should become collectible. After the middle of the year the difficulty of providing funds for the operation of the city's government became less. Offerings of short-term bonds of Chicago and of Cook County were successfully made under the authority that the Legislature had granted.

The City Council passed on May 19 an ordinance to authorize a merger of the city's surface and elevated lines and to provide for city-owned subways to run through the business sections and to connect with motorbusses traversing the outlying sections. This ordinance was put to a referendum vote on July 1 and was approved by a majority of some 5 to 1. The Chicago Rapid Transit Company, for its part, won a victory in the decision of the Federal District Court in September rendering permanent an injunction,

temporarily granted in 1928, against State or City interference with its 10-cent fare.

The reform movement with regard to Chicago politics made some progress. Police Commissioner William P. Russell, who had been subjected to much criticism, resigned on June 16. Ten politicians, including five trustees of the Sanitary Board, were indicted on May 29, on a charge of fraud, relating to an alleged plot to plunder the Sanitary Board of several millions of dollars. A popular petition was brought for the ousting of Fred V. Maguire, chairman of the election board of Cook County, and he was accordingly brought to trial, but the defense established that many signers of the petition against him had no knowledge of alleged appointments of gangsters or other unfit persons to be judges and clerks of election, such as had been charged.

The campaign against organized criminality in Chicago continued. Judicial advisory councils of the State and of Cook County framed a plan for the revision of the State's criminal code. Their report, published on August 4, was sent to the Governor for submission to the Legislature of 1931. The plan looked to the reduction of the number of offenses for which long prison sentences might be imposed on first offenders, but proposed the life sentence for second offenders in a list of the less serious crimes. Divers efforts were made to promote the activities against lawbreakers through private committees or extraordinary bodies. A so-called secret committee of six, chosen by influential citizens early in the year, was enlarged in June to the number of sixteen and continued to work in secret. The seven chief daily journals of the city, stirred by the assassination of the Chicago *Tribune's* crime reporter, A. L. Lingle, entered into a compact on June 12 to unite their efforts and resources to drive out gang and police abuses. These journals later urged that the State's Attorney appoint as special assistants two prominent lawyers, who should investigate the acts of gangsters, police, and officials in general.

The assassination of Lingle, the *Tribune* reporter, was at first supposed to have been the work of criminals against whom he had secured information. Investigation by the State's attorney and others brought out indications that he had handled large sums of money, that he had engaged in joint transactions of a speculative character with Police Commissioner Russell, and allegations that he had taken money from men supposedly interested in unlawful enterprises. Another conspicuous crime was the shooting to death of one Jake Zuta, the reputed chief of one of the most notorious Chicago gangs. Zuta was shot at Delafield, Wis., early in August. When the State's Attorney opened his safe-deposit boxes lists of names including many persons of official or private station were reported to have been found, indicating that Zuta had paid these persons contributions for their good will. The lists were not published.

While the courts did not accede to demands made by the Chicago Sanitary District early in the year for permission to exceed the rate of withdrawal of Lake water through the drainage canal that had been set under the authority of the United States Supreme Court, an appeal to Secretary of War Hurley was more successful. Treating the mid-summer drought and the consequent low stage of water for canal navigation as an emergency he granted permission to withdraw

water at a greater rate, the excess to be made up after the emergency had passed.

Construction was undertaken for a main pipe line to transmit natural gas from the Panhandle region of Texas to Chicago. The project was carried on by the Continental Construction Company, the joint subsidiary of several of the leading petroleum and natural gas companies. At an estimated cost of not far from \$100,000,000 was to be created a main pipe line about 1000 miles in length, made of 24-inch pipe and capable of delivering 300,000,000 cubic feet a day. In the southern part of the State natural gas from the Louisiana area was brought to East St. Louis through the system of the Mississippi River Fuel Corporation in May. The work of planning the Chicago Exposition of 1933 was carried on, and in May Charles G. Dawes, absent on leave from his post as Ambassador to Great Britain, went to Chicago and took part in the making of the necessary financial arrangements. See EXPOSITIONS.

Chicago and the surrounding country experienced on March 25 and 26 a blizzard described as hardly less severe than the New York blizzard of 1888. Snow fell for 44 hours, surface transportation was blocked, schools were closed and in some districts there was difficulty in obtaining immediately needed food supplies. The recorded snowfall was 19.1 inches. A fire at the Chicago Municipal Airport on June 25 destroyed 27 airplanes and many structures, causing a loss estimated at \$2,000,000. The Chicago Board of Trade, because of the agitation spread by the Federal Secretary of Agriculture against short sales of wheat made by agents of the Russian Soviet government, made a ruling on September 26 against sales of grain on the Chicago market by any foreign government.

Further litigation again brought about arrears in the payment of the employees of Chicago in October. A drive was arranged late in the year to raise contributions of \$2,000,000 for the relief of the unemployed in the city. In the autumn political campaign Mayor Thompson of Chicago "knifed" Ruth Hanna McCormick, Republican candidate for Senator, issuing an appeal to the Negro voters to oppose her. The deposit of securities of the Chicago traction companies, preliminary to the consolidation of these companies into the Chicago Local Transportation Company, was invited and was largely effected in October.

ELECTIONS. The vote on November 4 elected as United States Senator former Senator James Hamilton Lewis, Democrat, who defeated Ruth Hanna McCormick, Republican, by the phenomenal total (unofficial) of 1,350,808 votes to 656,322. Fifteen Republicans and 12 Democrats were reported to have been elected to the House of Representatives. The State Legislature, none the less, remained prevalently Republican. Three proposals, to promote the repeal of the Eighteenth Amendment, of the Volstead Act and of the State prohibition law, were carried at the polls by majorities of over 300,000 in each case. A proposal to amend the State constitution so as to amplify the taxing powers of the Legislature was defeated. The popular vote approved a series of amendments of the banking law, qualification of women to serve as judges, and an issue of \$14,000,000 in bonds for purposes of conservation.

OFFICERS. Governor, Louis L. Emmerson; Lieutenant-Governor, Fred. E. Sterling; Secretary of State, William J. Stratton; Treasurer, Edward J.

Barrett; Auditor of Public Accounts, Oscar Nelson; Attorney-General, Oscar E. Carlson; Superintendent of Public Instruction, Francis G. Blair.

JUDICIARY. Supreme Court: Chief Justice, Frank K. Dunn; Associate Justices, William M. Farmer, Oscar E. Heard, Clyde E. Stone, Frederic R. De Young, Warren W. Duncan, Warren H. Orr.

ILLINOIS, UNIVERSITY OF. A coeducational State institution of higher learning in Urbana-Champaign, Ill.; founded in 1867. The enrollment in the autumn of 1930 was 12,709, of whom 9460 were men and 3249 were women, distributed among the several colleges as follows: Liberal arts and sciences, 3991; commerce and business administration, 2133; education, 892; engineering, 1823; agriculture, 740; music, 163; journalism, 101; law, 272; library, 134; graduate school, 1096; medicine, 576; dentistry, 149; pharmacy, 682. The 1930 summer-session enrollment was 2553, of whom 1538 were men and 1015 were women. The number of persons on the teaching staff above the rank of assistant was 754, in the grade of assistant or lower there were 413, and the administrative officers totaled 25. The income for the year 1929-30 was \$7,115,863, of which \$4,969,724 was from the State. The productive funds from Federal endowment totaled \$649,012 and from private gifts, \$304,330. During 1930 a gymnasium for the university high school, an agronomy seed house, and a cattle-feeding plant were constructed, and work was in progress on the chemistry annex, the women's gymnasium, and the college of medicine building in Chicago. The library contained 836,496 volumes and 221,800 pamphlets. President, Harry Woodburn Chase, Ph.D., LL.D.

ILLUMINATION. See ELECTRIC LIGHTING.

"TM ALONE" CASE. See ARBITRATION, INTERNATIONAL.

IMAMATE OF YEMEN. See ARABIA.

IMBROS AND TENEDOS. Turkish islands in the Aegean. See GREECE under *History*.

IMMIGRATION. During the fiscal year ending June 30, 1930, there were admitted into the United States 446,214 aliens of whom 241,700 were immigrants and 204,514 were nonimmigrants. In the same period the number of departures totaled 272,425 of whom 50,061 were emigrants and 221,764 were nonemigrants. Thus the net increase for the year was 173,789. For the fiscal year 1928-29, the net increase was 226,829, aliens admitted numbering 479,327 and departed 252,498.

The number of immigrant aliens admitted dropped from 279,678 in the fiscal year ended June 30, 1929, to 241,700 for the fiscal year 1930, a decrease of 37,978, or 13.6 per cent. While immigration from Europe as a whole dropped from 158,598 in 1929 to 147,438 in 1930, a decline of 11,160, or 7 per cent, that from Great Britain and Northern Ireland jumped from 23,576 to 36,489, or 54.8 per cent, with that from Italy also showing an increase from 18,008 to 22,327 and the Irish Free State from 17,672 to 17,971. The largest decrease for European countries was in the case of Germany and Scandinavia (Denmark, Norway, and Sweden), the number of immigrants supplied by the former dropping from 46,751 to 26,569, or 43.2 per cent, and from the latter 17,379 to 6919, or 60.2 per cent. Practically all of the other countries of Europe sent a larger number of immigrants in 1930 than in 1929, the increase

for all being 1951, or 5.5 per cent. Canadian and Mexican immigration also showed a decline from the previous year, the number of immigrants coming from Canada showed only a small decrease from 64,440 to 63,502, or 1.5 per cent, but that from Mexico dropped from 40,154 to 12,703, a decrease of 27,451, or 68.4 per cent. Immigration from Asia, the West Indies and other sources, except South America and Newfoundland, was a little larger during the past year than in the fiscal year 1929.

Of the 446,214 aliens of all classes admitted during the fiscal year 1930, 141,497, or 31.7 per cent, came in under the Immigration Act of 1924 as immigrants charged to the quota; 99,154, or 22.2 per cent, as returning residents; 70,823, or 15.9 per cent, as temporary visitors for business or pleasure; 62,919, or 14.1 per cent, as natives of nonquota countries; 32,105, or 7.2 per cent, as husbands, wives, and unmarried children, of American citizens; and 27,991, or 6.3 per cent, as transits. The remaining 11,725, or 2.6 per cent, were of the miscellaneous classes under the act, including 6389 Government officials, 1902 students, 1340 ministers and professors and their wives and unmarried children, 1510 aliens to carry on trade under existing treaty, 485 wives and unmarried children (born in quota countries) of natives of nonquota countries, 72 women who had been citizens of the United States, 26 Spanish subjects admitted into Porto Rico, and 1 American Indian born in Canada. Government officials, visitors and transits, husbands, wives, and children, of citizens, students, and ministers and professors and their wives and children were the classes showing an increase during the year 1930 over the preceding year. About the same proportion of the annual quota arrived during the year 1930 as during 1929, the percentage being 92.1 and 89.2, respectively. The annual quota was reduced from 164,667 in 1929 under the 1890 population plan to 153,714 in 1930 under the national origin plan, a decrease of 10,953, or 6.7 per cent; the number of quota immigrants admitted was 146,918 in 1929 as compared with 141,497 in 1930, a decrease of 5421, or 3.7 per cent.

A record number of aliens was deported, the total deportations for 1930 reaching an unprecedented number of 16,031, an increase of 3723, or 28.8 per cent, over the previous high-water mark of 12,908 reached in 1929.

The tables on page 362 indicate the numbers of aliens admitted and departed, by continents of origin and by race or people.

STOPPAGE OF IMMIGRATION. In September President Hoover, taking advantage of the extraordinary powers vested in him by the immigration law, issued an order through the State Department upon the American consuls in the foreign countries calling upon these officials to restrict immigration as much as possible. The purpose of the order was to serve as a relief measure to alleviate the unemployment situation in this country and was in line with the policy advocated by the American Federation of Labor. In view of the fact that the immigration law makes the American consuls the sole judges as to whether applicants for visas under the quota restrictions are liable to become public charges, the order in reality was in the nature of a ban upon continued immigration. The President acted as a result of a report submitted to him by Joseph P. Cotton, Acting Secretary of State. On the question of turning back immigrants

ALIENS ADMITTED DURING THE MONTH OF JUNE, 1930, AND DURING THE FISCAL YEAR ENDED JUNE 30, 1930, BY SPECIFIED CLASSES UNDER THE IMMIGRATION ACT OF 1924, AS AMENDED, AND BY PRINCIPAL PLACES OF BIRTH

| Place of birth | Aliens admitted | | | | | |
|---|------------------|--------------------------|------------|---------------------------------------|-------------------------|--|
| | Quota immigrants | | | Nonimmigrants and nonquota immigrants | | |
| | June, 1930 | July, 1929 to June, 1930 | June, 1930 | July, 1929 to June, 1930 | Total during June, 1930 | Grand total July 1, 1929, to June 30, 1930 |
| Total | 9,198 | 141,497 | 21,505 | 304,717 | 80,703 | 446,214 |
| Europe | 8,781 | 187,016 | 12,264 | 177,246 | 20,995 | 814,262 |
| Asia | 211 | 2,150 | 1,935 | 19,950 | 2,146 | 22,100 |
| Africa | 29 | 330 | 63 | 873 | 92 | 1,203 |
| Australia and Pacific Islands | 16 | 284 | 418 | 4,107 | 434 | 4,891 |
| Canada, Mexico, and other America | 211 | 1,717 | 6,825 | 102,541 | 7,086 | 104,258 |

INCREASE OR DECREASE IN POPULATION BY ADMISSION AND DEPARTURE OF ALIENS DURING THE FISCAL YEAR ENDED JUNE 30, 1930, BY RACE OR PEOPLE, AND SEX

| Race or people | Aliens admitted | | | Aliens departed | | | Increase (+) or decrease (-) |
|--|-----------------|--------------|---------|-----------------|-------------|---------|------------------------------|
| | Immigrant | Nonimmigrant | Total | Emigrant | Nonemigrant | Total | |
| Total | 241,700 | 204,514 | 446,214 | 50,661 | 221,764 | 272,425 | + 173,789 |
| African (black) | 1,806 | 2,726 | 4,532 | 776 | 1,782 | 2,558 | + 1,974 |
| Armenian | 790 | 199 | 989 | 57 | 170 | 227 | + 762 |
| Bohemian and Moravian | 653 | 665 | 1,318 | 574 | 1,091 | 1,665 | - 347 |
| Bulgarian, Serbian, and Montenegrin | 744 | 812 | 1,556 | 846 | 1,223 | 2,069 | - 513 |
| Chinese | 970 | 7,144 | 8,114 | 3,404 | 6,138 | 9,542 | + 1,428 |
| Croatian and Slovenian | 1,314 | 576 | 1,890 | 280 | 621 | 901 | + 989 |
| Cuban | 2,122 | 6,518 | 8,640 | 1,274 | 7,221 | 8,495 | + 145 |
| Dalmatian, Bosnian, and Herzegovinian | 108 | 195 | 303 | 119 | 663 | 782 | - 479 |
| Dutch and Flemish | 4,713 | 3,912 | 8,625 | 998 | 4,475 | 5,473 | + 3,152 |
| East Indian | 51 | 185 | 236 | 65 | 149 | 214 | + 22 |
| English | 34,960 | 41,243 | 76,203 | 6,461 | 48,551 | 55,012 | + 21,191 |
| Finnish | 556 | 1,948 | 2,504 | 331 | 2,102 | 2,433 | + 71 |
| French | 13,771 | 10,059 | 23,830 | 1,945 | 9,626 | 11,571 | + 12,259 |
| German | 34,415 | 30,074 | 64,489 | 5,732 | 28,076 | 33,808 | + 30,681 |
| Greek | 3,793 | 2,221 | 6,014 | 785 | 3,409 | 4,194 | + 1,820 |
| Hebrew | 11,526 | 3,699 | 15,225 | 299 | 1,911 | 2,210 | + 13,015 |
| Irish | 34,947 | 8,519 | 43,466 | 1,940 | 9,371 | 11,311 | + 32,155 |
| Italian (north) | 2,822 | 4,133 | 6,955 | 755 | 5,012 | 5,767 | + 1,188 |
| Italian (south) | 20,494 | 15,359 | 35,853 | 2,206 | 19,346 | 21,552 | + 14,301 |
| Japanese | 796 | 7,423 | 8,219 | 1,004 | 9,331 | 10,335 | - 2,116 |
| Korean | 27 | 67 | 94 | 33 | 77 | 110 | - 16 |
| Lithuanian | 426 | 409 | 835 | 194 | 873 | 867 | - 82 |
| Magyar | 1,542 | 1,800 | 3,342 | 668 | 1,668 | 2,236 | + 1,106 |
| Mexican | 11,915 | 4,971 | 16,886 | 6,296 | 5,200 | 11,496 | + 5,390 |
| Pacific Islander ..... | ..... | 6 | 6 | 7 | 55 | 52 | - 56 |
| Polish | 4,924 | 2,836 | 7,760 | 1,924 | 4,132 | 6,056 | + 1,704 |
| Portuguese | 780 | 2,479 | 3,259 | 336 | 3,548 | 3,884 | - 625 |
| Rumanian | 432 | 667 | 1,099 | 429 | 1,031 | 1,460 | - 361 |
| Russian | 1,634 | 2,860 | 4,494 | 472 | 1,710 | 2,182 | + 2,312 |
| Ruthenian (Russniak) | 473 | 137 | 610 | 12 | 131 | 143 | + 467 |
| Scandinavian (Norwegians, Danes, and Swedes) | 8,478 | 12,161 | 20,639 | 2,775 | 14,058 | 16,828 | + 3,811 |
| Scotch | 28,117 | 12,441 | 40,558 | 2,210 | 12,045 | 14,255 | + 26,303 |
| Slovak | 3,214 | 1,581 | 4,795 | 758 | 2,144 | 2,902 | + 1,893 |
| Spanish | 1,169 | 5,781 | 6,950 | 1,776 | 6,099 | 7,875 | - 925 |
| Spanish American | 3,237 | 4,904 | 8,141 | 1,741 | 4,810 | 6,551 | + 1,590 |
| Syrian | 637 | 659 | 1,296 | 81 | 617 | 698 | + 598 |
| Turkish | 175 | 148 | 323 | 26 | 141 | 167 | + 156 |
| Welsh | 2,043 | 848 | 2,891 | 180 | 831 | 1,011 | + 1,880 |
| West Indian (except Cuban) | 600 | 1,649 | 2,249 | 737 | 2,095 | 2,832 | - 583 |
| Other peoples | 526 | 500 | 1,026 | 155 | 536 | 691 | + 335 |
| SEX | | | | | | | |
| Male | 117,026 | 119,259 | 236,285 | 32,565 | 134,090 | 166,655 | + 69,630 |
| Female | 124,674 | 85,255 | 209,929 | 18,096 | 87,674 | 105,770 | + 104,159 |

likely to become public charges, the report said that such action could be taken "even during a considerable period subsequent to the applicant's arrival—although the applicant need not by such refusal lose advantage of his priority application . . . and may get his visa when unemployment conditions again become normal." It is interesting to note that this method was employed in an effort to check the flow of Mexican immigration into this country. The State Department, feeling that many of the Mexican immigrants were in danger of becoming public charges, ordered a tightening of the restrictions. As a result of conferences held with consular

offices at the border cities, Mexican immigration was markedly reduced. Thus, in the first six months of 1930, only 3140 Mexicans were permitted to enter the country (making an annual rate of 6280) as compared with an annual rate of 56,747 for the last five fiscal years, or a reduction of 88.9 per cent.

SOUTH AFRICA. The Union of South Africa joined other nations in March, 1930, when it passed an immigration quota bill. Quotas were placed on alien immigrants coming from all countries except the following: Territories comprising the British Commonwealth of Nations, Austria, Belgium, Denmark, France, Germany,

Holland, Italy, Norway, Portugal, Spain, Sweden, Switzerland, and the United States. The quota restrictions were drastic in view of the fact that not more than 50 persons from each country not included in the above list would be permitted to enter the Union. Exceptions were to be made by an immigrants' selection board set up by the act, in the cases of persons who meet certain qualifications as to character, occupation or relationship to residents in the Union. However, such exempted persons were not to exceed 1000 in any year from one particular country. The following countries, on the basis of 1929 immigration, apparently would be largely affected by the new quota law: Lithuania, Poland, Latvia, Russia, Greece, Palestine. From the nature of the protests which filled the public press, it was evident that immigration from these countries had been largely Jewish in character.

See also articles on the various countries under *Area and Population*.

IMPERIAL CONFERENCE OF 1930. See GREAT BRITAIN under *History*.

IMPORTS. See articles on various countries and special articles such as AGRICULTURE; CORN; IRON AND STEEL; ETC.

IMRO (INTERNATIONAL MACEDONIAN REVOLUTIONARY ORGANIZATION). See BULGARIA and JUGOSLAVIA under *History*.

INCINERATORS. See GARBAGE AND REFUSE DISPOSAL.

INCOME TAX. See TAXATION.

INDEPENDENT METHODISTS. See METHODISTS.

INDEX NUMBERS. See FINANCIAL REVIEW.

INDIA. A dependency of the British Empire comprising all that part of the Indian peninsula which is directly governed by British officials or indirectly governed through the rulers of native states subject to the British Parliament. The dependency is divided into British India, or the territory subject to British law, and the Indian States, ruled by native princes. Capital, Delhi.

AREA AND POPULATION. The total area, including the Indian states and agencies which are in political relations with the Government, according to the census of 1921, was 1,805,332 square miles, of which 1,094,300 square miles were in the British provinces. The total population in 1921 was 318,942,480, as compared with 315,156,396 in 1911. At the end of 1930 the total population was estimated at about 330,000,000. The population of the British provinces in 1921 was 247,003,293, as compared with 243,933,178 in 1911. The average density was 177 to the square mile; maximum provincial density, 608 to the square mile in the Province of Bengal. Over 90 per cent of the population was classed as rural, only 9½ per cent living in towns of 5000 or more. The average annual excess of births in the British Provinces from 1922 to 1926 was 1,969,739. The rate per 1000 inhabitants in 1927 was 35.27; the death rate, 24.89.

The area and population of the Indian States and agencies subject to the British Government at the time of the 1921 census are shown in the accompanying table.

The accompanying table from the *Statesman's Year Book* for 1930 gives the area and population of all the British-governed divisions of India according to the census of 1921.

RELIGION, ETC. The enumeration of the population in 1921 was: Hindus, 216,734,586; Moslems, 68,735,233; Buddhists, 11,571,268; Animistic, 9,

774,611; Christians, 4,754,064; Sikhs, 3,238,803; Jains, 1,178,596; Parsis, 101,778; Jews, 21,778. There are 2300 different castes, the so-called depressed classes ("untouchable") comprising 30 per cent of the Hindu population. The preponder-

INDIAN STATES AND AGENCIES: AREA AND POPULATION

| State or Agency | Area in square miles in 1921 | Population in 1921 |
|--|------------------------------|--------------------|
| Assam (Manipur) State | 8,456 | 384,016 |
| Baluchistan States | 80,410 | 378,977 |
| Baroda State | 8,127 | 2,126,522 |
| Bengal States | 5,434 | 896,926 |
| Bihar and Orissa States | 28,648 | 3,959,669 |
| Bombay States (including States in Western India Agency) | 63,453 | 7,409,429 |
| Central India Agency | 51,531 | 5,997,023 |
| Central Provinces States | 31,176 | 2,066,900 |
| Gwalior State | 26,357 | 3,186,075 |
| Hyderabad State | 12,471 | 12,471,770 |
| Kashmir State | 84,258 | 3,820,518 |
| Madras States Agency | 10,696 | 5,460,312 |
| Mysore State | 29,475 | 5,978,892 |
| Northwest Frontier Province (Agencies and Tribal areas) | 25,500 | 2,825,136 |
| Punjab States Agency | 37,059 | 4,416,036 |
| Rajputana Agency | 128,987 | 9,844,384 |
| Sikkim State | 2,818 | 81,721 |
| United Provinces States | 5,949 | 1,134,881 |
| Total States | 711,032 | 71,939,187 |
| Total India | 1,805,332 | 318,942,480 |

ating languages are Hindu, Bengali, and Telugu. Cities of over 250,000, with their populations in 1921, are: Calcutta (with suburbs), 1,327,547;

BRITISH TERRITORIES IN INDIA

| Provinces | Area in square miles in 1921 | Population in 1921 |
|-------------------------------------|------------------------------|--------------------|
| Ajmer-Merwara | 2,711 | 495,271 |
| Andamans and Nicobars | 3,143 | 27,086 |
| Assam | 53,015 | 7,606,230 |
| Baluchistan | 54,228 | 420,648 |
| Bengal | 76,843 | 46,695,526 |
| Bihar and Orissa | 83,161 | 34,002,189 |
| Bihar | 42,256 | 23,380,288 |
| Orissa | 13,766 | 4,968,873 |
| Chota Nagpur | 27,065 | 5,653,028 |
| Bombay (Presidency) | 123,621 | 19,348,219 |
| Bombay | 77,085 | 16,012,342 |
| Sind | 46,506 | 3,279,377 |
| Aden | 80 | 56,500 |
| Burma | 233,707 | 13,212,192 |
| Central Provinces and Berar | 99,876 | 13,912,760 |
| Central Provinces | 82,109 | 10,837,444 |
| Berar | 17,767 | 3,075,316 |
| Coorg | 1,582 | 163,838 |
| Delhi | 593 | 488,188 |
| Madras | 142,260 | 42,318,985 |
| Northwest Frontier Province | 13,419 | 2,251,340 |
| Punjab | 99,846 | 20,685,024 |
| United Provinces | 106,295 | 45,375,787 |
| Agra | 82,137 | 33,209,145 |
| Oudh | 24,158 | 12,166,642 |
| Total provinces | 1,094,300 | 247,003,293 |

Bombay, 1,175,914; Madras, 526,911; Hyderabad, 404,187; Rangoon, 341,962; Delhi, 304,420; Lahore, 281,781; and Ahmedabad, 274,007.

EDUCATION. At the census of 1921, 87.4 per cent of the males and 98.1 per cent of the females over six years of age were illiterate. The number of persons who spoke English was 2,500,000. In 1927-28, there were 219,810 "recognized schools," with 11,160,156 pupils; and 34,914 "unrecognized schools," with 615,066 students. Recognized schools conform to standards prescribed by the Department of Public Instruction; the unrecognized do not. Of some 3,500,000 boys in British

India, who annually begin the four years of elementary education considered necessary for literacy, little more than 500,000 are able to complete the course.

PRODUCTION. Agricultural production is the basic source of India's wealth, and supports over three-fourths of the population. Rice is the chief crop and the staple food of the masses. The cotton crop, which normally totals about 6,000,000 bales of 400 pounds each, ranks second in size to that of the United States and is the leading raw material export. India is the largest cane-producing country in the world, although \$50,000,000 worth of sugar is imported annually, and it has a monopoly of the world's jute supply. The annual productivity of the country is estimated at \$10,000,000,000, or about 5 per cent of the world total. The area of British India actually sown in 1927-28 was 223,802,226 acres, of which 43,240,726 acres were under irrigation.

The area and yield of the principal crops in British India and the Indian States in the 1929-30 crop season are shown in the accompanying table.

INDIAN CROPS: AREA AND YIELD, 1929-30
(Including Indian States)

| Crop | Area ^a | | Production ^b | |
|------------------------|--------------------|-----------------|-------------------------|------------------------|
| | 1928-29 | 1929-30 | 1928-29 | 1929-30 |
| Wheat | 32,011 | 30,468 | 317,595 | 368,293 |
| Barley | 6,825 ^c | ..... | 97,722 | ..... |
| Rice, rough .. | 83,020 | 79,906 | 1,599,758 | 1,535,595 |
| Sugar | 2,568 | 2,504 | 2,707 ^d | 2,766 ^e |
| Tea | 773 | ..... | 403,765 ^d | ..... |
| Rape and mustard | 6,823 | 3,459 | 908 ^e | ..... |
| Sesamum | 5,543 | 5,318 | 495 ^e | 460 ^e |
| Linseed | 3,124 | 2,332 | 322 ^e | ..... |
| Castor seed .. | 1,407 | 1,253 | 120 ^e | 106 ^e |
| Peanuts | 6,351 | 5,643 | 3,211 ^e | 2,475 ^e |
| Cotton | 27,053 | 25,692 | 2,791,170 ^d | 2,472,200 ^d |
| Jute | 3,144 | 3,317 | 3,982,400 ^d | 3,906,800 ^d |
| Indigo | 72 ^e | 67 ^e | 1,478 ^d | 1,635 ^d |

^a Thousands of acres.

^b Thousands of units—bushels except as indicated.

^c Unit, long ton.

^d Unit, pound.

^e For 89 per cent of indigo area.

^f Not including Indian States.

Livestock constitutes another important source of income, hides and skins alone reaching a yearly value of about \$60,000,000. Forests cover more than 100,000,000 acres, including 86,985,199 acres in British India, and yield important quantities of shellac (\$40,000,000 annually), rubber, myrabolans (palm balsam), turpentine, rosin, sandalwood, and wood oils.

India has important iron and other mineral ore deposits. Production of iron ore approximates 2,000,000 tons annually; of coal, 22,000,000 tons; of petroleum, 300,000,000 gallons. Manganese, chromite, wolfram, lead, tin, zinc, mica, magnesite, salt, and saltpetre are other minerals exploited. Gold and silver production averages \$10,000,000 yearly. In 1928, an average of 179,687 persons were employed daily in the coal mining industry.

Industrially, India is one of the seven leading countries of the world. The wealth derived from manufacturing is estimated at nearly \$3,000,000,000 annually, or about two-fifths of the annual agricultural income. Cotton and silk weaving, shawl and carpet weaving, wood-carving and metal-working are the most important indigenous industries after agriculture. In 1927, there were 278 cotton mills (with 342,315 employees), 2116 cotton ginning and pressing factories, 90 jute mills, 1459 rice mills, 122 jute presses, 868 tea

factories, 207 lumber mills, 211 oil mills, 45 sugar factories, 11 petroleum refineries, 77 motor works and coach building plants, and numerous others. Production of yarn in 1928-29 was 648,000,000 pounds, of woven goods, 446,000,000 pounds. Industry was generally depressed in 1930, as a result of political disturbances.

COMMERCE. Although the prosperity of India depends to only a slight degree upon foreign trade, it ranks among the seven leading trading nations of the world. Previous to the outbreak of the civil disobedience movements in 1930, India normally absorbed one-eighth of the total exports of the United Kingdom. In 1928-29, 43 per cent of the total imports were from the United Kingdom, as compared with 64 per cent in 1913.

For the fiscal year ended Mar. 31, 1930, general imports into British India totaled 2,407,600,000 rupees (\$878,800,000) and British Indian exports amounted to 3,018,000,000 rupees (\$1,134,400,000). Comparative figures for 1928-29 were: Imports, 2,533,100,000 rupees (\$924,600,000); exports 3,301,300,000 rupees (\$1,205,000,000). The decrease in the value of exports was due mainly to the sharp decline in the price of raw jute, jute manufactures, and tea. Raw cotton shipments showed considerable increases in quantity and value. Imports of automotive vehicles, cotton twist and yarn, sugar, electrical machinery, mineral oils, and chemicals all increased in quantity and value in the calendar year 1929, as compared with 1928. Import declines were recorded in raw cotton, iron and steel, cotton and wool piece goods, and artificial silk manufactures. The United Kingdom in 1929 furnished 42.4 per cent of all imports, followed by Japan, with 9.2 per cent, and the United States and Germany, in the order named. Indian exports in 1929 went chiefly to the United Kingdom (which took 21.2 per cent of the total, against 21.9 per cent in 1928), the United States, Japan, Germany, and France, in the order named. Imports from the United States (1929) were valued at \$59,903,000 while exports to that country totaled \$139,845,000. The per capita general imports and exports of British Indian products in 1929 were equal to about \$2.82 and \$3.65, respectively.

FINANCE. In the budget for the fiscal year ended March 31, 1930, total revenues and expenditures of the Central Government of India were estimated to balance at £100,547,000 (1,340,633,000 rupees). The rupee exchanged at \$0.362 in 1929. Preliminary returns, as reported by Sir George Schuster, the Finance Minister, in his budget speech before the Legislative Assembly in March, 1930, indicated a deficit of £795,000 (10,600,000 rupees), which more than absorbed the 7,400,000 rupees remaining in the Revenue Reserve Fund. The resulting gap of 3,200,000 rupees was exactly filled by receipts from the German liquidation account. Customs revenue collected during the year totaled 510,000,000 rupees, as compared with 500,170,000 rupees in 1928-29. The increase was due to higher duties put into effect March 1, 1929, rather than to larger imports.

On the basis of existing taxation (March, 1930), the Finance Minister estimated that the budget for 1930-31 would show a deficit of 55,200,000 rupees. The new budget proposals therefore provided for the reduction of military expenditures by 3,000,000 rupees and the imposition of new taxation, which was expected to leave a surplus of 7,000,000 rupees (about £525,000). Of par-

ticular importance to the British cotton industry, was the raising of the import tariff on cotton piece goods from 11 per cent to the general tariff rate of 15 per cent. An additional protective duty of 5 per cent was levied on non-British plain-grey cotton piece goods for three years. The Provincial finances are conducted separately.

The public debt of the Central Government on Mar. 31, 1929, stood at 107,416 crores, or 10,741,600,000 rupees, of which 73,578 crores were productive in railways, telegraphs, and irrigation; 17,086 crores were unproductive; 13,695 crores were incurred on behalf of the Provincial Governments; and 3057 crores represented Treasury holdings of cash, bullion, and securities.

COMMUNICATIONS. India's railway mileage is second only to that of the United States. On Mar. 31, 1929, there were 40,950 miles of line in operation, of which 29,450 miles represented mileage of the Imperial State lines and 5345 miles, Indian State lines. A total of 1282 miles of new railway lines were opened in 1928-29. During the same year all railways carried 620,110,100 passengers and 90,835,000 tons of freight, reporting net earnings of 442,500,000 rupees. The railway staff included 4988 Europeans and 802,878 Indians.

Vessels entering with cargoes in the inter-port trade in 1928-29 had an aggregate tonnage of 18,878,440; vessels clearing, 19,052,056. An air-mail line connects Karachi with London and an inland air service links Karachi with Delhi, Jodhpur, and Hyderabad.

ARMY. The strength of the British Army in India in 1929 was 59,987 men, and of the Indian Army 172,175. The Royal Air Force units in India comprised six squadrons, with 218 officers and 1757 British and 138 Indians of other ranks. Lieut. Gen. Sir Kenneth Wigram was appointed Chief of the General Staff of India, effective Mar. 21, 1931. See **MILITARY PROGRESS.**

GOVERNMENT. Executive and legislative power rests with the Government-General-in-Council. The Council consists of no fixed number of members, but at least three of them must have had 10 years' service in India and one must be a lawyer of at least 10 years' standing. The administration of India in England is under a Secretary of State for India, aided by a council appointed by him, of which at least half the members must have been residents of India for 10 years and must not have left India more than five years previous to their appointment. A high commissioner for India in England acts as agent for the Governor-General-in-Council and conducts business assigned by the Secretary of State. There is also in India the Legislature consisting of the Governor-General and two Chambers, namely, the Council of State and the Legislative Assembly, both constituted under the Montague-Chelmsford Act. See **NEW INTERNATIONAL YEAR BOOK** for 1919 et seq. The Viceroy and Governor-General during 1930 was Baron Irwin of Kirby Underdale (appointed Apr. 4, 1926). The Secretary of State for India was Capt. Wedgwood Benn, appointed in June, 1929, to succeed Viscount Peel. The High Commissioner for India in the United Kingdom was Sir A. C. Chatterjee.

HISTORY

CIVIL DISOBEDIENCE. The tide of Indian nationalism, after mounting steadily during 1929, reached its climax in the spring of 1930. In accordance with a resolution adopted in December,

1929, by the All-India National Congress, the executive committee on February 16 formally authorized Nationalist leaders to engage in a campaign of non-violent disobedience to the civil authorities. On March 6, Mohandas Karamchand Gandhi issued an ultimatum to the Viceroy, Lord Irwin, demanding immediate dominion status for India. Dominion status was not granted, and on March 12 the Mahatma (Great Soul) left his retreat in Sabarmati at the head of 79 volunteers and started a 170-mile march to Dandi, on the Gulf of Cambay, with the announced intention of violating the Government's salt monopoly by dipping up sea water to be heated for the manufacture of salt.

His act of open defiance to the Government took place on April 6, without any effort of the British authorities to arrest him. It served as a signal for similar acts of defiance throughout India. Numerous Hindu government officials resigned, the collection of taxes was forcibly resisted and evaded, railway employees quit their work and in some cases lay across the tracks to obstruct traffic, there were numerous strikes, foreign stores and goods were boycotted, and at Gandhi's order the native liquor shops were picketed by women and toddy palm trees were cut down to prevent the manufacture of liquor.

As in previous civil disobedience campaigns, many of the Mahatma's followers repudiated his doctrine of non-violence. During the week of April 14 there was rioting in Calcutta, Bombay, and Karachi, followed by a raid on the railway and police arsenals at Chittagong, near Calcutta, in which six persons were killed. To aid the Bengal authorities in meeting the situation, the Viceroy promulgated an ordinance giving emergency powers to the executive. As the civil disobedience campaign gained momentum, the emergency powers were extended to apply to the northwest city of Peshawar, where three British soldiers and some 20 natives had been killed during riots and where a Hindu regiment had refused to obey the orders of its British officers to fire on the mob. Virtually all of Gandhi's associates in the campaign were imprisoned and on May 5 the increasing seriousness of the situation forced the Government to imprison the Mahatma, who, in various ways, had courted arrest. He was locked up in Yeroda jail at Poona under an 1827 ordinance forbidding resistance to British authority and under which he could be held without trial for an indefinite period.

Fierce outbursts of rioting in Calcutta, Delhi, and other cities was the Indian Nationalists' response to the arrest of their leader. Trains were stoned, telegraph wires cut, and Government officials attacked. The police and troops fired upon menacing mobs in Calcutta and Delhi, killing over 20. Delhi was placed under martial law, and British military forces were held in readiness for the conflagration which it was feared would sweep India. The outbreak, however, did not materialize on the scale expected. For the most part the Mohammedans refused to join in the Nationalist campaign. The Council of the All-India Moslem Federation adopted a resolution disapproving of the civil disobedience movement as injurious to the best interests of the Moslem community. Similarly, the National Liberal Federation on May 15 issued a statement deprecating civil disobedience as leading to serious disorder and hardship without bringing India nearer to the desired goal of dominion status.

Only in Sholapur, a large manufacturing town 220 miles southeast of Bombay, did the situation become critical. There frenzied Gandhi adherents on May 8 attacked the police, assumed control of the city, burned all liquor shops and three police stations, and looted government buildings and residences. The police fired on the mob, killing 31 and wounding 100, but were forced to take refuge in the railway station pending the arrival of troops and the establishment of martial law on May 13.

Despite these disturbances the Viceroy on May 12 reiterated the Government's determination to proceed with its efforts to provide eventual "dominion status" for India. He announced that the round-table conference proposed by him in 1929 and rejected by the India National Congress would be held in London in October. Censuring Mahatma Gandhi and his lieutenants in the civil disobedience campaign for "rejecting a unique chance to play a constructive part in the evolution of India's future," he warned them that the civil disobedience campaign would postpone real political advancement throughout India.

The immediate aftermath of Gandhi's arrest marked the climax of Nationalist violence. Repeated clashes between the police and thousands of Nationalists intent upon violating the Government's salt monopoly occurred during the remainder of May at Wadala and Dharasana, but with continued arrests of the leaders and the commencement of the rainy season the movement gradually spent its force. In November, some 27,000 Nationalists were serving prison terms. Non-violent resistance and the boycott of British goods continued, however, and sporadic outbursts and assassinations of British officials were reported from various points throughout the remainder of the year. Lieut. Gen. Norman Skinner Simpson, Inspector General of Prisons in Bengal, was assassinated December 8 and on December 23 Sir Geoffrey de Montmorency, Governor of the Punjab, was wounded by a would-be assassin.

A study of the statistics given above under *Area and Population and Religion* explains in part the refusal of large sections of the Indian masses to respond to Gandhi's nationalistic appeal. Their inaction was primarily attributable to the conflicting racial, religious, and caste loyalties of the Indian people as well as to the inertia of a vast and illiterate population still largely imbued with Oriental fatalism. In 1930, as in other critical periods following the conquest of India, the British retained their supremacy because Moslem and Hindu, high-caste and low-caste, princes and proletariat, generally speaking, distrusted each other more than they did the foreign overlord.

WAR ON THE BORDER. In the meantime, a serious situation had been developing on the Northwest Frontier, where the warlike Afridi (Afghan) tribesmen, aroused by reports of the breakdown of British authority, were gathering in force for raids upon Peshawar and the villages of the Peshawar plain. During the disturbances in Peshawar in May, the Hadji of Tarangzai, a turbulent border mullah, marched on the city with some 500 Pathan hillmen, but his following was dispersed by the Royal Air Force. The Afridi raids developed in earnest in June and August on a scale that had not been equaled since the frontier outburst of 1897-98. A force of from 7000 to 14,000 Afridis, advancing on Peshawar, was met and repulsed on the Kajuri Plain June 5 by

a brigade of British and Indian troops. The retreating tribesmen were pursued by airplanes and many of their villages were demolished from the air.

A second Afridi lashkar (military force) of between 5000 and 10,000 men succeeded in reaching a military depot close to the city walls before being driven back by British and Indian troops on August 9 and 10. Repeated raids by smaller groups of Afridis kept the border in a state of extreme tension throughout the summer. One British officer and nine men were killed and 11 wounded in a clash with Waziri tribesmen on August 24, while the Waziri losses were placed at 33 killed, 14 wounded, and 70 prisoners. Punitive raids by Royal Air Force planes upon the mountain villages of the tribesmen forced many to capitulate and give hostages for their future peaceful conduct.

The effort of British negotiators to reach a similar settlement with the main Afridi tribal council was reported on November 20 to have failed. The British military staff then decided to extend the system of military roads protecting Peshawar in order to bar the Afridis from their usual winter quarters in the foothills of the Kajuri Plain. That the invasions from the Afghan highlands were not more serious was due largely to the action of Nadir Shah, the Afghan king, in preventing the Afghan chiefs subject to his rule from joining in the Afridi raids. A number of Communist agents were arrested on charges of stirring up the border tribesmen and inducing villagers under British jurisdiction to refuse the payment of taxes.

The part Communism was playing in the disturbances in India was described by Solomon Lozovsky, general secretary of the Third International, before the Communist party convention held in Moscow in June, 1930. The Communist-inspired revolutionary movement, he said, was aimed not only at the British but also at the Indian bourgeoisie. At first confined to nonpayment of taxes, peasant action was proceeding to confiscation of the land under the leadership of two organized revolutionary groups, the so-called "Red Shirts" and the League of Indian Youth.

THE SIMON REPORTS. The Indian Statutory Commission, headed by Sir John Simon and approved by the House of Commons on Nov. 25, 1927, concluded its investigation of the situation in India in April, 1929, and submitted its findings in two volumes published on June 10 and 24, 1930. The report, as analyzed by the Foreign Policy Association, recommended that India be allowed to progress toward self-government as a federation of autonomous Provinces, but only under the strongest British safeguards. Eight of the nine Provinces of British India would develop self-governing institutions and send representatives to a Federal Assembly at Delhi, in which the Indian States would be represented also. Burma, the ninth Province, would be separated from India, under its own constitution.

Unitary Indian governments responsible to legislatures elected under an extended franchise would be set up for the eight Provinces of British India. The whole field of legislation would be thrown open to the Provincial legislatures, but the British Governors would retain statutory powers to overrule the legislatures when necessary for the preservation of order or the protection of minorities. The British Governors might assume extraordinary powers in case of emergency, but



Photo Keystone View Co., N. Y.

BARON IRWIN OF KIRBY UNDERDALE
Viceroy and Governor-General



Photo Keystone View Co., N. Y.

MAHATMA GANDHI
Indian Native Leader

their extension for more than one year would require the approval of the British Parliament. The existing Legislative Assembly would be replaced by a Federal Assembly, consisting of representatives elected by the Provincial legislatures and the Indian States, and which would enjoy enlarged financial powers.

The Governor General and the Council of State would retain their executive control of the Central Government. The Governor General would continue to initiate tax measures for federal purposes, which would require the approval of the Council of State and the Federal Assembly. Where the safety of British India was considered at stake, he would be authorized to certify a rejected measure. The commission recommended the continuance of British control of the army and of a large British element in the military ranks. It advised that the defense of the Northwest Frontier be placed in Imperial hands, separate from the Government of India, which, however, would supply an annual non-votable sum for the support of forces stationed in India. The commission emphasized that its proposals were designed to give India, and particularly the Provinces of British India, freedom to develop self-governing institutions. The proposed safeguards, it was asserted, were to be applied only if self-government was repudiated.

The Simon Commission had been boycotted by a large section of the Indian public and by the Legislative Assembly but was assisted by a Central Indian Committee, chosen by the Governor General, and by committees representing most of the Provincial councils. The commission's proposals were immediately rejected by the adherents of the All-India National Congress as well as by a large section of moderate Hindu and Moslem opinion. The All-India Moslem Conference, while deciding by a large majority to participate in the round-table conference, registered its emphatic opinion "that the minimum demands of Muslims (Moslems) of India have not been met by the (Simon) Commission." The Conference opposed the system of proportional representation suggested by the commission, and demanded greater provincial autonomy, guaranteed Moslem majorities in Bengal and the Punjab, the separation of Sind from Bombay, extension to the Northwest Frontier Province of the reforms proposed for the other Provinces, full provincial autonomy for Baluchistan, and provision for Moslem representation in the public services.

ROUND-TABLE CONFERENCE. A conference in London of representatives of the various Indian factions and of the British political parties to consider means of meeting India's demands for greater self-government was proposed by Lord Irwin in 1929. The Nationalists refused to participate in the conference on two grounds: (1) they demanded a preliminary explicit pledge from Great Britain that the conference would grant India a responsible government, including complete fiscal autonomy, which was refused; (2) they objected to the choice of delegates by the British Viceroy, demanding that the various Indian groups be permitted to select their own representatives.

Lord Irwin, in an address to the Indian Legislature on July 9, 1930, announced that the British Government would not be bound by the recommendations of the Simon Report at the round-table conference and that it would not promise to meet the Nationalists' demands in advance. The forth-

coming conference was defined by the Viceroy as "not a mere meeting for discussion or debate, but a joint assembly of representatives of both countries on whose agreement precise proposals to Parliament may be founded." He added that "His Majesty's Government still hopes that Indians of all schools of thought, whatever the attitude some have hitherto taken, will be ready to share in this constructive work." This open invitation to opposition Indian leaders to enter the conference fell on deaf ears. Negotiations were then initiated by two moderate leaders in the Indian Legislative Assembly, Sir Tej Bahadur Sapru and Mr. Jayakar, with Mahatma Gandhi and the Nationalist leaders, Motilal and Jawarhalal Nehru, in an effort to end the civil disobedience movement and restore normal conditions. The Nationalist leaders, who were imprisoned at Poona, held out for a pledge of dominion status for India, with the right to secede at any time from the British Empire, and for full economic and military control by a national government. They left the question of their representation at the round-table conference to be decided after these and other "preliminaries" had been agreed to by the Viceroy. The latter dismissed the proposals as impossible and the failure of the negotiations was announced on September 5. On the following day the India Office stated that the round-table conference would take place as scheduled.

The conference opened in London November 12, with a membership of 13 British and 76 Indians of moderate temper, who had been nominated by Lord Irwin. The British delegation was headed by Premier MacDonald and comprised, in addition, four members each from the Labor, Liberal, and Conservative parties. Of the Indians, 16 represented the Indian States and 60 the Provinces of British India. An important obstacle to an autonomous India was eliminated early in the conference, when the Indian princes announced their willingness to enter a federated government. Despite the variety of castes, religions, and races represented, all were unanimous in demanding responsible self-government under federal machinery for both the Indian States and the British Indian Provinces. The united front presented by the Indian delegates and the assurance given by Premier MacDonald on November 21 that his Government stood by Britain's pledge to grant eventual dominion status to India aroused hopes for the success of the conference. On the previous day the Brahmans and other high-caste Hindus signed an agreement that the "untouchables" of the Indian caste system should have political equality in proportion to their numbers in the new Indian Constitution to be demanded of Great Britain.

The ancient antagonism between Hindu and Moslem evidenced itself early in the conference, however, and gradually destroyed the united front of the Indian delegation. The Moslems demanded that the Hindus guarantee separate electorates and a share in the government services for Moslem minorities in Hindu communities. On December 17 a committee of 27 was named to deal with the demands for political rights of all Indian minorities. The conference adjourned for the Christmas holidays, however, without prospect of an agreement between the Hindus and Moslems. It was agreed on December 1 that Burma should be separated from India and Premier MacDonald announced that his Government favored the proposal. When the conference reconvened on Dec. 29, 1930, both the Liberals and Conservatives evidenced a

desire to support the Labor Government in its plans for extending a greater measure of autonomy to India than recommended in the Simon Report.

A feature of the first sessions of the conference was the publication on November 14 of the India Government's official comment on the report of the Simon Commission. The dispatch, signed by Lord Irwin and the members of the Council of State, differed materially from the Simon Report on a number of fundamental points and urged immediate action toward granting India increased autonomy. The Viceroy recommended that Great Britain reserve its authority with regard to the defense of India from external attack, the conduct of Indian foreign relations, maintenance of internal security and financial stability, and the protection of minorities from unreasonable treatment. Virtually all other functions not in conflict with the above aims could properly be vested in a responsible government of India, he asserted. Disapproving of the Simon recommendation for the defense of the Northwest Frontier by the Imperial Government, he advised that the British Government in India be permitted to retain control of defense. The Viceroy's statement was received with favor by the Indian delegation at the round-table conference but was severely attacked as short-sighted and narrow by the *London Times* and other leading British journals.

The appointment of Viscount Willingdon, retiring Governor General of Canada, to succeed Lord Irwin upon the expiration of the latter's term as Viceroy in March, 1931, was announced by the MacDonald Government on Dec. 19, 1930. Lord Willingdon, a Liberal in politics, had previously served for 11 years as Governor of the Presidency of Madras. His appointment was said to have been made at the request of the India Government.

Of interest in connection with the round-table conference was a poll taken by *The Times of India* among non-official Europeans in India which showed 815 favoring the granting of dominion status and 165 opposing. Dominion status was defined as a responsible government at the centre, with safeguards providing final British control of the army, foreign affairs, the external debt, and of the European and other minorities.

OTHER EVENTS. Administrative autonomy of the Church of England in India went into effect Mar. 1, 1930, in accordance with the Indian Church Act of 1927 and the corresponding measure passed by the Church of England Assembly and confirmed by Parliament in the same year. The Anglican communion in India assumed the title of the Church of India, Burma, and Ceylon. At the same time it lost much of the financial aid formerly received from the Government of India. See COTTON, EARTHQUAKES, and GREAT BRITAIN under *History*.

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Crisis in India: Its Constitutional Basis," *Foreign Policy Association Information Service* for Nov. 26, 1930 (vol. vi, no. 19). See also PHILOLOGY, MODERN; COMMUNISM.

INDIANA. POPULATION. According to the Fifteenth Census, the population of the State on Apr. 1, 1930, was 3,238,503. The population on Jan. 1, 1920, was 2,903,390. The capital is Indianapolis.

AGRICULTURE. The following table gives the acreage, production, and value of the principal crops in 1929 and 1930:

| Crop | Year | Acreage | Prod. Bu. | Value |
|----------|------|-----------|-------------------------|--------------|
| Corn | 1930 | 4,206,000 | 110,197,000 | \$67,220,000 |
| | 1929 | 4,124,000 | 131,968,000 | 97,656,000 |
| Hay | 1930 | 1,993,000 | 2,022,000 ^a | 29,441,000 |
| | 1929 | 2,179,000 | 3,539,000 ^a | 35,700,000 |
| Wheat | 1930 | 1,615,000 | 29,058,000 | 20,630,000 |
| | 1929 | 1,631,000 | 27,723,000 | 31,048,000 |
| Oats | 1930 | 1,914,000 | 57,420,000 | 17,226,000 |
| | 1929 | 1,895,000 | 54,008,000 | 21,603,000 |
| Potatoes | 1930 | 58,000 | 4,984,000 | 5,732,000 |
| | 1929 | 55,000 | 4,620,000 | 6,930,000 |
| Tobacco | 1930 | 16,400 | 11,382,000 ^b | 1,593,000 |
| | 1929 | 19,300 | 15,112,000 ^b | 2,569,000 |
| Rye | 1930 | 106,000 | 1,378,000 | 758,000 |
| | 1929 | 125,000 | 1,625,000 | 1,462,000 |

^a Tons. ^b Pounds.

Farms in the State numbered 182,092 in 1930, the total having declined from the 195,786 of 1925 and the 205,126 of 1920.

MINERAL PRODUCTION. Improvement in the coal mining industry, which dominates the important iron industry of the State, had not immediately followed the termination of labor troubles at the collieries in 1928; it manifested itself in 1929, when the year's total quantity of coal mined rose to 18,344,358 net tons, from 16,378,580 for 1928. The value of the product rose less notably, to \$29,880,000 for 1929, from \$29,212,000 for 1928. The State's by-product coke ovens shipped, in 1929, 6,455,378 short tons, a fair increase over the 6,094,201 tons of 1928. The value of the shipments was, for 1929, \$41,208,876; for 1928, \$38,237,790. Correspondingly, the production of pig iron rose. The blast furnaces shipped 4,279,825 long tons in 1929, as against 3,842,762 in 1928; in value, \$71,416,732 for 1929 and \$63,622,330 for 1928. The output of the important stone industry of Indiana, for 1928, the last year of reported official figures, was of lower quantity but slightly greater total value. There were quarried, in 1928, 5,102,280 short tons of stone; in 1927, 5,813,000. The total of 1928 fetched \$22,720,411; that of 1927, \$22,634,359. The clay products of the State totaled \$16,540,711 for 1928 and \$17,855,971 for 1927. Petroleum was produced in 1929 to the quantity of 977,000 barrels, valued at \$1,600,000 (estimated), and the value of natural gas output exceeded \$600,000 in 1928. The entire mineral product of the State reached the value of \$98,583,915 for 1928; \$107,578,234 for 1927.

FINANCE. State expenditures in the year ended Sept. 30, 1929, as reported by the United States Department of Commerce, were: for maintenance and operation of governmental departments, \$29,445,094 (of which \$5,203,645 was for local education); for interest on debt, \$99,559; for permanent improvements, \$19,641,088; total, \$49,185,741 (of which \$23,296,538 was for highways, \$8,113,553 being for maintenance and \$15,182,985 for construction). Revenues were \$48,882,164. Of these, property and special taxes formed 27.6 per cent; departmental earnings and remuneration to the State for officers' services,

10.2; sales of licenses, 46.8 (including taxes of \$14,033,711 on sales of gasoline). The State's funded debt outstanding on Sept. 30, 1929, was \$2,411,000. Net of sinking-fund assets, it was \$2,366,730. On property bearing an assessed valuation of \$5,166,896,475 were levied in the year State taxes of \$14,984,000.

TRANSPORTATION. The total number of miles of railroad line under operation on Jan. 1, 1930, was 7105.01. There were built, in 1930, 41.81 miles of additional second track.

EDUCATION. There proceeded in 1930 a study conducted by an interim committee of 13 members of the Legislature, charged by the session of 1929, to determine the proper course of the State with regard to the granting of State aid for the public schools. The school population of the State was estimated, for 1930, at 865,352. There were enrolled in the public schools 667,379 pupils. Of these, 504,269 were in elementary and 142,200 in high-school grades. The expenditures of the year for public-school education totaled \$71,988,318. The average salary of teachers, for the year, was \$1103 for elementary grades and \$1521 for high schools.

CHARITIES AND CORRECTIONS. Supervision of all the State's institutions having the care or custody of persons was exercised in 1930, in accordance with the long established organization of this branch of the State government, by the Board of State Charities. This body was composed of six non-salaried, non-partisan appointee members and of the Governor, serving as its president ex-officio. To carry out its orders it had an executive secretary, its own appointee. It gave annual licenses to all hospitals receiving maternity cases and to private institutions, agencies, and individuals engaged in placing or caring for children. Its Children's Department had under its supervision 2300 children in family homes and 2400 in institutions. Its advisory powers extended over charitable and correctional institutions in 92 counties.

The 20 institutions of the State, with their respective populations of Sept. 30, 1930, were: Central State Hospital, Indianapolis, 1666; Logansport State Hospital, Logansport, 1013; Richmond State Hospital, Richmond, 1219; Evansville State Hospital, Evansville, 1050; Madison State Hospital, North Madison, 1491; School for Feeble-Minded Youth, Fort Wayne, 1568; Farm Colony for Feeble-Minded, Butlerville, 374; Village for Epileptics, Newcastles, 767; Soldiers' Home, Lafayette, 353; Soldiers' and Sailors' Children's Home, Knightstown, 638; State Sanatorium, Rockville, 166; Indiana University Hospitals, Indianapolis, 439; State School for the Deaf, Indianapolis, 405; State School for the Blind, Indianapolis, 131; State Prison, Michigan City, 2331; Reformatory, Pendleton, 1981; State Farm for Misdemeanants, Greencastle, 1383; Women's Prison, 72 (penal), 133 (correctional); Indiana Girls' School, Indianapolis, 380; Indiana Boys' School, Plainfield, 530. The entire population of State institutions numbered 18,490.

POLITICAL AND OTHER EVENTS. Work was prosecuted on the \$10,000,000 World War Memorial for which five city blocks had been set apart in the heart of Indianapolis. At Vincennes the United States government, the State and Knox County cooperated in undertaking at the site of Fort Sackville and on the Wabash River the construction of a monument to John Rogers Clark and a bridge, with accessory parkways. Improvement

of the highways opening up the hill country to the south and southwest of Indianapolis was reported as conducing to an extensive development of fruit growing in that section. In politics the year was marked by the relative absence of the discords and evidences of dereliction in office that had characterized the recent past. Plans were made by the Missouri-Kansas Pipe Line Company to construct a line 930 miles in length to transmit natural gas from the Amarillo district of Texas to central Indiana, at an estimated cost of nearly \$40,000,000.

ELECTIONS. The State elected neither a Governor nor a United States Senator on November 4. In the elections to the Federal House of Representatives, 9 Democrats and 4 Republicans were chosen, thus almost exactly reversing the party balance of the delegation, which in the Seventy-first Congress was 10 Republicans and 3 Democrats. The lower house of the State Legislature passed to the control of the Democrats, who obtained about three-fourths of the seats; the Republican majority in the upper house was reduced.

OFFICERS. Governor, Harry G. Leslie; Lieutenant-Governor, Edgar D. Bush; Secretary of State, Otto G. Fifield; Auditor, Archie N. Bobbitt; Treasurer, G. Banta Reynolds; Superintendent of Public Instruction, Roy P. Wischart. As Secretary of State, Frank Mayr, Jr., succeeded on December 1; and as Auditor, on the same date, Floyd E. Williamson.

JUDICIARY. Supreme Court: Judges, Julius C. Travis, David A. Myers, Clarence R. Martin, Willard B. Gemmill, B. M. Willoughby.

INDIANA UNIVERSITY. A coeducational State institution of higher learning in Bloomington, Ind.; founded in 1820. For the first semester of the academic year 1930-31 the registration aggregated 4226 students, of whom 2656 were men and 1670 women. These were distributed as follows: Graduate school, 248; arts and sciences, 2388; law 144; commerce and finance, 181; music, 78, education, 372; medicine, 439; dentistry, 159; nurses' training, 187; social service, 41. The faculty had 310 members. The endowment funds amounted to \$764,528, and the total income for the year, from State and private sources, was \$3,498,000. The library contained 218,750 volumes. In 1927 the legislature appropriated a mill tax that was expected to yield at least \$350,000 a year, for ten years, to be used exclusively for the construction of new buildings and the purchase of land. President, William Lowe Bryan, Ph.D.

INDIANS. According to the annual report of the U. S. Commissioner for Indian Affairs, Charles J. Rhoads, the total estimated and enumerated number of Indians reported by Federal agencies on Apr. 1, 1930, was 340,541. This number consisted of 221,808 Indians who were actually enumerated and 118,733 other Indians who were taken from tribal rolls, earlier and special censuses, and estimates based on records. This aggregate represents an increase over the corresponding figure for the previous year of 0.9 per cent. If a comparison is made between the number actually enumerated in the same areas for 1929 and 1930 the increase is 1.4 per cent. Of the 221,808 Indians enumerated, 112,907 were males, 108,890 females, and for 11 the sex was not reported.

It was significant when the Indians enumerated were considered that 185,377, or 83.6 per cent, resided at the Federal jurisdiction where

enrolled, while only 3984, or 1.8 per cent, resided at another jurisdiction, and 32,447, or 14.6 per cent, resided elsewhere—that is, outside of any Federal jurisdiction.

Of the 32,447 Indians residing elsewhere, 41 were living in the New England States, 208 in the Middle Atlantic, 3633 in the East North Central, 9234 in the West North Central, 437 in the South Atlantic, 93 in the East South Central, 2166 in the West South Central, 5120 in the Mountain States, and 6024 in the Pacific States, and for 5491 Indians the residence was either not reported or unknown. Oklahoma had far more Indians than any other State. If the estimated population of the Five Civilized Tribes and Kaw Reservation were included, the Indian population was 121,884, or 35.8 per cent of the aggregate Indian population of the United States. Arizona ranked next with 47,072, or 13.8 per cent. According to the enumerated population, only two other States had an Indian population of over 20,000—New Mexico and South Dakota. According to a preliminary tabulation of the tribes enumerated on Apr. 1, 1930, the most important numerically were the Navajo, Sioux, and Chippewa, numbering 40,863, 33,168, and 23,647, respectively.

In the estimated Indian population, 118,733, the Five Civilized Tribes and the Kaw Reservation mentioned were of course responsible for the greatest numbers, after which came California, Sacramento Agency, 8761; New York with 4445; Michigan with 1192; Wisconsin with 1404 at three reservations, and the remainder distributed among other States.

In his annual report Dr. Ray Lyman Wilbur, Secretary of the Interior, stated that an encouraging start had been made as regards the Indian's personal welfare. Appropriations of \$18,794,829, or \$4,597,763 more than in 1929-30, were secured for 1930-31. The new Indian Service administration, referred to in the 1929 YEAR BOOK, had to use, during its first fiscal year, the machinery and money available under the old programme.

The revised programme planned by the new administration involved the following leading items: Better food, better clothing, new specialists in vocational education, elementary education, and field supervision; experienced agriculture-extension workmen; organization of the Washington work so as to enable education, agriculture, and industrial work to be major administrative divisions under experienced heads; reduction of the retirement age in the field force from 70 to 65, resulting in opportunity for recruiting new blood; setting up a personnel officer to see that promotions and personnel questions are handled on the most effective basis; these changes have been the starting points.

EDUCATION. Of the approximately 72,000 Indian children in schools in the United States, 38,000 were attending State public schools and the number was increasing from year to year. The Government was paying tuition for them in 861 white communities, 23 more than in 1929. Hundreds of other communities admit Indian children without tuition. Of the other 34,000 who go to Indian schools, 4000 live at home and go to Government day schools. There were 12,000 in reservation boarding schools and nearly 12,000 in boarding schools away from their own reservations; 6000 more attend mission and other private schools. In addition to the 72,000 in schools

there were about 9000 others of school age, all of whom should be given an educational opportunity.

Dr. W. Carson Ryan, Jr., of Swarthmore College, formerly of the U. S. Office of Education, was appointed director of Indian education. Dr. Earl A. Bates, author of the Bates plan, which had been applied with success in New York State, was borrowed for one year from Cornell University. This plan, considered one of the soundest methods of approach to vocational education for the Indian which had been actually tried, emphasized education in trades, agriculture, commercial arts, home making. A key factor was coöperation by the States as Indians are citizens of the States and voters. It must be made increasingly clear that there is a State as well as Federal responsibility to these citizens.

LAW AND ORDER. The Federal Code in 1910 gave Federal courts jurisdiction over eight major crimes committed on Indian reservations. Other crimes were in an uncertain border class where many States decline jurisdiction and the Federal courts have none. Four solutions were considered to settle the confusion of jurisdictional questions between Federal and State governments: (1) Submission of reservations to State criminal laws to be applied in State courts; (2) a special Federal code to be applied in Federal courts; (3) State laws in Federal courts; (4) use of tribal courts on some reservations. A valuable study was being carried on by the Board of Indian Commissioners (an independent body not associated with the Indian Service), with a view to adaptation of these differing methods to suitable classes of reservations.

HEALTH. Continued progress in the improvement and extension of medical care and relief for Indians was reported. The U. S. Public Health Service continued to detail medical officers, field directors, and sanitary engineers to the medical service of the Indian Bureau and to make available the service of the National Institute of Health. Hospitals and other services were improved and the Bureau received the coöperation of various Federal, State, county, and local organizations in attacking special Indian health problems. In addition to a considerable increase in hospital capacity, steps were taken to extend diagnostic and treatment facilities and to add to the personnel. The regular nonreimbursable appropriation for health purposes for 1929-30 was \$2,658,000, an increase of \$1,218,600 over the previous year. In addition, Congress provided a deficiency appropriation of \$400,000 for urgent health demands.

OTHER DEVELOPMENTS. The Bureau continued its efforts to assist the Indians in the development of agricultural pursuits. An agricultural extension service was supplied by a director and eight agents, each with a specified territory including several reservations. A supervisor of livestock was appointed during the year and seven home demonstration agents gave instruction to Indian women.

INDIAN STUDIES. See **ANTHROPOLOGY**.

INDO-CHINA, also known as **FARTHER INDIA.** The southeastern peninsula of Asia including the following divisions: Burma, politically attached to British India; Siam, a self-governing monarchy; French Indo-China, comprising Cambodia, Annam, Cochinchina, Laos, and Tongking; the Federated Malay States, a British pro-

tectorate; the Straits Settlements, a British colony; and the Malay States of Johore, Kedah, Kelantan, Perlis, and Trengganu. See the articles on BURMA, FRENCH INDO-CHINA, SIAM, and the other principal states mentioned.

INDO-IRANIAN STUDIES. See **PHILOLOGY, MODERN.**

INDUSTRIAL WORKERS OF THE WORLD. The fact that the Industrial Workers of the World had steadily lost place in the American labor movement has been recorded previously. By the end of 1930 their membership had grown so small that any influence as an insurgent labor movement was practically nil. Probably the chief influence in bringing about this situation had been the development of communism among those labor groups partial to left wing tactics. It has been pointed out that one of the reasons for the steady decline of the I.W.W. was the passage by a number of States of criminal syndicalist laws which made membership in the organization illegal. One of the events which attracted great attention to the I.W.W. in the period immediately after the World War and which served to centre on it public hostility, was the Armistice Day tragedy in Centralia, Washington, in 1919. It will be recalled that this so-called tragedy occurred on Nov. 11, 1919, in Centralia, when a violent clash took place between parading ex-soldiers and members of the I.W.W. As a result of this incident, four parading legionnaires were shot to death; the I.W.W. hall was wrecked; and one member of the I.W.W. was lynched by the mob. Growing out of the shooting there took place, on the charge of conspiracy, the trial of 11 I.W.W. members. The incident ended with the conviction of seven of the defendants for murder and these were given sentences ranging from 25 to 40 years. In October, 1930, a report throwing interesting light on this case was issued, bearing the imprint of the Department of Research and Education of the Federal Council of Churches (q.v.), the Social Action Department of the National Catholic Welfare Conference, and the Social Justice Commission of the Central Conference of American Rabbis. This report makes the important conclusion that while the convicted were legally guilty of a crime, "The crime was not premeditated and was committed under decidedly extenuating circumstances, in the light of which sentences seem very severe." The report pointed out that its investigations disclosed that no conspiracy to kill on the part of the I.W.W. existed in view of the fact that the I.W.W. hall was first raided by legionnaires before any firing began. "Throughout this whole tragedy," says the report, "passion reigned. Business men, raiders and I.W.W. alike were in a state of mind which does not lend itself to reason. The outstanding feature of this whole series of events was the passion of the community, which made sound moral judgment impossible."

INFANT FEEDING. See **FOOD AND NUTRITION.**

INFANTILE PARALYSIS. See **MEDICINE, PROGRESS OF.**

INFANT MORTALITY. See **CHILD WELFARE.**

INFANTRY. See **MILITARY PROGRESS.**

INHERITANCE TAXES. See **TAXATION.**

INJUNCTIONS. See **TRADE UNIONS.**

INLAND WATERWAYS. See **CANALS.**

INSECTS, INSECTICIDES, ETC. See **ENTOMOLOGY, ECONOMIC; ZOÖLOGY.**

INSTITUTE FOR RESEARCH IN SOCIAL SCIENCE. See **NORTH CAROLINA, THE UNIVERSITY OF.**

INSTITUTE OF AGRICULTURE, INTERNATIONAL. See **AGRICULTURE.**

INSTITUTE OF INTERNATIONAL RELATIONS. See **CALIFORNIA, UNIVERSITY OF; INTERNATIONALISM.**

INSTITUTE OF POLITICS. See **POLITICS, INSTITUTE OF.**

INSTITUTE OF PUBLIC AFFAIRS. See **PUBLIC AFFAIRS, INSTITUTE OF.**

INSURANCE. That the depression which followed the collapse of the stock market in the fall of 1929 should seriously affect the insurance business was inevitable. Insurance had become so interwoven with other business activities and also with the personal affairs of individuals that they could not be disarranged without its feeling the effect. In comparison with what some other classes of business had to go through in 1930, insurance may be considered fortunate. As the bulk of the life insurance of the country was written by mutual companies which were not operated for profit, this branch must be considered separately from the others when the results of the year's operations are studied. Generally speaking the companies transacting the other branches of insurance lost money both on underwriting and on investments. Their premium income fell somewhat below that of previous years, but they were unable to effect a corresponding reduction in losses and expenses. In several classes of the business the losses increased. As the bulk of the assets of fire, casualty, and surety companies were invested in bonds and stocks, the decline in market value of these securities during the year reduced the aggregate assets of these companies by millions of dollars. It was anticipated, of course, that much of this would be restored as general business became more active and corporations again were operating at a profit.

Compared with the three previous years, very few companies were organized and little new capital was put into the business. A few independent companies were organized, most of them being small institutions. Several large casualty and surety companies were organized as running mates for established institutions. A number of companies increased their capital to enable them to do a larger business or, in a few cases, in order to distribute more to stockholders while still maintaining moderate dividend rates. On the other hand the number of mergers was larger than usual, and there were several failures of companies which were inadequately financed, badly managed or affiliated with other institutions which got into trouble.

A noteworthy event of the year was the decision of a surety-casualty company which had been organized in 1928 with the largest capital and surplus with which an insurance company ever started in the United States to withdraw from the insurance business, return to its stockholders over eight million dollars of the capital funds they had paid in, and confine its operations to the guaranteeing of certain investments offered by its affiliated institutions. Notwithstanding the advantage of very large resources, its management concluded that the building of a profitable insurance business would require years and that the money of the stockholders would yield larger returns if invested in other enterprises.

Comparatively few State legislatures were in

session in 1930 and the number of new laws affecting the insurance business was not large. The National Convention of Insurance Commissioners, through a special committee, investigated the acquisition cost of fire and casualty insurance. It found the cost higher than the investigators thought it should be, but concluded that this was not due in any great measure to payment of excessive commissions to agents and brokers, but rather to the multiplicity of companies, their appointment of unnecessary and incompetent agents, and the waste resulting from this augmented competition.

LIFE INSURANCE. Very careful estimates of the results of the year's operations were made by the Association of Life Insurance Presidents in November and December, as exact figures are not available until several months of the following year have elapsed. The new life insurance produced and paid for in 1930 amounted approximately to \$18,500,000,000, an amount 3.3 per cent less than the 1929 production, which was the largest in the history of the business. During the first half of the year the production increased over the corresponding period of 1929. This was attributed in part to a drive by agents to get as many people insured as possible before July 1, because at that date nearly all the companies, under orders from the Insurance Commissioners, adopted new policy provisions covering permanent total disability which were less liberal than those formerly in use. This action was taken after careful study of the experience under the old disability clauses disclosed that it was so bad that drastic reform was imperative.

At the close of the year it was estimated that the amount of legal reserve life insurance, ordinary, industrial, and group, in force in the United States was \$108,500,000,000 and that the number of policy holders was 68,000,000, an increase of 1,000,000 during the year. The amount of the invested assets of the companies was placed at \$18,900,000,000. Companies paid during the year \$2,200,000,000, of which \$1,325,000,000 went to living policyholders as dividends, matured endowments, annuities, disability benefits, and cash surrender values, and \$875,000,000 was paid to the beneficiaries of deceased policyholders.

The mortality rate for the year was unusually favorable, possibly the best in the history of the business. This was due largely to the smaller number of deaths from influenza, pneumonia, and tuberculosis. Deaths from apoplexy, automobiles, homicides, and suicides increased, however. It was notable that while suicides among holders of ordinary policies increased from 24 per 100,000 in 1929 to 30 per 100,000 in 1930, the rate among holders of the small, weekly-premium industrial policies increased only from 9 to 10 per 100,000.

One of the great problems facing the life insurance companies in 1930 was that of the lapse of policies, due in part to the heavy borrowing against policies in 1929 and in part to inability of policyholders to pay premiums. The utmost efforts were made both by companies and their agents to prevent these lapses, and the time and energy devoted to this work by agents may have contributed somewhat to the reduced production of new business.

A disconcerting feature of the year was the buying and selling of stock of life insurance companies. The failure of a prominent investment banking house which had been active in acquir-

ing stock of insurance companies disclosed that it had used one life insurance company which it controlled as a holding company for its other insurance interests and that this company had large stock interests in five other life insurance companies, besides one fire and one casualty company. The control of the stock of this company was sold, by court order, to a holding company which owns two other life insurance companies. While there had been no disclosures of abuse of this large group of companies, some of the Insurance Commissioners were impressed with the possibilities of substitution of assets, diversion of deposits to banks controlled by the interests controlling the life insurance companies and other abuses which might endanger the solvency of the life insurance companies if the controlling interests were corrupt or even if they exercised bad judgment.

A gratifying development in life insurance of late was the increased attention to the broader and more thorough education of life insurance salesmen. Since the American College of Life Underwriters had set up standards for the degree of Chartered Life Underwriter, institutions were giving courses of study which would prepare candidates for the degree to take the examinations. In addition, the Life Insurance Sales Research Bureau had extended its work in educating general agents and managers, and the National Association of Life Underwriters was launching a "traveling school," conducted by experienced life insurance educators. The number of companies conducting their own schools for agents increases every year.

FIRE INSURANCE. The fire insurance companies of the country found 1930 an extremely trying year. During 1929 rates on certain classes in many States had been reduced because of favorable experience and also to check the inroads of new stock companies and of mutual companies upon the business on the books of the old companies. Largely as the result of these reductions and of others early in 1930, the aggregate premium income was materially reduced. Added to this cause, were the drop in many commodity prices, reduction in stocks by merchants and the dropping of insurance by many persons who were unable to pay premiums on the full amount they needed. The reduction in premium income was estimated at between 10 and 15 per cent.

As the number of operations performed was almost as large as usual, companies were obliged to retain the usual staffs and overhead could not be reduced. Accordingly, expenses remained almost at their former level. At the same time there was an increase in the losses paid by the companies, as the fire losses of the country were over \$41,000,000 in excess of those in 1929. In the absence of official figures it appeared that the companies in the aggregate paid out more in losses and expenses than they received in premiums. Some of them, however, may have made an "underwriting" profit by reason of the reduction in liability for unearned premiums. Under the depressed general conditions a marked increase in moral hazard was expected. It appeared to some extent but not in such a degree as had been feared.

Stock market conditions had a bad effect on the invested assets of companies, varying with the classes of securities held by them. Those companies which confine their investments to bonds and preferred stocks probably fared better

in this respect than did those having in their portfolios a larger proportion of common stocks. When annual statements are filed it is anticipated that most companies will show reduced assets and surplus, regardless of the care or conservatism with which they have invested their funds.

In the fifteen years following the beginning of the World War the premium income of the fire insurance business had nearly trebled and stockholders' capital and surplus had increased even more rapidly. Efforts to secure premium income on which to earn profits on this vast sum had resulted in overexpansion of agency organizations and increased expense ratios. The available income, in short, was being secured through too many companies and too many agents. Until the adverse conditions of 1930 arrived few companies had been forced to quit or curtail operations and thus relieve the situation. During the year the number of companies was but slightly reduced by mergers, retirements, and failures, but many agencies were merged and many agents sold their business to others and left the insurance field. Companies, forced to watch expenses more closely than in the past, scrutinized the records of individual agencies more carefully to determine whether they were actually a source of profit or, because of the quality of their business and the expense of supervising them, they were a source of loss. No statistics were available, but there was reason to believe that a period of contraction of agency organizations had succeeded the long expansion period. See FIRE PROTECTION.

CASUALTY INSURANCE. The growth of casualty insurance, which was very rapid for nearly 20 years, had been slowing down of late, and in 1930 probably showed a slight recession. With this stationary, or possibly reduced, premium income came very trying competitive conditions, resulting from the fact that many companies organized in recent years were making every effort to get a volume of business, and some of them were disregarding the practices which most of the older companies had found advantageous. During 1930 several large companies, affiliated with powerful fire insurance companies, entered the business and while they adhered to standard practices they were able, through their fire affiliations, to secure many agencies and much business which other companies had previously had. Throughout the year there were signs of distress among casualty companies which were not well financed or had not been wisely managed. A few mergers took place. A few companies reinsured their business and went into voluntary liquidation and a few were forced into involuntary liquidation.

Workmen's compensation insurance constituted one of the largest classes written by casualty companies and on this they had been sustaining an underwriting loss for several years, although the interest on the reserves had produced a large income. As the premiums in this class are based upon payroll, the unemployment during 1930 reduced the premium income materially. Companies, however, regarded this as temporary and they could not afford to cut expenses by disrupting experienced staffs which they had taken years to build up. It was expected, therefore, that annual statements would show an increase in the expense ratio on this class, while the loss ratio already was high. It was necessary to make a new examination of the constantly rising medi-

cal and hospital costs and to advance rates somewhat because of this factor.

Automobile liability insurance was another very large class which did not produce the normal premium income. The number of new automobiles registered in 1930 was more than a million less than in 1929 and the number of prospects for liability insurance was therefore reduced. There were some rate reductions and a larger proportion of the new cars were low-priced ones, on which liability rates are lower than on the more expensive ones. The fact that a dozen States had automobile financial responsibility laws doubtless resulted in some additional car owners taking insurance, but probably not enough to offset other factors. The loss experience had been growing worse, as accidents had become more numerous and the size of claims and of judgments for personal injuries had been growing larger. During the year rates were advanced in a few Southern States and on Jan. 5, 1931, advances became effective in 21 other States.

Burglary underwriters had their most serious trouble in the field of bank burglary insurance. This at one time was a very satisfactory class, losses resulting chiefly from burglaries. In recent years, however, burglaries had given way largely to the more rapid method of holding banks up in the daytime. Notwithstanding additional precautions by the bankers hold-ups had increased greatly. Such faith have the underwriters in the efficacy of tear-gas bombs in foiling robbers that they are offering a liberal discount from the regular robbery rates where these are installed.

Another branch of the business which showed the effects of present conditions was forgery insurance, the amount of losses due to forging and raising checks having increased greatly.

Steam boiler insurance had to meet industrial changes, such as the use of new fuels, extremely large boilers and very high steam pressures. This necessitated a revision of rates, with advances on these more hazardous units and reductions on smaller boilers. Insurance of oil and gas heaters against explosion and of various classes of machinery against breakdown was opening a new field to boiler and machinery insurance companies.

Surety companies had a year which in many ways was discouraging. The premium income was possibly slightly below that of 1929 but losses in several classes of the business were above normal. Throughout the year losses came to light disclosing embezzlement before the stock market collapse. As the embezzlers often had lost everything, salvage from these losses was smaller than in previous years. The closing of hundreds of banks in various parts of the country threw heavy losses upon surety companies, not only under bonds guaranteeing deposits of public funds and, in some instances of private funds, but also under other forms of bonds such as those covering public officials and fiduciaries who found themselves unable to produce funds for which they were accountable because the funds were tied up in closed banks.

Surety companies would recover, as banks were liquidated or reorganized, considerable of what they had been obliged to pay under these bonds, but the waiting periods might be long and the recoveries in some cases small. Surety companies also were called upon to complete an unusual number of construction contracts where con-

tractors whom they had bonded were unable to do so because of bank closings or other causes.

See FRANCE, *History* under INDUSTRIAL UNREST; UNEMPLOYMENT.

INTELLIGENCE TESTING. See PSYCHOLOGY.

INTERNAL COMBUSTION ENGINES. The combined production of gas and oil engines in the United States during 1930 was approximately 10 per cent under 1929, with the gas engines enjoying the best year of their existence due to large orders for gas line pumping service. A number were also installed in recompression plants in the natural gas fields. A number of Diesels were installed in hotels and office buildings and a few in utility plants and municipal plants. Water works pumping also utilized a few. There is further indication of Diesel engine application to peak load service for isolated central stations.

In the marine field many foreign-built ships were equipped with Diesels but this form of propulsion received scant attention in American-built ships except some tugs, ferry-boats, dredges and fishing boats. The primary reasons for this are the difference in cost between European and American-built Diesels and the fuel bunker oil for burning under steam boilers is much cheaper along the Atlantic Seaboard than Diesel oil. The oil standardization committee of the American Society of Mechanical Engineers in 1930 was looking into the modification of Diesel engines to adapt them to burning this cheaper bunker oil. Among the transatlantic liners equipped with Diesels that went into service in 1930 were the *Britannic* of the White Star Line and the *Lafayette* of the French Line.

Few new designs or radical changes in Diesel engines were brought out during the year, although a number of refinements were introduced. The mechanical fuel-injection type continued to gain in favor over the air-injection type and was also superseding engines with precombustion chambers—a type that was popular a few years previously. Improvements were noted in injection valve designs to permit use of lower grade oils and there was a marked trend toward higher rotative speeds up to 750 revolutions per minute. Other improvements include nickel steel and nickel cast-iron for engine frames, aluminum pistons and alloy steels for valves and shafts. With the extension of natural gas pipe lines over many sections of the country, thus affording attractive gas rates to many localities, there was some conversion of oil engines to use natural gas.

Some progress was being made toward lightweight engines of small size for busses and trucks, but cheap gasoline kept the gasoline engine at the front for such service and retarded development of engines using heavy oils. In Europe this condition did not prevail and more progress was made in this line.

Aside from automobile and tractor engines, which are dealt with elsewhere (see AUTOMOBILES) the gasoline engine found application to a limited extent for standby service in water works and buildings.

INTERNAL REVENUE TAXES. See PUBLIC FINANCE; TAXATION; TOBACCO.

INTERNATIONAL ARBITRATION. See ARBITRATION, INTERNATIONAL.

INTERNATIONAL ASSOCIATION FOR SOCIAL PROGRESS. See SOCIAL PROGRESS, INTERNATIONAL ASSOCIATION FOR.

INTERNATIONAL BANK. See REPARATIONS.

INTERNATIONAL EXPOSITIONS. See EXPOSITIONS.

INTERNATIONAL INSTITUTE OF AGRICULTURE. See AGRICULTURE.

INTERNATIONALISM. A committee for the endowment of the Walter Hines Page School of International Relations, published the address of Owen D. Young, delivered at the Johns Hopkins University on Feb. 23, 1925. Mr. Young presented an exposition of the Page memorial project. He argued that all efforts toward world peace are essentially weak because the necessary research has not been done in the fields where the main problems lie. In the course of his address he said:

Some of these problems are economic, some are embedded in racial psychologies, some of them are historical, some are geographical, some are military, and some partake of two or more of these origins. There are experts in all these fields, but it is doubtful if there exists a man whose business is to inter-relate them. And certainly, there is no single place in the world, whether library or university, or government department, where anybody can go and learn all there is to be known of these fundamental facts and inter-relations. The Page School, as I see it, will become such a place. Guided by professors of distinction, research workers will accumulate this information by study of original sources. These men will gather the facts about international trade, racial psychology, commercial and military geography, diplomatic usage and experience, effects of artificial economic barriers upon international amity, effects of new inventions to expedite communications and all the hundreds of things that enter into the contacts of nation with nation. These facts will be digested, systematized, cross-referenced, analyzed, and made accessible and intelligible to everybody who needs to know them. The men who do this research work will become experts in international problems. Some of them will continue their service in pure research as a life career. Others will be teachers of the science. Others will be drafted into the government service. The Page School will, therefore, achieve three things. First, it will develop a science of international relations. Second, it will ascertain the facts so far as they can be found, on any particular problem. And third, it will produce a continually growing body of men trained in that science and available for service in the fields of education, government and business.

The programme at Johns Hopkins is considerably more ambitious than simply establishing a chair of international relations. Mr. Young's idea was that such a school would serve in the first place as a clearing house for all research and inquiry in this field which was being conducted or was likely to be conducted in the United States. He further hoped that such a school would co-operate with similar institutions in Europe so that there would be available a really comprehensive body of fact that might serve as a corrective to the current supply of prejudices and notions.

Fairly considerable sums had been collected from outside New York State towards the initial endowment of \$1,000,000 which the Trustees originally set as their goal. Efforts shortly were to be made to complete the fund, but in the meanwhile the school was opened with such resources as were available and the Hon. J. V. A. MacMurray, former Minister to China was appointed director. The school was not concerning itself with instruction, but only with research designed to illuminate certain problems of international relationships. It was primarily interested in that type of international problems which centres about the question of the causation of national action, such as economic forces and the conscious and unconscious impulses motivating the relationships between peoples and their respective governments.

The only investigations up to the end of 1930 were: One conducted by Frederick Sherwood Dunn on the Theory and Practice of Diplomatic Protection; one by Col. S. C. Vestal dealing with the military conditions under which wars have broken out and analyzing the defects of the historic schemes of world peace; and one by Albert K. Weinberg in the nature of a review and critique of the thinking that has been done on the subject of the motivation of international conduct.

The Norman Wait Harris Foundation for the Study of International Relations held its Seventh Institute June 16 to 27 at which there were present lecturers from Japan, Great Britain, Peru, Canada, and the United States. These lectures, which dealt largely with American foreign policy, are published in book form by the University of Chicago. In addition, there were a series of round tables organized to discuss certain phases of the general problems of American foreign policy. The leaders were mainly from the United States, although there were some from Japan and China.

The seventh session of the Institute of International Relations was held at Glenwood Mission Inn, Riverside, Calif., December 7 to 12, under the auspices of the University of Southern California for the promotion of serious study of the problems involved in international relations. In 1930 there were lectures on the United States of Europe; the London Naval Treaty; Anglo-American Relations; the French Foreign Policy; the German Constitutional Crisis and the Present Parliamentary Situation; the Economics of World Peace and Internationalism; Intellectual Cooperation; the Future Political Status of the Philippines; International Implications of the New Tariff; Post-War Tendencies in International Cooperation. There were also general conferences on Civil Strife in China; Foreign Powers in China; Japan as a Factor in Pacific Relations; Political and Social Developments in Japan; Economic Problems of Japan; India's Political Crisis; Political Experiments in Central America; Problems of Reciprocal Trade; Temporary Revolutions in South American Republics; Our Cultural Relations with Mexico; International Relations Clubs.

The round tables were devoted to a discussion of the Foreign Policies of the United States; International Contacts in the Pacific Area; International Aspects of Industry, Resources, and Labor Problems; Functioning of International Organizations; Fundamentals of Internationalism; Recent Economic Developments in Europe; Reorientation in Peru, Argentina, Chile, and Brazil; Economics of the Orient; Problem of Minorities in Europe; Survey of the Work of the League of Nations.

That the airplane was fast developing as an instrument of international good will and in lessening the distance between nations was decreasing international prejudice was pointed out by Harry F. Guggenheim, American Ambassador to Cuba and patron of aviation, in his book, *The Seven Skies* (New York, 1930). In this volume he says that

In furthering aviation development there is nothing so inspiring as the thought that the airplane with its ability to break down the physical barriers between nations will also break down the petty prejudices that exist between them. These prejudices based on the superficial differences of the nations are periodically irritated until they become what has well been termed "international incidents," the casual causes of grave misunderstandings. To be air-minded is to be, to some extent, internationally minded; and because of the closer link between nations

which the airplane contributes, we shall approach nearer to that happy condition of moral disarmament which a great French statesman has rightly said is a prerequisite to physical disarmament.

Mr. Guggenheim was appointed by President Hoover as a member of the National Advisory Committee for Aeronautics. He believes that in the United States the government should have a definite part in aviation control.

The Federal Government should regulate the operation of airplanes and the movement of visitors at airports. The rapidity with which airports have sprung up all over the country, and in addition, certain legal technicalities of jurisdiction, find us without adequate airport discipline.

In December, 1928, President Coolidge selected Mr. Guggenheim as a delegate of the United States to the International Committee on Civil Aeronautics. He also served as the member from the United States on a committee of civil aviation experts in connection with the Disarmament Conference of the League of Nations. In 1928 he was awarded the American Arbitration Society's medal, given annually "for distinguished service for the promotion of commercial peace."

COMMONWEALTH FUND FELLOWSHIPS. Thirty-three students from British and Colonial universities and the British Colonial Service were appointed in May to the Commonwealth Fund Fellowships by the British Committee of Award. These fellowships are awarded annually for study in the United States, the new appointees being scheduled to enter American universities and scientific schools in the fall of 1930, to travel extensively through the United States in the summer of 1931, and to complete a second year of study before returning home. Three of the 1930 fellows came on leave of absence from Government service in India and Africa. Richard D. Waghorn, captain in the Royal Engineers, was to study railway construction as an aid to his work with the Indian State Railways; Charles Maurice Tattam, of the Geological Survey of Nigeria, was to study methods of prospecting, using the Colorado School of Mines as a base; Chidlow Bigne, of the Forestry Department of the Gold Coast, was to study tropical forestry at Yale.

The Commonwealth Fund, of which Edward S. Harkness was president and founder, established these fellowships in 1925 as a contribution toward the development of understanding and good will between Great Britain and the United States. The total number of fellows appointed to 1930 was 148, representing most of the English, Scottish, and Welsh universities as well as many in the Dominions and Colonies. Fellows choose their own course of study in preparation for further research or professional activity. A student from the University of Sydney was to study immigration legislation in the United States in relation to government policy in Australia. The other subjects chosen ranged from agriculture and astronomy to physics and philosophy.

LIFE AND WORK MOVEMENT. This movement came into being through the conference at Stockholm in 1925. It concentrates on the practical tasks of the churches. In it practically all of Protestantism, the Anglican churches, and the Orthodox bodies of Europe are united to a degree perhaps nowhere else realized in official bodies. While its effectiveness in the first five years of its existence was not such as to challenge widespread attention, it had at least begun the realiza-

tion of the ideals of its founders. The chief reason why it was not better known in America was simple. The aims of the Federal Council of the Churches of Christ in America, so far as church coöperation within the nation is concerned, are so fully parallel to those of the Life and Work movement that there had been no reason to develop organization in America. In 1930 the Federal Council and the Life and Work movement worked out a plan by which the council's commissions on relations with churches abroad was recognized as the American Section of this world movement.

Accomplishments, however, were by no means inconsiderable, although it was probably too soon to judge of the deeper currents that had been set in motion as a result of the Stockholm Conference and the successive annual meetings of the Continuation Committee there appointed. It had begun the application of modern methods of social investigation to the great common problems of the churches of all nations through the establishment of the International Christian Social Institute at Geneva. The best indication of the significance of this organization, still in its infancy, was that it had already attracted the hostile attention and bitter criticism of the Soviet government through *Pravda*, which regarded the Institute as a menace to the growth of Communism. The movement had also been one of the main forces aiding the rapid development of the federal church movement in Germany, and to a lesser extent in Switzerland and France. More important than anything else had been the service rendered to all the church forces through the steady development of acquaintance and fellowship of the church leaders of different countries of Europe and the United States.

A natural outgrowth of the increased interest in the movement and the fruit of the experience thus far gained was a decision taken in September at Chexbres sur Vevey, Switzerland, where the Continuation Committee met for a week. That decision was to form a permanent organization to be known as the Universal Christian Council on Life and Work. Paul H. Steele, of London, who had long served the organization with quiet effectiveness, was made permanent Assistant Secretary for Administration, and transferred his office from London to Geneva where a permanent office was established. Dr. Adolf Keller, Director of Research, was appointed to the position of General Secretary for Education and Extension. The office in Geneva, in which there were placed at work collaborators from Germany, Sweden, Holland, and France, was to be considerably reorganized.

The Chexbres meeting was attended by more than seventy-five representatives of world-wide church groups. The Lord Bishop of Winchester, acting as Chairman of the Executive Committee, played an important rôle. The Lord Bishop of Chichester, whose services as Secretary of the Lambeth Conference alone would entitle him to wide recognition, likewise contributed. So did Bishop Amundson of Haderslev (1930 preacher at the League of Nations), Archbishop Soederblom of Upsala, Dr. William P. Merrill, the Rt. Rev. Warren L. Rogers, and Dr. S. Parkes Cadman of the United States, Prof. Wilfred Monod and Pastor Jezequel of France, Dr. Adolf Deissmann, Dr. Stange, Dr. Siegmund-Schultze and Dr. Hinderer of Germany, Professor Alivatos of Greece, Professor Choisy of Switzerland,

and Dr. G. F. Barbour of Scotland. It was a meeting in which, in spite of many debates revealing differences, practically all important action was finally unanimous.

The Rev. Henry S. Leiper, formerly editorial secretary of the Congregational Commission on Missions, was made executive secretary of the American Section of the Universal Christian Council on Life and Work with headquarters at 287 Fourth Avenue, New York. The chairman of the Section was the Rev. S. Parkes Cadman and the honorary chairman was Bishop Francis J. McConnell. The chairman of the executive committee was the Rev. Kenneth D. Miller.

WORLD ALLIANCE FOR INTERNATIONAL FRIENDSHIP THROUGH THE CHURCHES. Among the topics considered at the Goodwill Congress of the World Alliance for International Friendship through the Churches, held in Washington, D. C., November 10-12, were: Immediate entrance of the United States into the World Court, the exercising of restraint by the American government in the building of the cruisers allowed under the London Naval Treaty, the implementing of the Peace Pact of Paris, and a reconsideration of such issues as Allied debts and reparations.

President Hoover's Armistice address was delivered from the platform of the Goodwill Congress. The President voiced his conviction that "the outlook for peace is happier than for half a century," notwithstanding the fact that "nations in many ways are always potentially in conflict." After reviewing the accomplishments of the World Court, the President urged American participation in its work. By way of answering the oft-repeated suggestion that the Peace Pact of Paris be implemented in some way, the President said, "I do not say that some such further step may not some day come about." For the immediate future, however, Mr. Hoover expressed the opinion that the Pact could be buttressed "by extension from one nation to another of treaties which, in times of friction, assure resort to well-tried processes of competent negotiation, of conciliation, and of arbitration."

Among the other speakers were: Alanson B. Houghton, former American Ambassador to Great Britain and Chairman of the Federal Council's Commission on International Justice and Goodwill, who based his plea for peace upon the need for cultivating in the mind of America an attitude of trust toward the rest of the world; Prof. James T. Shotwell, who pointed to the world tragedy that lies ahead unless a way is found to cut down competitive armaments. Jacob Gould Schurman, former Ambassador to Germany, called for American entrance into the World Court. The Right Honorable Arthur Meighen, former Prime Minister of Canada, reminded his hearers that the world could not effectively be organized for peace without the coöperation of the United States; Judge Florence E. Allen, of the Ohio Supreme Court, voiced the demand for a world of nations governed by law; President Mary E. Woolley, of Mount Holyoke College, declared that world justice and peace would remain an idle dream so long as youth was not instructed in the things that make for good will between nations. The Hon. C. C. Wu, Minister of the Chinese Republic, urged a sympathetic understanding among Westerners of the issues confronting China; Dr. S. Parkes Cadman called on the nations to make good their pledges to reduce their armaments.

WOMEN'S APPEAL. An Appeal to the "World's

Statesmen" was issued by the representatives of organizations with a membership of upwards of 40,000,000 women working in various ways in fifty-six different countries of the world to forward international understanding and coöperation. This appeal was signed for the International Council of Women, by the Duchess of Aberdeen and Temair; for the Women's International League for Peace and Freedom, by Jane Addams; for the World's Young Women's Christian Association, by C. M. Van Asch Van Wyck; for the International Alliance of Women for Suffrage and Equal Citizenship, by M. I. Corbett Ashby; for the World Union of Women for International Concord, by Clara Guthrie D'Arcis; for the International Federation of University Women, by Winifred Cullis.

In this appeal the signers stated they felt impelled to call attention to an increasing and ominous tendency of the press, the general public, and even governmental circles to discuss, or admit in discussion, the possibility of another war; "this," they declared, "in utter disregard of the sacred pact formally renouncing war, which has just been signed by fifty-seven civilized nations. This constitutes a flagrant slur on the national honour of the signatories of the Briand-Kellogg Pact, a direct menace to the youth of the world and to humanity in general. *It cannot and must not be tolerated.*"

The statement declared that we stagger under an unprecedented burden of armaments in the midst of commercial depression and economic warfare, that we have come to a critical moment of upheaval and unrest which demanded the energetic action of every constructive force. The statement maintained—

Work for peace is the most urgent task before the world to-day. We appeal, therefore, to every right-thinking person and, in particular to women, who pay the first cost of human life, to realize their responsibility and power. We ask every single individual to use his active influence to combat the idea of a recourse to violence for the solution of any problem; to work by word and deed for the eradication of the psychological causes of war: fear, ignorance and greed, and to promote by every means the recognition of the oneness of humanity and the interdependence of nations.

We demand of our statesmen, elected by the people—if they value their privilege of service—to increase their efforts and henceforward to make the wholehearted observance of the Briand-Kellogg Pact the supreme charge of national honour and the safeguard of humanity.

PHILIPPINES FRIENDSHIP PROJECT. The third world friendship project, sponsored by the Committee on World Friendship among children in behalf of the children of the Philippines, came to a close October 10 for the Middle West and Eastern States and November 10 for the Pacific Coast; the last army transport sailing from Brooklyn left October 28 and the last sailing from the Pacific Coast November 19. The Friendship Treasure Chests, which figured in this project, were the termination of a programme of study of the country and the people. As a help to such a programme a bibliography of books on the Philippines was issued, arranged in two lists, one for adults and one for children. The educational value of the plan for the children of the United States was a prime factor. It was developed in such a way that children might have the largest possible educational value from it. This did not bar young people or adult groups from sharing in it, but the programmes were worked out in co-operation with the children and the latter made to feel that this was their friendship effort. The

greetings were written by the children themselves.

It was found necessary to make the Friendship Treasure Chests of a material impervious to white ants and so metal was finally chosen because of its decorative possibilities. The chests were $10\frac{1}{2} \times 6\frac{1}{2} \times 5$ inches in size, with handles of brass and a lock and key. They were lithographed in eleven colors, the committee believing that children would happily study the charming old maps; the pictures of Washington and Risal, of Columbus and Magellan; the watchful sea-serpent and whale; and Old Boreas and Father Neptune controlling the winds and waves. Filipino children learn English in their schools, but as there is great need of books a bibliography of 300 books suitable for children from six to fifteen years of age was prepared under the supervision of Miss Clara Whitehill Hunt of Brooklyn, a librarian widely known as an authority on children's books. All books sent were selected from the list prepared by the Committee.

JAPANESE FRIENDSHIP. In March, 1930, great celebrations took place in Tokyo and Yokohama on the completion of the colossal reconstruction programme carried on since the Japanese earthquake of 1923. The cities that had been largely destroyed by earthquakes and terrible conflagrations had been almost completely rebuilt. Five young Japanese women were sent as "Envoys of Gratitude" to express to the American people the appreciation of the people of Japan for the help rendered at the time of their distress, the United States having contributed about \$12,000,000 at that time. It was to bring to America in a dramatic way Japan's expression of gratitude and good will that the *Jiji Shimpō*, one of the great daily newspapers of Tokyo, sponsored this unique delegation. They landed in San Francisco on April 2, and made a triumphal tour of America's principal cities. In Washington, they were received by President Hoover at the White House. A luncheon was given by the American Red Cross and a reception by the Chamber of Commerce. The Federal Council of Churches entertained the Japanese guests at luncheon, at the Women's University Club in New York. See **PEACE AND PEACE MOVEMENTS**.

INTERNATIONAL JUSTICE. See **LEAGUE OF NATIONS**; **WORLD COURT**.

INTERNATIONAL LABOR CONFERENCE. See **MATERNITY PROTECTION**.

INTERNATIONAL LABOR ORGANIZATION. The 14th session of the International Labor Conference was held in Geneva, Switzerland, June 10-28, and there were in attendance delegates from 51 of the 55 countries which are members of the International Labor Organization. On the agenda of the Conference were the following three items: Forced labor, hours of work of salaried employees, and hours of work in coal mines. In regard to the question of forced labor, the Conference adopted a draft convention calling for the suppression of this form of work as soon as possible. The convention called for the final abolition of forced labor within five years. Similarly, a draft convention was adopted calling for the limitation of hours of work of "white-collar" workers to 8-hours a day and 48 hours a week. There were also adopted recommendations calling for inquiries into the hours of work of employees in hotels, restaurants, theatres, and other places of amusement, and hospitals and asylums. These investigations were requested in view of the

fact that such types of activity were not covered by the provisions of the draft convention. A convention proposing the limitation of hours of work of underground workers in coal mines did not succeed in passing, but a decision was reached that the subject be placed on the agenda for the next annual meeting. The Conference, before it broke up, passed a series of resolutions affecting this subject, however. These were: A resolution relating to safe working conditions in mines; another regulating the hours of surface workers; and a resolution pointing out the necessity for the creation of economic agreements among the coal-producing countries. See **UNEMPLOYMENT**.

INTERNATIONAL LANGUAGES. See **PHI-LOGOLOGY**, **CLASSICAL**.

INTERNATIONAL LAW. The First Assembly of the League of Nations failed to adopt the resolution of the Advisory Committee of Jurists meeting at The Hague in 1920, recommending the codification of international law, but on Sept. 22, 1924, as a result of a proposal by the Swedish Delegation, the Fifth Assembly adopted a resolution asking the Council to appoint a Committee of Experts to prepare a list of subjects that might be regulated by international agreement and to report on questions considered "sufficiently ripe for solution." A Committee of Experts for the Progressive Codification of International Law was appointed Dec. 12, 1924, and held annual sessions from 1925 to 1928. After careful study by the Committee, questionnaires were communicated by the Secretariat to the governments of states, whether members of the League or not, for their opinion on the following subjects: 1. Nationality; 2. Territorial waters; 3. Diplomatic privileges and immunities; 4. Responsibility of states in respect of injury caused in their territory to the person or property of foreigners; 5. Procedure of international conferences and procedure for the conclusion and drafting of treaties; 6. Piracy; 7. Exploitations of the products of the sea; 8. Communication of judicial and extra-judicial acts in penal matters; 9. Legal position and functions of consuls; 10. Revision of the classification of diplomatic agents; 11. Competence of the courts in regard to foreign states; 12. Domicile.

The Committee also adopted reports on: 1. Extradition; 2. Criminal competence of states in respect of offenses committed outside their territory; 3. Legal status of Government ships employed in commerce; 4. Most-favored nation clause; 5. Recognition of the legal responsibility of foreign commercial corporations; 6. Nationality of commercial corporations and their diplomatic protection.

On June 13, 1927, the Council considered the reports drawn up by the Committee of Experts at its session and the report thereon of the Polish representative, and decided to transmit them to the Assembly. The Committee recommended seven subjects which might be the subject of an international conference or conferences: 1. Nationality; 2. Territorial waters; 3. Responsibility of states, etc.; 4. Diplomatic privileges and immunities; 5. Piracy; 6. Procedure of international conferences; 7. Exploitation of the products of the sea.

The Council, and after it the First Committee of the Assembly, selected only the first three questions as being ripe for successful international discussion at the time. On Sept. 27, 1927, the Assembly adopted a resolution asking the Council

to appoint a Preparatory Committee of five members to make arrangements for a codification conference on those questions and to draft its rules of procedure. This committee completed its work in three sessions held in February, 1928, January, and May, 1929.

The Assembly resolution of Sept. 24, 1928, decided to refer to subsequent conferences two new questions which the Committee of Experts had deemed ripe for international regulation, i.e., legal position and functions of consuls, and competence of the courts in regard to foreign states. The 1928 Assembly also decided to ask a committee of three jurists to make a "systematic survey" of the subjects which the Assembly proposed to cover in its work of codification. The report of this committee made to the tenth Assembly in 1929 revealed that 250 conventions had been selected for publication in the form of a code.

In its resolution of Sept. 24, 1929, on the first codification conference, the Assembly requested the Council to hasten preparations for the first conference in March, 1930, and to invite the Committee of Experts to continue its labors after the close of the first conference. It noted the systematic "Survey of the Subjects of International Law" drawn up by the committee of jurists with a view to general codification, and stated as its opinion "that it would be necessary first to proceed to codify the various successive conventions which deal with certain particular subjects so as to determine what precisely are the texts in force and the states which are parties thereto."

The first conference for the codification of International Law met at The Hague from March 13 to Apr. 13, 1930. It was composed of delegates of 48 states or members of the League of Nations. Nine states not members of the League were represented, including the United States of America. Of the states not members of the League, only Afghanistan, Costa Rica, Ecuador, and Iraq failed to send representatives.

Three subjects were on the agenda of the conference, quite independent of each other and they were dealt with by separate committees. The first committee drafted four instruments, later adopted as acts of the conference: 1. Convention on certain questions relating to the conflict of nationality laws; 2. Protocol relating to military obligations in certain cases of double nationality; 3. Protocol relating to a case of statelessness; 4. Special protocol concerning statelessness. It also framed eight recommendations which were adopted by the conference and embodied in its final act.

The second committee encountered so many political obstacles in considering the subject of territorial waters that an attempt to reach an agreement was abandoned. Its deliberations were useful, however, in paving the way for further discussion of this difficult subject.

A third committee on responsibility of states for damage caused in their territory to the person or property of foreigners included many of the ranking delegates to the conference, but it failed to reach any agreement, and its report was said to contain few suggestions for guidance in future effort toward codification.

The final act of Apr. 13, 1930, made suggestions for more careful preparatory work for the next conference for the codification of international laws and included definite proposals for examination by the Council and the Assembly.

M. Heemskerck, former Prime Minister of The Netherlands, was chosen by the Council to preside, and with his mastery of both French and English he made an excellent chairman. Eighty-five persons were brought to The Hague from Geneva, to serve as the secretariat. As Professor Hudson shows, this was one of the great gains to the world from the establishment of the League Secretariat, a staff of trained and experienced people at hand to enable international conferences to be conducted efficiently. M. Politis of Greece presided over the first committee, Herr Goppert of Germany over the second, and Professor Basdevant of France over the third.

Women's nationality attracted the most publicity. Various women's organizations were represented at The Hague, and especially those which stood for a thorough-going equality between women and men. Some of these organizations whose positions were most extreme bitterly attacked the convention adopted by the conference. The reasons for this attack did not make much appeal to persons of moderate views, who did not object to some mention of men and women or of husbands and wives. The relevant provisions of the convention were mainly concerned with accomplishing two things: 1. To prevent statelessness of a woman who marries a foreigner by providing that if she does not gain the nationality of her husband, she shall keep her former nationality; 2. To require the consent of a woman before her nationality may be affected by the naturalization of her husband abroad. These seemed to be very sensible provisions, Professor Hudson said, and likely to improve the present situation without in any way prejudicing a continuance of the changes that were fast being made in national legislation.

The convention was adopted by the conference with but one dissenting voice, that of the United States. It subsequently was signed on behalf of a large number of states.

On January 24, Senator Borah moved an amendment to the cruiser bill before the Senate to the effect that Congress favored a recodification of the rules governing the conduct of belligerents and neutrals in war at sea. "My idea of the freedom of the seas," Mr. Borah declared, "is the right of neutrals to carry goods as freely in war as in peace, except when they are carrying munitions or attacking a blockade which must not be a paper blockade." An agreement to this effect proving impossible in 1931, he declared that the Washington armament treaty would be wiped out "and the nations will engage in competitive armament building. We will have to build not only against the strongest but against combinations of the strongest . . ." The result will be a "tremendous burden of taxation for the American People and another cataclysm such as that of 1914."

According to the press reports of this speech Senator Borah did not mention the Anti-War Pact, nor the difference between legal and illegal wars. In the light of the League Covenant and of the Kellogg pact the Foreign Policy Association pointed out:

It is difficult to see how any one can hope to secure an agreement making the rights of "neutrals" more extensive than they were before the World War. The very conception of neutrality presupposes the legality of war. It presupposes that neutral governments cannot pass judgment as to which belligerent is in the right, but in the League Covenant and the Anti-War Pact the nations of the world have promised that they will not embark upon certain kinds of war. If they delib-

erately violate this promise and go to war, the members of the League promise to apply an economic blockade and even military sanctions against them. The United States has assumed no such obligations. Nevertheless how can any self-respecting nation claim the right of unrestricted trade with a State which has flagrantly embarked upon a war in violation of the Kellogg treaty? It is inconceivable that the State Department would make such a demand in a sea law conference or that other States would consider granting it. On the other hand, the British Government, in accepting the Covenant and the Anti-War Pact, have pledged themselves not to use their fleet whether against belligerents or neutrals unless acting by virtue of international authority.

Proposals have been frequently made that the United States should agree not to interfere with League sanctions in the case of a public war, but that in return the other States should agree to the principle of the freedom of the seas in the case of a private war. By private war was meant those wars in which members of the League could legally engage; i.e. in case of disagreement among members of the Council. The ratification of the Anti-War Pact abolishes the basis for this distinction. All wars except those in self or coöperative defense, now become illegal. Henceforth the real difficulty will be in determining whether a state has violated the Anti-War Pact, in determining which party to a dispute is acting in "self-defense," and which party is the aggressor. Under the Covenant the League Council makes recommendations as to the question, and under the Locarno agreement the Council decides. The United States, however, is not a member of the Council, and it is not likely to recognize its jurisdiction unless it has the same right of veto as the members of the Council enjoy. It has been suggested that the United States should agree not to interfere with League sanctions in case of a war in which the Council is unanimous; but that in case of a war in which the Council is divided, the freedom of the seas, as defined to mean unrestricted right of neutrals to trade with the belligerents, should be recognized.

The press during the latter part of the year reported that England and the United States were carrying on conversations concerning the question of sea law, but the State Department categorically denied this report.

During the London Naval Conference the proposal for a Consultative Pact was made in the hope of settling, indirectly at least, this question, but this effort failed and no further attempt for its solution was made. If, however, some foreign government should take advantage of President Hoover's support of the idea of a Consultative Pact, made in his Armistice Day speech, negotiations might be actively undertaken.

BIBLIOGRAPHY. The special *Supplements to the American Journal of International Law*, volume 20 (1926) and volume 22 (1928), contain reprints of documents from the League of Nations Committee of Experts for the Progressive Codification of International Law. The *Journal* for July, 1930, contains articles on the results of the first Conference on Codification of International Law and the *Supplement* for that number contains texts of the important documents of the Conference. The *Handbook of the League of Nations since 1920*, by Denys P. Myers, published by the World Peace Foundation in 1930, contains a chapter on "The Progressive Codification of International Law." In March 1930 the League of Nations Association of the United States in Geneva published a study entitled *The First Conference for the Codification of International*

Law, which summarized the work of codification by the League from 1920 to 1930.

AMERICAN CODIFICATION. At the sixth International Conference of American States (held in Havana in 1928) codification of certain subjects in public international law was adopted. In addition, the conference provided for the appointment of three permanent committees:—One at Rio de Janeiro for the codification of public international law; one at Montevideo for further work dealing with private international law; and another at Havana for the study of comparative legislation and uniformity of legislation. These committees had not met up to the end of 1930.

Action as follows was taken by the respective government on the conventions on public International Law signed at the Sixth International Conference of American States held at Havana in 1928:—

Convention on Status of Aliens was ratified by Brazil, Nicaragua, Panama, United States.

Convention on Asylum was ratified by Brazil, Mexico, Nicaragua, and Panama.

Convention on Rights and Duties of States in the Event of Civil Strife was ratified by Brazil, Mexico, Nicaragua, Panama, and United States.

Convention on Consular Agents was ratified by Brazil, Mexico, Nicaragua, Panama.

Convention on Diplomatic Officers was ratified by Brazil, Mexico, Nicaragua, and Panama.

Convention on Private International Law was ratified by Brazil, Costa Rica, Cuba, and Dominican Republic, Guatemala, Haiti, Honduras, Nicaragua, Panama, and Peru.

Convention on Treaties was ratified by Brazil and Panama.

INTERNATIONAL LAW ASSOCIATION. The International Law Association held its thirty-sixth conference in New York September 1 to 10. It was the third conference that the Association had held in the United States since its foundation in 1873. The prior meetings were held in Buffalo in 1899, and in Portland, Maine, in 1907. Representatives of 25 countries, many of them outstanding figures in the field of international law, attended the sessions in a painstaking, and it is generally believed an effective endeavor to advance the common cause by exchange and interchange of views on the intricate problems that formed the agenda of the conference. As in similar gatherings in the past it was demonstrated that through frank round-table talks on specific questions formulated for consideration, wide differences of background, tradition, self-interest, and language could be diminished if not obviated as Lewis M. Isaacs pointed out in his review of the meeting. Varying human factors were exhibited, special emotional reactions affecting the discussion, deflecting it now in one direction and now in another. These served to emphasize the conclusion that by this conference method, with the gradual building up of "rules and principles winning general acceptance by their inward reasonableness and the eminence of the legal authorities whose names they bear," to quote from the welcoming address of Hon. John W. Davis, the ultimate goal of an established system of international rules of conduct, sanctioned and upheld by all the nations of the world, was possible of attainment.

Coincident in point of time with the earlier days of the conference was the arrival in New York of the foreign guests of the American Bar Association, the English, Scotch, Irish, and

French lawyers and judges, who had attended the annual meeting of the American Bar Association in Chicago, and were proceeding homeward by way of the Atlantic seaboard. There was some overlapping of the personnel of the two groups, but a harmonious and delightful commingling of entertainments and social gatherings, the cumulative effect of which helped to create an atmosphere most favorable to the more serious business of the International Law Association itself.

Held in the commodious and congenial surroundings of the home of the Association of the Bar of the City of New York, the business sessions were productive of varied and useful concrete results. At the opening meeting, Hon. John W. Davis, former Ambassador to Great Britain and a former President of the American Bar Association, was unanimously chosen president of the conference. Lord Tomlin of England, Lord of Appeal in Ordinary, was elected vice-president. To Dr. Davis's address of welcome, Lord Tomlin; Dr. Walter Simons, former Chief of Justice of the German Republic; Commendatore Guiseppe M. Palliccia, Special Attaché of the Royal Italian Embassy; and M. Pierre Arminjou, former Judge of the Mixed Tribunal at Cairo, made fitting responses.

The delegates settled down to a discussion of the Legalization of Documents, presided over by Arthur K. Kuhn, one of the vice-presidents of the American Branch of the Association and chairman of the general conference committee. Complete accord was reached in what promised to be an effective resolution regulating and simplifying the procedure of certification of documents for use and admission in evidence, in countries other than that out of which they issue.

A large amount of time was devoted to the discussion of the effect of war on contracts, Hon. R. E. L. Vaughan Williams of England presiding. The conference agreed upon certain general principles that should govern the situation and also upon a number of suggested rules as to the protection of private property in war time, covering, among other topics, that of persons altering residence during war, neutrals, branch offices and agents, war-time contracts, pre-war debts, pre-war breaches of contract, prescription periods of limitation, negotiable instruments, and severability of obligations.

The question of the effect of war on politics and on insurance and reinsurance of various kinds was reserved for future consideration. As indicating the nature of one fundamental problem the delegates were sharply divided on the proposal that "the general rule should be that the effect of war is to dissolve all contracts, subject to specified exceptions, in preference to stating that the effect of war is not to dissolve contracts except in certain cases in which there should be dissolution." Some delegates contended that on principle the rule should be stated in favor of the preservation of contracts, except in the enumerated cases; while others took the position that practical consideration dictates the statement in the negative. The conference adopted the resolution in the above form.

The conference also approved a resolution to the effect that "for the purpose of facilitating the collection of debts during the period of war, an organization be set up in each of the belligerent countries, permitting the collection of obligations of the debts due from nationals and the conse-

quent discharge of the obligations of the debtors to a like extent."

A session, dealing with war-time conditions of trade, included the sea rights of neutrals. This was presided over by Professor Borchard of the Yale Law School. The conference agreed on a draft convention on the rights and duties of belligerents with regard to neutral property at sea, embodying a number of important principles, which, while not attempting to cover the whole subject, should go far to simplify the work of succeeding conferences. Among the topics involved were visit and search, neutral character, contraband, blockade, submarine cables, and judgment of prizes.

A resolution on commercial arbitration, that promised to have great practical value, was adopted, reading as follows:

Be it resolved, that in order to safeguard the security of transactions in international commerce it is necessary that agreements between governments be entered into to regulate the essentials of arbitration practice and procedure between nationals and their respective countries, and to provide for the reciprocal enforcement of commercial arbitration agreements and awards made pursuant thereto, provided these arbitrations have been conducted under institutions of high standing and which possess necessary facilities.

Action was taken in support of endeavors to improve the international status of trademarks, this session being conducted by Dr. Walter Simons, and there were interesting and important sessions on the subjects of social insurance, air law, and the protection of minorities.

At the final meeting, the following resolution (referring to the Kellogg-Briand Pact) was unanimously adopted:

Resolved, that the International Law Association, at its Thirty-sixth Conference in New York City assembled in September, 1930, record its deep satisfaction that in its advance in civilization the world has reached the time when the Paris Pact could win the acceptance of the nations, and further it desires to convey to M. Briand and Secretary Kellogg its admiration for their noble services for humanity and reason, and trusts that further measures will promptly be taken for adding to the practical efficiency of the pact.

During the period of the conference, the delegates attended many interesting and enjoyable gatherings, some of them, in the earlier days, in conjunction with the foreign guests of the American Bar Association, which of themselves contributed not a little to the usefulness of the proceedings by bringing the delegates into closer social relations and more intimate touch with one another. There was a luncheon and reception by the Chamber of Commerce of the City of New York, an official reception by the Mayor of the City of New York, luncheons by The New York Times, the American Foreign Law Association, and the American Arbitration Association, and a convocation at Columbia University, at which the honorary degree of LL.D. was conferred on Lord Tomlin, Sir Frederick Pollock, Prof. Pierre Arminjou, and Dr. Walter Simons, all delegates to the Association.

It was the general opinion that a feeling of deep satisfaction could be justly indulged in at the results of the conference, not merely in the concrete agreements which were arrived at on specific subjects, but equally in the very evident accord on fundamental and far-reaching problems of international conduct and intercourse.

INTERNATIONAL RELATIONS, INSTITUTE OF. See CALIFORNIA, UNIVERSITY OF; INTERNATIONALISM.

INTERPARLIAMENTARY UNION. The twenty-sixth Inter-Parliamentary Conference which convened at London July 16, 1930, was attended by 450 delegates representing the Parliaments of 32 states: South African Union, United States of America, Australia, Austria, Belgium, Bulgaria, Canada, Czechoslovakia, Denmark, Danzig, Dutch East Indies, Egypt, Estonia, Finland, France, Germany, Great Britain, Greece, Hungary, British India, Ireland, Italy, Japan, Latvia, The Netherlands, New Zealand, Norway, Poland, Rumania, Sweden, Switzerland, Turkey. No delegates were sent from any of the Latin American states, in spite of incessant propaganda to secure their cooperation.

Both Houses of the British Parliament were sitting when the Union met in London. The organizers did not wish to break the tradition according to which the Union holds its meetings within the Parliaments of the states which receive the Conference, and so placed the Royal Gallery at the disposal of the Union. The Duke of Sutherland, president of the British delegation, was elected president of the Conference. After opening addresses by M. Fernand Bouisson, president of the Council, the Duke of Sutherland, and Foreign Minister Arthur Henderson, the conference commenced the discussion of the subjects on the agenda.

The first point on the agenda was the debate on the report of the Secretary General on the general political situation of the world. The lesson that might be drawn from this exchange of views was that two important questions occupied the members of the Union: on one hand, the reduction of armaments, the necessity of which was declared by Lord Cecil to be far more urgent than perfecting the numerous juridical instruments that aim at insuring peace; on the other hand, the economic organization of the world and above all of Europe—an organization, which, in the opinion of many speakers, was suitably formulated in the memorandum of the French Government on European federal union. The question of national minorities occupied a less important place in this debate than during previous conferences. Economic and financial problems were raised by nearly all the speakers. This general debate continued during the two meetings on July 16 and the morning sitting of the following day. Subsequent sessions were devoted to the examination of the draft resolutions submitted to the conference. These texts were all adopted without modification, except in the draft resolution on the problem of national minorities, where a few words were omitted.

Control of international trusts and cartels was the subject of a discussion of the highest interest in its scientific and even technical nature. The draft resolution, presented by Baron Sztérényi (Hungary), of the Committee on Economic and Financial Questions, affirmed that the regulation of trusts and cartels was necessary—control by the State concerned if it were a question of national trusts, control by an international authority if an international trust. The resolution was adopted unanimously with the exception of the abstention of three delegations.

"Security Problems: Implications of the Paris Pact of Aug. 27, 1928" was the topic on July 16. After renewing the homage already rendered to the Briand-Kellogg Pact by the Berlin Conference two years earlier, the draft resolutions established some of the consequences which the

states, in their own interest, should draw from their adhesion to this treaty: the General Act of Sept. 26, 1928, and the Optional Clause of Art. 36 of the Statute of the Permanent Court of International Justice. In cases where certain states could not adhere to these conventions, they should conclude regional or bilateral treaties on the basis of the model treaties recommended by the 1928 Assembly of the League of Nations. As for the other consequences of a violation of the Paris Pact, the resolution left to the *rapporteur*, Morton D. Hull (United States), the task of making known his own opinion and that of a committee formed with his group to study this question. Mr. Hull's conclusions may be summarized as follows: While the attitude of the states members of the League of Nations, in cases of a violation of the Paris Pact, is defined by Art. 16 of the Pact, the situation of non-member states, particularly the United States of America, will not really be very different, for their line of conduct will be parallel to that of member states, with which it may even coincide. M. Bastid (France) presented a report on the settlement of international disputes. His conclusion, in conformity with the draft resolution, aimed at the ratification of the General Act by all the states. The resolution was accepted by a large majority, constituting a solid basis on which the Union will continue its work in the field of security and disarmament.

Monday, July 21, was devoted to a debate on the evolution of the parliamentary system. The draft resolution submitted to the London Conference declared faith in the future of the parliamentary system and enumerated measures for its improvement. MM. Borsarelli (Italy) and Rutgers (Netherlands) disapproved of certain features of the draft resolution but it was accepted without other opposition. The assembly unanimously adopted (July 22) the proposals presented by M. Studer (Switzerland), of the Committee on Ethnic and Colonial Questions, relating to the problem of national minorities. The committee had never secured the unanimous adoption of its resolutions submitted to preceding conferences. The proposal submitted by M. Studer declared, in conformity with the wish of the Copenhagen Conference in 1923, that the extension of the protection of minorities to all states was "in the interest of peace and good understanding between the nations." It then stated the necessity of completing the procedure followed by the League of Nations, by relieving the Council of the League of examining minor cases, which do not raise any question of principle. It proposed that a clearer distinction should be made between the organ for preliminary investigation, whose duty it is to establish the facts, and the body appointed to examine the dispute from the legal standpoint, to deliberate upon it and give an award. For this purpose, conciliatory bodies should be created within the states signatories of Minorities Treaties, for the preliminary examination of questions relating to minorities likely to give rise to a complaint to the League of Nations, with the object of finding the means of meeting such complaints. The League should on its side inform those concerned of the measures taken as a result of the petitions addressed to it. Several speakers made reservations, among others M. de Lukacs (Hungary), who had already submitted to the Ethnic Committee amendments which have been retained, and M. Lindhagen (Sweden) who presented proposals concerning the territorial status

of states and the protection of "extra-European majorities." These last proposals were referred to the Inter-Parliamentary Council.

Premier MacDonald, speaking at the close of the conference, made an appeal in favor of the coöperation of parliaments in the cause of peace and international reconciliation. The Inter-Parliamentary Council reelected as president M. Fernand Bouisson, president of the French Chamber of Deputies; M. Bouisson thus retained the functions of president of the Executive Committee. The conference elected M. Cicio St. Pop, president of the Rumanian Chamber of Deputies, as member of the Executive Committee, in the place of M. Raoul Dandurand (Canada). The Irish Free State Inter-Parliamentary group invited the delegates and their families to visit Ireland at the close of the London Conference.

The Inter-Parliamentary Council met in London, July 15 and 16, 1930. A permanent member of the Rumanian group, M. Cadere, ex-deputy, Secretary General of the Ministry of Justice was admitted and approval of the report of the Secretary General on the attitude of the groups with regard to the new scale of contributions was given. It was stated in this report that 13 groups had accepted the new scale, and that several others had increased their contributions to a considerable degree.

INTERSTATE COMMERCE COMMISSION. See RAILWAYS; UNITED STATES.

INVESTMENTS. See FINANCIAL REVIEW.

IODINE. See FOOD AND NUTRITION.

IOWA. POPULATION. According to the Fifteenth Census of the United States, the population of the State on Apr. 1, 1930, was 2,470,939. According to the State census taken in 1925, the population was 2,419,927. The population on Jan. 1, 1920, was 2,404,021. The capital is Des Moines.

AGRICULTURE. The following table gives the acreage, production, and value of the principal crops in 1929 and 1930:

| Crop | Year | Acreage | Prod. Bu. | Value |
|------------|------|------------|-------------|---------------|
| Corn ... | 1930 | 11,100,000 | 860,750,000 | \$209,285,000 |
| | 1929 | 10,893,000 | 429,878,000 | 300,915,000 |
| Oats ... | 1930 | 6,145,000 | 239,655,000 | 67,103,000 |
| | 1929 | 5,997,000 | 215,892,000 | 84,198,000 |
| Hay ... | 1930 | 3,286,000 | 5,284,000* | 59,509,000 |
| | 1929 | 3,566,000 | 6,720,000* | 73,051,000 |
| Wheat .. | 1930 | 405,000 | 8,937,000 | 5,797,000 |
| | 1929 | 416,000 | 8,076,000 | 8,554,000 |
| Potatoes.. | 1930 | 65,000 | 4,550,000 | 5,915,000 |
| | 1929 | 65,000 | 6,695,000 | 9,373,000 |
| Barley .. | 1930 | 527,000 | 16,337,000 | 6,698,000 |
| | 1929 | 592,000 | 17,168,000 | 8,927,000 |

* Tons.

Farms in the State numbered 216,361 in 1930, as against 213,490 in 1925 and 213,439 in 1920.

MINERAL PRODUCTION. Coal took first rank among the State's mineral products of 1929. There were mined, in 1929, 4,241,069 net tons of coal, as against 3,683,635 in 1928. The value of these totals was \$11,948,000 for 1929; for 1928, \$10,525,000. Cement, next in order of importance, was shipped to the quantity of 6,586,111 barrels in 1929 and 6,880,731 in 1928; shipments reached the value of \$9,781,159 for 1929, as against \$10,734,838 for 1928. Second in rank among the States in the production of gypsum, Iowa produced in 1928 (the latest year of available figures) 704,044 short tons, a decline from the 792,159 tons of 1927; the value of these quantities was, for 1928, \$5,355,214; for 1927,

\$6,713,497. The clay products totaled \$5,006,623 for 1928 and \$6,158,104 for 1927. There was a substantial yearly production of sand, gravel, and low-grade stone. The entire mineral production of the State amounted to \$35,498,669 for 1928 and, for 1927, to \$33,426,375.

FINANCE. State expenditures in the year ended June 30, 1929, as reported by the U. S. Department of Commerce were: for maintenance and operation of governmental departments, \$25,087,619 (of which \$807,364 was for local education); for interest on debt, \$878,485; for permanent improvements, \$16,332,063; total, \$42,298,167 (of which \$19,325,041 was for highways, \$5,027,644 being for maintenance and \$14,297,397 for construction). Revenues were \$40,891,561. Of these, property and special taxes formed 26.7 per cent; departmental earnings and remuneration to the State for officers' services, 16.3; sales of licenses, 45.4 (including taxes of \$4,931,900 on sales of gasoline). The State's funded debt outstanding on June 30, 1931 was \$17,471,000. Net of sinking-fund assets, it was \$10,453,995. On property bearing an assessed valuation of \$1,493,323,335 were levied in the year State taxes of \$9,574,066.

TRANSPORTATION. The total number of miles of railroad line under operation on Jan. 1, 1930, was 9709.02. No additional construction of railroad line in 1930 was reported.

EDUCATION. A commission on the courses of study in high schools prepared and distributed a set of courses of secondary study among the schools. The State Department of Education made surveys of the teacher personnel and of the State's group of handicapped children.

CHARITIES AND CORRECTIONS. The Board of Control of State Institutions, under authority of a statute of 1898, controlled and governed in 1930 the penal, correctional, and charitable institutions of the State. This body consisted of three appointed members, each serving 6 years, the terms finishing in rotation at intervals of 2 years, the board making the appointments of separate executive officers for the several institutions and determining the number and compensation of their subordinates. It also acted as purchasing agent for the institutions and maintained prison or other institutional industries. These provided the State's license plates and road markers, virtually all the clothing and bedding in the institutions, soap, shoes, brooms, brushes, tin and aluminum ware. On some 14,000 acres connected with the institutions were produced practically all the vegetables and much of the milk and butter that were consumed. Thus some 14,000 institutionalized persons were made collectively to support themselves in great part.

The institutions numbered 15. They were: Men's Reformatory, Anamosa; State Penitentiary, Fort Madison; Women's Reformatory, Rockwell City; Cherokee State Hospital (insane), Cherokee; Clarinda State Hospital (insane), Clarinda; Independence State Hospital (insane), Independence; Mt. Pleasant State Hospital (insane), Mt. Pleasant; Institution for Feeble-minded Children, Glenwood; Hospital for Epileptics and School for Feeble-minded, Woodward; State Juvenile Home, Toledo; Training School for Girls, Mitchellville; Training School for Boys, Eldora; State Sanatorium, (tuberculosis), Oakdale; Iowa Soldiers' Home, Marshalltown; Iowa Soldiers' Orphans' Home, Davenport.

POLITICAL AND OTHER EVENTS. The legal status of the bond issue of \$100,000,000 that the State

was to have put out for the financing of a highway system, in accordance with popular vote, remained unsettled in the courts. Consequently the several counties of the State resumed their road-building work, issuing their own bonds to meet the expenses incurred. The Iowa statute imposing a tax on public carriers on the basis of the number of ton-miles that every such carrier should travel on the highways was held valid in a decision of the U. S. Supreme Court rendered January 10, bearing on test cases brought by the Iowa Motor Vehicle Association.

ELECTIONS. Senator Daniel F. Steck, Democrat, who had originally been elected with the aid of a division in the State's Republican majority, was defeated on November 4 for reelection, by L. J. Dickinson, Republican. Dan W. Turner, Republican, was elected Governor, defeating F. P. Hagemann, Democrat. Ten Republicans and one Democrat were elected to the House of Representatives. The Republican majorities in the Legislature suffered some reduction.

OFFICERS. Governor, John Hammill; Lieutenant-Governor, Arch W. McFarlane; Secretary of State, Ed. M. Smith; Treasurer, R. E. Johnson; Auditor, J. W. Long; Attorney-General, John Fletcher; Superintendent of Public Instruction, Agnes Samuelson; Secretary of Agriculture, Mark G. Thornburg.

JUDICIARY. Supreme Court Justices: Truman S. Stevens, Charles W. Vermillion, Frederick F. Faville, Lawrence DeGraff, William D. Evans, E. G. Albert, E. W. Morling.

IOWA, STATE UNIVERSITY OF. A coeducational, State institution of higher learning in Iowa City; founded in 1847. The enrollment for 1929-30 was 9705, of whom 5214 were men and 4491 women. For the autumn of 1930 the enrollment was 6742, while the summer session registration totaled 4544. There were approximately 600 members on the faculty in the autumn of 1930. The income for 1929-30, including revolving funds, was \$5,447,734. The general library contained 314,502 volumes and the law library, 52,125 volumes. President, Walter A. Jessup, Ph.D., LL.D.

IOWA STATE COLLEGE OF AGRICULTURE AND MECHANIC ARTS. A State institution for the higher education of men and women in Ames, Iowa; founded in 1868. The enrollment for the autumn term of 1930 was 4318, distributed as follows: Agriculture, 817; agricultural engineering, 60; engineering, 1498; home economics, 950; industrial science, 340; veterinary medicine, 231; and graduate school, 422. The registration for the first half of the 1930 summer session was 1496 and for the second half, 803. The faculty numbered 497 members. The endowment funds amounted to \$695,000, and the income for the year was \$3,430,000. The library contained approximately 185,000 volumes. President, Raymond Mollyneux Hughes, LL.D.

IRAQ, or MESOPOTAMIA. A territory in southwestern Asia, occupying the basin of the Tigris and Euphrates rivers between Persia and northern Arabia. It comprises the former Turkish vilayets of Bagdad, Basra, and Mosul, which were conquered by British and Indian troops during the World War and later recognized as an independent state under a mandate assigned to Great Britain. Capital, Bagdad, with a population of about 145,000; reigning king in 1930, Feisal.

AREA AND POPULATION. The area is about 143,250 square miles and the population, at the census of 1920, was 2,849,282. Besides 87,488 Jews

and 78,792 Christians, the inhabitants are mainly Mohammedans of the Sunnite and Shiite sects. Basra, the chief sea port, with about 50,000 inhabitants; Kerbela (65,000), and Mosul (60,000), are other leading cities.

There were (1928) 26,706 pupils in 264 government primary and elementary schools; 742 pupils in two secondary schools; and 344 pupils in nine intermediate schools. The University of Al ul Bait was opened in 1926. Arabic, Kurdish, and Turkish are the languages of instruction.

PRODUCTION. Vast areas of Iraq's rich soil can be cultivated only through irrigation. Besides canal systems operated by the Government, tribal groups, and individuals, there were at the end of 1929 about 1800 pumps used to irrigate approximately 900,000 acres. Cheap oil for the operation of the pumps is obtained from three wells near the Persian border. As cheap fuel is an important factor in the economics of farming, Iraq's agricultural future is linked with its oil reserves. The Iraq Petroleum Company, a combination of United States, English, and European oil interests, which held monopoly rights to oil in the country, had three wells in production near the Persian border in 1930. Oil had also been struck in a number of wells near Kirkuk and the Mosul and Kifri districts were being prospected with favorable results. Pipe lines from the oil fields to Basra were under construction.

Wheat, barley, cotton, dates, and wool are the leading farm products. The cotton crop in 1929 was 4600 bales (5202 bales in 1928). Other products are oats, linseed, flax, sheep casings, licorice root, and fruits.

COMMERCE. During the fiscal year ended Mar. 31, 1929, imports totaled 95,006,000 rupees (\$34,500,000), as compared with 105,557,000 rupees in 1927-28. Exports totaled 55,741,000 rupees (\$20,300,000) in 1928-29 and 61,541,000 in 1927-28. The annual large adverse balance is largely offset by such invisible items as cash expenditures by British Forces in Iraq, the cash subsidy given by the British Government to the Iraqi Army, and expenditures by foreign business firms, pilgrims, and tourists. Iraq handles most of the transit trade to and from Persia, the total transit trade in 1927-28 amounting to 58,811,882 rupees.

FINANCE. Revenues for the fiscal year ended Mar. 31, 1929, totaled 59,059,320 rupees and expenditures 59,200,581 rupees, according to preliminary returns. For the preceding year revenues amounted to 59,097,055 rupees and expenditures to 56,993,338 rupees. In 1930, the fall in world prices, with accompanying decreases in Basra customs receipts and in the income of the farming population, adversely affected the budget. The Indian rupee, par value about \$0.3636, is accepted as legal tender in Iraq.

COMMUNICATIONS. Railways of Iraq totaled 752 route miles in 1930, of which 128 miles were standard gauge and 624 miles meter gauge. Though owned by the British government, the railways are administered by the Government of Iraq. The lines connect Bagdad with Baiji in the northwestern part of the country and with Magil, the port of the city of Basra on the Persian Gulf. The gross revenue for the fiscal year 1928-29 totaled 8,379,593 rupees—receipts from 715,501 passengers and 450,660 tons of freight—and the expenditures 8,246,580 rupees, leaving a net revenue of 133,013 rupees. There were nearly 5000 miles of highways (1930). Bagdad and Basra are links in the London to Karachi air line.

GOVERNMENT. The organic law passed by the constituent assembly in June, 1924, provided for a limited monarchy and a responsible government. The legislative body consists of the Senate of 20 nominated "Elder Statesmen" and the Lower House of 88 elected deputies. King Feisal ascended the throne Aug. 23, 1921, as a result of a plebiscite in which 96 per cent of the inhabitants voted in his favor. Premier and Minister of Foreign Affairs in 1930, Gen. Nuri Pasha as Said (appointed Mar. 23, 1930).

HISTORY. Two treaties negotiated during 1930 strengthened perceptibly the none too stable foundations of the Kingdom of Iraq. The first, signed February 24, was a treaty of friendship and conciliation between Iraq and the Kingdom of Hejaz and Nejd, which apparently eliminated the threat to Iraq's independence offered by the powerful Wahabi leader, Ibn Saud (for details of the treaty see ARABIA under *History*). The second, concluded at Bagdad toward the end of June by Sir Francis Humphreys, British High Commissioner, and the Iraqi Cabinet, provided for the virtually complete independence of Iraq.

The latter treaty was to become operative upon Iraq's admission to the League of Nations in 1932 and was to remain in force for 25 years. It provided for an alliance between the two countries in the event of war, the maintenance and protection of essential British communications with India and Australia, and the retention of British forces in Iraq for five years after 1932 pending the organization of native forces to replace them. Three permanent British air bases were to be maintained at Basra and west of the Euphrates. Any foreign military instructors employed were to be British but Iraq was to assume responsibility for the maintenance of order in the country and for defense against aggression.

The treaty was intended to relieve the British treasury of a heavy military burden as well as to meet the demands of Iraqi Nationalists. The Nationalist press, however, denounced those sections permitting the establishment of British air bases west of the Euphrates and making independence contingent upon admission to the League of Nations. It was feared that France and Italy, controlling similar Arab territories, would successfully oppose Iraq's admission and thus indefinitely postpone the termination of British supervision. The King on July 4 dissolved the Chamber of Deputies "to afford the nation an opportunity of expressing an opinion" on the treaty. A general election, held in October, resulted in an overwhelming victory for the Government. The Anglo-Iraqi treaty was ratified at a special session of the new Parliament on November 16. The Chamber of Deputies approved the pact by a vote of 69 to 13 and the Senate by 11 to 5. An agreement between Britain and Iraq covering the Iraqi railways and the port of Basra was signed at London August 20. Another agreement revising the administration of justice was published September 15.

Partly due to Nationalist agitation against Great Britain and partly because of internal dissension centring about Yashin Pasha Hashimi, Minister of Finance, the Cabinet headed by Nazi Bey Suwaidi resigned on March 11. A disagreement with the British High Commissioner was reported over the Cabinet's proposal to terminate the contracts of numerous British officials attached to the Iraqi military and police forces. A new Cabinet was formed March 23, with Gen.

Nuri Pasha as Said as Premier and Minister of Foreign Affairs.

The Kurds of Northern Iraq, who for several years had enjoyed virtual autonomy, petitioned the Government during July for the establishment of an independent Kurdish state. Their unrest was attributed in part to the proposed termination of British administrative control in Iraq. A protest against the omission from the Anglo-Iraqi treaty of a clause safeguarding Kurdish autonomy after 1932 was cabled to the League of Nations. The Cabinet agreed to recognize Kurdish as the official language in the northern provinces and the acting Prime Minister, himself a Kurd, and the High Commissioner, visited the Kurds to reassure them of their future status. Kurds demonstrating against the Government's methods of conducting the electoral campaign in Kurdish district, clashed with the authorities at Sulaimanieh, September 11. Iraqi troops fired on the demonstrators and 13 persons were killed and 35 wounded, including one Iraqi soldier killed and four soldiers and police wounded. Iraqi troops were sent to crush another Kurd outbreak late in October.

The ten-year-old controversy over the exploitation of the large Iraq petroleum deposits appeared near solution in October, 1930, with the announcement of an agreement for the construction of a main pipe line from the oil fields to the British-controlled port of Haifa, with a branch line to Tripoli in the French mandated territory of Syria. In December, an Italian protest was reported to have prevented the early construction of the pipe line, through which Iraq hoped to increase her budget revenues. See KURDISTAN, PERSIA, and TURKEY under *History*.

IRELAND. The smaller of the two main British Isles, with an area of 32,586 square miles; politically divided into Northern and Southern Ireland, the former consisting of the parliamentary counties of Antrim, Armagh, Down, Fermanagh, Londonderry, and Tyrone, and the parliamentary boroughs of Londonderry and Belfast; and the latter of the remaining 26 counties. Northern Ireland is under a separate Parliament and executive by the Government of Ireland Act of 1920 (see IRELAND, NORTHERN). The southern counties constitute a self-governing dominion, known as the Irish Free State, under the Treaty of Dec. 6, 1921. (See IRISH FREE STATE.) The total population of the island June 13, 1921, was estimated at 4,485,000, as compared with 4,390,218 at the census of 1911. No census for all Ireland was taken in 1921. Statistics for Ireland as a whole are no longer compiled and assembled, but for the two divisions, will be found under their respective titles, IRELAND, NORTHERN, and IRISH FREE STATE.

IRELAND, NORTHERN. A constituent part of the United Kingdom, comprising the parliamentary counties of Antrim, Armagh, Down, Fermanagh, Londonderry, and Tyrone, and the two parliamentary boroughs of Belfast and Londonderry. Capital, Belfast.

AREA, POPULATION, ETC. The area of Northern Ireland, exclusive of water, is 3,351,444 statute acres (also given as 5238 square miles). At the census of 1926, the population was 1,256,561, as compared with 1,250,531 in 1911. The estimated population, as of June 30, 1929, was 1,250,000. In 1928, births totaled 25,963, deaths 18,004, and marriages, 7264. Roman Catholics constituted one-third of the population. The popu-

lation of Belfast was 415,007 in 1926. For the academic year 1928-29 there were 1933 public elementary schools, with 200,919 pupils; 72 secondary schools, with 10,611 pupils; and 135 technical and other schools, with about 24,000 students. Queen's University, Belfast, had 1375 students (1929).

PRODUCTION. Agriculture is the main occupation, although important linen and shipbuilding industries centre in Belfast. In 1929, there were 102,295 farm holdings exceeding one acre and the acreage under crops was 1,013,886, as compared with 1,022,915 acres in 1927. The yield, in tons, of the principal crops (1928) was: Oats, 276,519; potatoes, 1,154,130; turnips, 765,839; flax, 5856; and hay, 794,835. Cattle, pork products, and butter and eggs are shipped to England in considerable quantities. Livestock in 1928 included 738,005 cattle, 624,034 sheep, and 229,128 swine. Linen exports from the United Kingdom in 1927, practically all supplied by Northern Ireland, were valued at £9,800,798. The output capacity of the Belfast shipyards exceeds 250,000 tons annually. Rope, twine, tobacco, soaps are other products. Statistics for commerce are included in those given for the United Kingdom of Great Britain and Northern Ireland.

FINANCE. Approximately 30 per cent of the annual expenditure represents the cost of Imperial defense and of Northern Irish services reserved to the Imperial Parliament. Deducting the cost of these services, the budget for 1929-30, estimated to balance at £8,324,000, showed a surplus of about £17,000, while for 1928-29, revenue totaled £8,145,000 and expenditure £8,067,000. Unfavorable economic conditions and the increasing cost of social services were given as the reason for decreasing budget surpluses. The contribution toward the Imperial Exchequer, provisionally fixed in 1920 at about £6,000,000, shrank to about £875,000 in 1929-30 and to about £150,000 in 1930-31.

COMMUNICATIONS. In addition to 754 miles of railway line, the country is served by various inland waterways, supplemented by 180 miles of canals. There were 12,971 miles of highway in 1929.

GOVERNMENT. The country forms an integral part of the United Kingdom and is represented in the House of Commons by 13 members. The local Parliament elected in May, 1929, included 37 Unionists, 11 Nationalists, 3 Independent Unionists, and 1 Laborite. The Governor in 1930 was the Duke of Abercorn. The ministry was as follows: Prime Minister, Viscount Craigavon; Finance, H. M. Pollock; Home Affairs, Sir R. Dawson Bates; Labor, J. M. Andrews; Education, Viscount Charlemont; Agriculture, Sir E. M. Archdale; Commerce, J. M. Barbour.

IRIGROYEN, HIPÓLITO. See ARGENTINA under *History*.

IRISH FREE STATE. A self-governing Dominion of the British Empire, constituted under the Irish Free State Government Act of Dec. 5, 1922, which embodies the terms of the Treaty of Dec. 6, 1921. Capital, Dublin.

AREA AND POPULATION. Comprising about five-sixths of Ireland, the Irish Free State has an area of 17,024,481 statute acres, or 26,585 square miles. The population in 1929 was estimated at 2,943,000, as compared with 2,949,000 in 1928 and 2,971,922 at the census of 1926. The loss of population is due largely to emigration. In 1928, there were 59,176 births, 41,792 deaths, and 13,-

716 marriages; overseas emigrants numbered 24,691 (27,148 in 1927) and overseas immigrants, 2154 (1904 in 1927). The chief cities, with their populations in 1926, are Dublin, 418,981 (397,957 at census of 1911); Cork, 78,490; Limerick, 39,448; and Waterford, 26,647. At the census of 1926, there were 2,751,269 Roman Catholics and 207,307 Protestants, as compared with 2,812,509 Roman Catholics and 327,179 Protestants at the census of 1911.

EDUCATION. Primary education is free and compulsory for children under 14 years. Study of the Irish language is obligatory, and its use as a medium of instruction is increasing. In 1928-29, there were 5555 elementary schools, with 512,333 pupils and, in 1927-28, 287 secondary schools, with 25,561 pupils. Trinity College, Dublin, had 1309 students in 1928-29 and the three units of the National University at Cork, Galway, and Dublin had 2374 students.

PRODUCTION. The Irish Free State is primarily an agricultural country. Of the total area in 1928, 22 per cent was under cultivation, 49.5 per cent comprised permanent grass land, and 30 per cent, wood, forest, and other land. Production (in tons) of the leading crops in 1929, with figures for 1928 in parentheses, was: Wheat, 31,718 (31,763); oats, 689,385 (637,291); barley, 127,720 (131,697); rye, 3159 (3761); potatoes, 3,006,676 (2,246,336); sugar beets, 141,139 (140,488); flax, 1181 (1177). Cereal production is inadequate for domestic needs and considerable quantities of wheat, wheat flour, and corn are imported annually. Livestock raising and dairying are important. In 1928, there were 4,125,145 cattle, 3,263,556 sheep, 1,182,757 swine, 433,621 horses, and 195,920 asses in the country. A total of 3742 vessels and 12,755 men and boys were engaged in the fisheries in 1928. The fish catch in the same year was valued at \$1,544,000.

The total net output of Irish mines and factories in 1926, according to the census of that year, was £24,190,000 (\$118,000,000), after subtracting the cost of materials, fuel, and power from the gross value of the products. Salaries and wages totaling £13,200,000 (\$64,200,000) were paid to 107,300 workers. Butter, cheese, margarine, milled grain, and liquors were the leading manufactured products, the output of each totaling about £7,000,000. Other manufactured products were cured bacon, tobacco, bread, confectionery, and biscuits. The number of unemployed registered in July, 1930, totaled 23,393, as compared with 21,834 in August, 1929.

COMMERCE. Foreign trade increased in 1929, as compared with 1928. The value of imports, excluding bullion shipments, rose to £61,301,000 from £59,852,000, while the value of exports increased to £46,804,000 from £45,591,000. The unfavorable balance of trade likewise showed a slight gain from £14,261,000 in 1928 to £14,497,000 in 1929. Great Britain purchased 82 per cent of all Free State exports in 1929, and furnished 67 per cent of all imports. Exports went chiefly to Great Britain, £38,420,030; Northern Ireland, £5,045,220; the United States, £993,320. The chief sources of imports were: Great Britain, £41,762,536; Northern Ireland, £6,117,079; United States, £4,772,495; Argentina, £2,440,717; Germany, £1,159,856.

The leading imports in 1929 were: Wheat and wheat flour, £5,625,576; maize, £3,158,840; coal, £3,155,050; tea, £2,345,327; iron and steel and their manufactures (excluding cutlery and ma-

chinery), £2,276,762. The chief exports were: Live cattle, £13,549,485; porter, beer, and ale, £4,790,353; butter, £4,554,855; fresh eggs, £2,902,767; bacon, £2,720,365; horses, £2,517,522.

FINANCE. The budget for the fiscal year commencing Apr. 1, 1930, placed total expenditures at £30,337,000 and revenues at £30,257,000, of which £24,257,000 was anticipated from ordinary taxation sources and £6,000,000 from a new long-term loan. Of the expenditures £21,783,000 were allotted for ordinary supply services and £4,219,000 for central fund services, including the debt service. Receipts and expenditures for 1929-30 were calculated to balance at £29,575,000, according to revised estimates. Actual returns showed an excess of expenditure over revenue of £877,500, although ordinary revenues exceeded expenditures by about £250,000. Total revenues amounted to £24,172,639 and total expenditures to £25,050,061.

The public debt on Mar. 31, 1930, totaled £31,465,000 which was offset by government assets of £11,215,000, leaving a net debt of £20,250,000. The per capita debt was among the lowest in Europe.

COMMUNICATIONS. Railway lines in operation in the Free State at the beginning of 1929 had a mileage of 2674 miles, of which 84 per cent were standard gauge. There were 650 miles of inland canals and waterways, and more than 4388 miles of motor highways. A total of 13,500 vessels, aggregating 9,407,747 gross tons, entered and 13,463 vessels of 9,447,151 tons cleared the ports in 1928. The telegraph and telephone systems are government owned.

GOVERNMENT. The Irish Free State has a written constitution which provides that her status shall be similar to that of the Dominion of Canada. It has a coequal status with the other dominions of the United Kingdom, has complete control of its economic life, with a customs boundary right against all nations, including Great Britain and Northern Ireland. The Governor-General in 1930 was James MacNeill, appointed Dec. 6, 1927. The Executive Council as organized in October, 1927, was as follows: President, William T. Cosgrave; Vice President, Finance, Posts and Telegraphs, Ernest Blythe; Defense, Desmond Fitzgerald; Industry and Commerce and External Affairs, Patrick McGilligan; Education, J. Marcus O'Sullivan; Justice, James FitzGerald-Kenny; Agriculture, Patrick Hogan; Local Government and Public Health, Richard Mulcahy; Lands and Fisheries, Finian Lynch. The distribution of parties in the Dail Eireann, or lower Chamber of Parliament, in 1930 was as follows: Cumann na nGaedhal (President Cosgrave's party), 63; Fianna Fail (de Valera Republicans), 57; Labor, 13; Independents, 11; Farmers, 6; National League, 2; The Speaker 1.

HISTORY. The outstanding internal development of the year was the defeat of President Cosgrave and his colleagues of the Executive Council on March 27 and their reelection six days later after vain attempts of the Fianna Fail and of the Labor party to secure a governing majority. The Cosgrave Cabinet, which had been in power for eight years, was defeated by a majority of two votes on an amendment to the Old Age Pensions Act which would have increased the pension benefits distributed by the Government materially. Mr. Cosgrave's reelection was made certain when the Labor party, which held the balance of power, announced that it would not support Mr. de

Valera, who was then in the United States raising funds for a projected newspaper. Labor spokesmen declared that they accepted the Anglo-Irish Treaty without equivocation and that they would not vote for the Fianna Fail leader so long as he continued to subordinate every other political issue to the removal of the obligations assumed under the Treaty. Fianna Fail in turn declared that it would not support the candidacy of T. O'Connell, leader of the Labor party. In the final division, Mr. Cosgrave was elected by 80 votes to 65.

The Imperial Conference of 1930, which met in London in September, was another bone of political contention. Fianna Fail spokesmen demanded that the Government boycott the conference. They contended that the maintenance of the imperial connection would mean political, industrial, and cultural domination of Ireland by Britain. While rejecting this plea, the Government seized the opportunity presented by the conference to consolidate the Free State's position as an autonomous and coequal Dominion of the British Empire (see GREAT BRITAIN under *History*). In December, John W. Dulaney was appointed High Commissioner in London, succeeding Prof. T. A. Smiddy, who became a member of the new Free State tariff commission.

A revival of the terroristic tactics in vogue during the civil war was threatened with the opening of Parliament in November. A guard at the house of Prof. Michael Hayes, Speaker of the Dail, was shot by two men in civilian attire November 23. The shooting was preceded by other attacks on guards of government officials and was attributed to resentment at the Government's order disbanding the Defense Association, an army reserve organization. The poor harvest of 1930 and low agricultural prices stimulated a demand for a tariff on agricultural imports at the winter session of Parliament. The Opposition leader, de Valera, had long urged the imposition of high tariff duties as a means of promoting domestic industries and preventing emigration. Opposing these tariff proposals, the Cosgrave Government promised \$1,500,000 for unemployment relief, particularly in rural areas.

Thirteen books by leading American and English authors comprised the first list of publications banned under the censorship act of 1929, it was announced May 13, 1930. Nine of the books were on the subject of birth control.

FOREIGN RELATIONS. The election of the Free State to a non-permanent seat on the Council of the League of Nations in September, 1930, was considered a diplomatic triumph in government circles, as it represented the first international recognition of the Free State's status as a sovereign nation and marked an advance in her claim for equality with the other League members. The first consulate established by any British Dominion was opened by the Irish Free State in New York City during the year. The first Papal Nuncio to Ireland in more than 300 years presented his credentials to the Governor General on Jan. 15, 1930. See IRELAND, NORTHERN, and LEAGUE OF NATIONS.

IRISH LANGUAGE AND LITERATURE. See PHILOLOGY, MODERN, under *Celtic*.

IRON AND STEEL. The iron ore mined in the United States in 1930, exclusive of ore that contained 5 per cent or more of manganese in the natural state, was estimated by the U. S. Bureau of Mines at 58,359,000 gross tons, a decrease of

20 per cent as compared with that mined in 1929. The ore shipped from the mines in 1930 was estimated at 55,094,000 gross tons, valued at \$145,888,000, a decrease of 27 per cent in quantity and of 26 per cent in total value as compared with the figures for 1929. The average value of the ore per gross ton at the mines in 1930 was estimated at \$2.65; in 1929 it was \$2.61. The stocks of iron ore at the mines, mainly in Michigan and Minnesota, apparently increased from 7,067,206 gross tons in 1929 to 10,430,000 tons in 1930, or 48 per cent. The Bureau of Mines estimates were based on preliminary figures furnished by producers who in 1929 mined about 99 per cent of the total iron ore. They show the totals for the principal iron-ore producing States, and, by grouping together certain States, the totals for the Lake Superior district and for groups of Southeastern, Northeastern, and Western States.

About 84 per cent of the iron ore shipped in 1930 came from the Lake Superior district, in which approximately 49,378,000 gross tons was mined and 46,411,000 tons was shipped, decreases of 21 and 29 per cent, respectively, as compared with the quantities mined and shipped in 1929. The ore shipped in 1930 was valued at the mines at \$126,026,000, a decrease of 28 per cent. These totals include the ore from mines in southern Wisconsin and ore shipped by rail as well as by water from all mines, but exclude manganiferous ores amounting to approximately 801,500 gross tons in 1930 and 1,058,953 tons in 1929 that contained 5 per cent or more of manganese in the natural state. The former ore is chiefly hematite. The stocks of iron ore in this district apparently increased from 6,108,499 gross tons in 1929 to 9,175,000 tons in 1930, or 50 per cent. The shipments of iron ore by water from the Lake Superior district in 1930 (including manganiferous iron ores), according to the Lake Superior Iron Ore Association, amounted to 46,582,982 gross tons, a decrease of 29 per cent as compared with these shipments in 1929. The average value of the ore at the mines in the Lake Superior district in 1930 was \$2.72 a ton; in 1929 it was \$2.68.

The Southeastern States, in which the Birmingham district is the largest iron-ore producing area, mined approximately 5,937,000 gross tons of iron ore in 1930, a decrease of 13 per cent as compared with 1929. The shipments of iron ore from mines in these States in 1930 amounted to 5,851,000 gross tons, valued at \$11,349,000, decreases of 16 and 17 per cent, respectively, in quantity and value as compared with 1929. The ore is mainly hematite; brown ore and magnetite come next in order. The average value of the ore produced in these States in 1930 per gross ton was \$1.94; in 1929 it was \$1.96. The stocks of iron ore at the mines in this group of States, mainly in the Birmingham district, increased from 827,486 gross tons in 1929 to 914,000 gross tons in 1930.

The Northeastern States, which include the Adirondack district, New York, and the Cornwall district, Pennsylvania, in 1930 mined 2,245,000 gross tons of iron ore, an increase of 2 per cent. The iron ore shipped from mines in these States amounted to 2,033,000 tons, valued at \$7,345,000, decreases of 12 and 2 per cent, respectively, in quantity and value as compared with 1929. The stocks of iron ore in this group of States increased from 119,056 gross tons in 1929 to 328,000 tons in 1930. The average value of the ore in these States in 1930 per gross ton was \$3.61; in 1929

it was \$3.24. The bulk of this ore is magnetite.

The Western States that ordinarily produce iron ore, named in order of their importance, are Wyoming, Utah, New Mexico, Colorado, and Washington. Occasionally Arizona, California, Idaho, Montana, and Nevada contribute small quantities. In 1930 the Western States mined and shipped approximately 799,000 gross tons of iron ore, valued at \$1,168,000, a decrease of 33 per cent in the quantities mined and shipped and

Pig iron production in December was 1,665,690 tons, or 53,732 tons a day. The per diem rate was the lowest since January, 1922, comparing with 106,080 in April, 1930. On Dec. 31, 1930, there were 95 stacks active, or 90 fewer than on April 1 at the inception of the uninterrupted decline in pig iron output, and as compared with 157 on January 1. Production for 1930, totaling 31,399,105 tons, was 25.7 per cent smaller than the record 1929 output.

ESTIMATES OF IRON ORE MINED AND SHIPPED IN THE UNITED STATES IN 1930 AND ACTUAL OUTPUT IN 1929

| District | Ore mined | | Ore shipped | | | |
|----------------------|--------------------|--------------------|--------------------|---------------|--------------------|---------------|
| | 1929 Gross tons | 1930 Gross tons | 1929 Gross tons | 1929 Value | 1930 Gross tons | 1930 Value |
| Lake Superior: | | | | | | |
| Michigan | 15,456,397 | 13,668,000 | 16,838,568 | \$ 47,597,976 | 11,262,000 | \$ 32,248,000 |
| Minnesota | 45,760,358 | 34,385,000 | 46,470,243 | 121,776,312 | 34,000,000 | 90,598,000 |
| Wisconsin | 1,608,571 | 1,325,000 | 1,789,721 | 4,848,978 | 1,149,000 | 3,180,000 |
| Total | 62,825,826 | 49,378,000 | 65,098,532 | 174,223,266 | 46,411,000 | 126,026,000 |
| Southeastern States: | | | | | | |
| Alabama | 6,453,075 | 5,710,000 | 6,637,299 | 12,575,113 | 5,607,000 | 10,586,000 |
| Georgia | 59,316 | 53,000 | 59,316 | 175,145 | 53,000 | 149,000 |
| Missouri | 168,934 | 127,000 | 171,456 | 661,055 | 127,000 | 482,000 |
| North Carolina | 30,675 | ..... | 30,575 | 106,411 | ..... | ..... |
| Tennessee | 102,171 | 28,000 | 101,796 | 234,827 | 28,000 | 75,000 |
| Virginia ..... | ..... | 19,000 | 232 | 631 | 86,000 | 57,000 |
| Total | 6,814,171 | 5,937,000 | 7,000,674 | 13,753,182 | 5,851,000 | 11,349,000 |
| Northeastern States: | | | | | | |
| New Jersey | 281,327 | 890,000 | 285,115 | 1,157,848 | 387,000 | 1,686,000 |
| New York | 822,261 | 890,000 | 875,564 | 3,941,985 | 752,000 | 3,647,000 |
| Pennsylvania | 1,092,013 | 965,000 | 1,151,130 | 2,382,839 | 894,000 | 2,012,000 |
| Total | 2,195,601 | 2,245,000 | 2,311,809 | 7,482,672 | 2,033,000 | 7,345,000 |
| Western States | 1,192,122 | 799,000 | 1,191,719 | 1,689,520 | 799,000 | 1,168,000 |
| Grand total | 73,027,720 | 58,359,000 | 75,602,734 | \$197,148,640 | 55,094,000 | \$145,888,000 |

of 31 per cent in value of shipments as compared with 1929. The ore comprises hematite, magnetite, and brown ore.

The imports of iron ore reported for the full year ended Dec. 31, 1930, amounted to 2,775,124 gross tons, valued at \$8,113,039, or \$2.94 a ton. The imports for the year 1929 were 3,139,334 gross tons, valued at \$8,145,354, or \$2.59 a ton. The reported exports of iron ore for the year ended Dec. 31, 1930, amounted to 752,267 gross tons, valued at \$2,734,168, or \$3.63 a ton, as compared with exports for the entire year 1929 of 1,304,417 tons, valued at \$4,774,842, or \$3.66 a ton.

The accompanying table shows the quantity and value of the iron ore mined and shipped in the United States by the principal producing States. The figures for 1929 are final, but those for 1930 are subject to revision.

UNITED STATES PIG IRON PRODUCTION. Production of pig iron in the United States in 1930 aggregated 31,399,105 tons or 25.7 per cent below the 1929 record total of 42,286,000 tons. The monthly pig iron output during the three years compares as follows in tons:

| | 1930 | 1929 | 1928 |
|-----------------|-----------|-----------|-----------|
| January | 2,827,464 | 3,442,770 | 2,866,468 |
| February | 2,538,920 | 3,206,185 | 2,900,126 |
| March | 3,246,171 | 3,714,473 | 3,199,674 |
| April | 3,181,868 | 3,662,625 | 3,180,900 |
| May | 3,232,760 | 3,899,082 | 3,283,856 |
| June | 2,934,900 | 3,715,104 | 3,082,840 |
| July | 2,639,537 | 3,782,511 | 3,072,711 |
| August | 2,523,921 | 3,756,680 | 3,186,570 |
| September | 2,276,770 | 3,466,611 | 3,062,814 |
| October | 2,164,768 | 3,588,118 | 3,873,506 |
| November | 1,867,107 | 3,181,411 | 3,802,523 |
| December | 1,665,690 | 2,836,916 | 3,869,846 |

UNITED STATES STEEL PRODUCTION. Steel ingot production in 1930 according to the American Iron & Steel Institute totaled 39,652,00 tons, against 54,312,000 in 1929 and comparing with 36,811,000 in 1924. In both 1930 and 1929 the number of working days was 311.

Following are monthly calculations of the institute for steel ingot production, all in tons:

| | Monthly output re- porting com- panies, 1930 | Estimated monthly all companies, 1930 | Estimated monthly all companies, 1929 |
|-----------------|--|--|--|
| January | 3,578,574 | 3,796,090 | 4,500,209 |
| February | 3,844,639 | 4,078,327 | 4,328,789 |
| March | 4,053,520 | 4,299,905 | 5,068,265 |
| April | 3,915,844 | 4,153,860 | 4,950,139 |
| May | 3,794,158 | 4,024,778 | 5,286,339 |
| June | 3,243,113 | 3,440,239 | 5,062,955 |
| July | 2,765,315 | 2,938,399 | 4,850,668 |
| August | 2,917,983 | 3,095,293 | 4,939,086 |
| September | 2,703,643 | 2,867,978 | 4,527,877 |
| October | 2,564,543 | 2,720,414 | 4,584,326 |
| November | 2,106,446 | 2,234,482 | 3,521,111 |
| December | 1,892,729 | 2,007,774 | 2,903,012 |

The following table gives a comparison of the total annual production of steel ingots by all steel ingot mills from 1911 to 1929 inclusive:

| 1930 | 39,652,539 | 1920 | 40,881,920 |
|------------|------------|------------|------------|
| 1929 | 54,164,348 | 1919 | 39,694,795 |
| 1928 | 49,865,185 | 1918 | 48,051,022 |
| 1927 | 43,397,743 | 1917 | 49,619,200 |
| 1926 | 46,936,205 | 1916 | 41,401,917 |
| 1925 | 44,140,738 | 1915 | 31,284,212 |
| 1924 | 36,811,157 | 1914 | 22,819,784 |
| 1923 | 43,485,685 | 1913 | 30,280,130 |
| 1922 | 34,508,418 | 1912 | 30,284,682 |
| 1921 | 19,184,084 | 1911 | 23,029,479 |

Steel ingot production in December, 1930, fell to the lowest level since July, 1924, and the out-

put for the year 1930 also was the lowest in 6 years. December output by companies which in 1929 produced 94.27 per cent of the country's total amounted to 1,892,729 tons and the estimated output for all companies was 2,007,774 tons. These figures compare with an output for July, 1924, the previous low, of 1,877,789 tons.

A hopeful feature of the situation at the end of the year was that the unfilled orders of the United States Steel Corporation amounted to \$3,943,596, which was an increase from August of the same year. On Dec. 31, 1929, unfilled orders of this corporation amounted to \$4,417,183, and in 1928 to \$3,976,742.

Production of pig iron in Canada during 1930 at 747,448 long tons was 30.8 per cent under the record for the industry, which was established at 1,080,160 in 1929.

For the year 1930 production of steel at 1,011,743 tons was 26.6 per cent less than the 1,378,024 tons made in the record year in 1929. In 1930 production included 957,430 tons of ingots and 54,313 tons of castings, 95 per cent intended for sale.

The total pig iron output for Great Britain for 1930 was 6,196,800, comparing with 7,589,300 in 1929. The total output of steel in 1930 was 7,298,500 tons, comparing with 9,636,200 in 1929 and was the lowest since 1926. From 1929 the number of furnaces working had decreased from 162 to 76; no less than eleven were damped down and five had suspended operations altogether.

The monthly output of British steel during 1930 averaged 608,200 tons, a similar basis of calculation giving 804,600 for the 1929 average and 638,600 for the average of 1913.

Production of steel in the United Kingdom during a series of calendar years compares as follows:

| Tons | | Tons | |
|------|-----------|------|-----------|
| 1930 | 7,298,300 | 1924 | 8,201,200 |
| 1929 | 9,636,200 | 1923 | 8,481,800 |
| 1928 | 8,519,700 | 1922 | 5,880,600 |
| 1927 | 9,097,900 | 1921 | 3,703,400 |
| 1926 | 3,596,100 | 1920 | 9,067,300 |
| 1925 | 7,385,400 | 1919 | 7,894,000 |

The largest British steel production of wartime, and the largest in the country's history, was the 9,539,439 tons of 1918. The largest prewar production was 7,663,876, in 1913. Until 1906 the annual output never exceeded 6,000,000 tons.

The following table shows the estimated production of pig iron and steel in Russia in 1930 as compared with the three previous years and the prewar year, 1913, in gross tons:

| | Pig iron | Steel |
|------|-----------|-----------|
| 1930 | 4,950,000 | 5,250,000 |
| 1929 | 4,240,000 | 4,760,000 |
| 1928 | 3,220,000 | 4,180,000 |
| 1927 | 2,920,000 | 3,580,000 |
| 1913 | 4,550,000 | 4,750,000 |

WORLD PRODUCTION. After the record figures of world production for both pig iron and steel in 1929, there was a sharp decline, which naturally reflected the world-wide business depression. According to the annual summaries of *The Iron Age* (New York), from which the accompanying tables are reproduced, pig iron production receded to near the 1913 total, but steel remained considerably larger than in the year

before the World War. The accompanying estimates show the pig iron output in 24 countries, and the steel ingot and casting production of 22 nations. While pig iron declined from 97,230,000 in 1929 to 79,100,000 in 1930, there was a shrinkage in the production of steel from 118,430,000 in 1929 to 93,600,000 in 1930. Where American pig iron was 43.8 per cent of the world's total, and steel 47.8 per cent in 1929, it declined to 40 per cent for pig iron and 44 per cent for steel in 1930. The most striking feature of the following tables was the heavy expansion in Russian production, with a new record in pig iron of 495,000 tons and in steel of 5,250,000 tons. Also there was a striking decline for the production in Germany.

TABLE OF WORLD PRODUCTION OF PIG IRON
[In millions of gross tons]

| (From the Iron Age, New York) | | | | |
|-------------------------------|-------|-------|-------|--------|
| Country | 1913 | 1928 | 1929 | 1930 * |
| United Kingdom | 10.26 | 6.61 | 7.59 | 6.25 |
| Germany | 16.49 | 11.62 | 13.19 | 9.50 |
| France | 5.12 | 9.82 | 10.20 | 10.00 |
| Belgium | 2.45 | 3.84 | 4.03 | 3.35 |
| Luxemburg | 2.51 | 2.73 | 2.86 | 2.45 |
| Saar | ... | 1.91 | 2.07 | 1.90 |
| Russia | 4.55 | 3.22 | 4.24 | 4.95 |
| Poland | ... | 0.67 | 0.69 | 0.48 |
| Norway | ... | 0.08 | 0.14 | 0.12 |
| Sweden | 0.72 | 0.43 | 0.52 | 0.46 |
| Italy | 0.42 | 0.56 | 0.71 | 0.52 |
| Austria | 2.31 | 0.45 | 0.45 | 0.40 |
| Hungary | | 0.30 | 0.28 | 0.25 |
| Czechoslovakia | | 1.54 | 1.62 | 1.45 |
| Spain | 0.42 | 0.56 | 0.74 | 0.65 |
| Rumania | ... | ... | 0.10 | 0.10 |
| Holland | ... | ... | 0.25 | 0.28 |
| United States | 30.97 | 38.16 | 42.61 | 31.60 |
| Canada | 1.02 | 1.08 | 1.16 | 0.82 |
| Australia | 0.05 | 0.41 | 0.42 | 0.44 |
| India | 0.21 | 1.05 | 1.35 | 1.30 |
| Mexico | ... | ... | 0.06 | 0.05 |
| Japan | 0.24 | 1.50 | 1.55 | 1.40 |
| China | 0.16 | 0.40 | 0.40 | 0.40 |
| Total | 77.90 | 86.94 | 97.23 | 79.10 |

* Partly estimated. Lorraine's output is included in Germany's in 1913, but in that of France since 1918.
Data revised from those previously published.

TABLE OF WORLD PRODUCTION OF STEEL INGOTS AND CASTINGS
[In millions of gross tons]

| (From the Iron Age, New York) | | | | |
|-------------------------------|-------|--------|--------|--------|
| Country | 1913 | 1928 | 1929 | 1930 * |
| United Kingdom | 7.66 | 8.52 | 9.64 | 7.55 |
| Germany | 17.32 | 14.29 | 15.99 | 11.40 |
| France | 4.61 | 9.85 | 9.55 | 9.15 |
| Belgium | 2.43 | 3.87 | 4.07 | 3.35 |
| Luxemburg | 1.31 | 2.53 | 2.66 | 2.25 |
| Saar | ... | 2.04 | 2.17 | 1.95 |
| Russia | 4.75 | 4.18 | 4.76 | 5.25 |
| Poland | ... | 1.41 | 1.36 | 1.25 |
| Sweden | 0.58 | 0.57 | 0.68 | 0.60 |
| Spain | 0.30 | 0.78 | 0.97 | 0.85 |
| Austria | 2.58 | 0.63 | 0.62 | 0.55 |
| Hungary | | 0.48 | 0.50 | 0.45 |
| Czechoslovakia | | 1.71 | 2.11 | 2.00 |
| Italy | 0.92 | 1.98 | 2.11 | 1.80 |
| United States | 31.30 | 51.54 | 56.43 | 41.20 |
| Canada | 1.04 | 1.24 | 1.39 | 0.92 |
| Australia | 0.01 | 0.46 | 0.46 | 0.42 |
| India | 0.06 | 0.41 | 0.58 | 0.60 |
| Mexico | ... | ... | 0.10 | 0.08 |
| South Africa | ... | ... | 0.03 | 0.03 |
| Japan | 0.24 | 1.84 | 2.05 | 1.75 |
| China | 0.04 | 0.20 | 0.20 | 0.20 |
| Total | 75.15 | 107.98 | 118.43 | 93.60 |

* Partly estimated. Lorraine's output is included in Germany's in 1913, but in that of France since 1918.
Data revised from those previously published.

The table of world steel exports and imports is also of interest in this connection, the figures

showing marked declines both in exports and imports. France was the only nation to show an increase in imports. Germany, while leading in the amount of exports, nevertheless showed a marked decrease over the previous year.

TABLE OF STEEL EXPORTS AND IMPORTS OF LEADING COUNTRIES
[In millions of gross tons]

| Exports | 1913 | 1922 | 1929 | 1930 * |
|---------------------|-------|-------|-------|--------|
| United States . . . | 2.89 | 2.35 | 2.48 | 1.70 |
| Great Britain . . . | 4.97 | 4.26 | 4.39 | 8.20 |
| Germany | 6.20 | 4.64 | 5.48 | 4.45 |
| France | 0.58 | 4.99 | 4.21 | 3.95 |
| Belgium | 1.55 | 4.46 | 4.52 | 3.85 |
| Total | 16.19 | 20.70 | 21.08 | 17.15 |
| Imports | 1913 | 1922 | 1929 | 1930 * |
| United States . . . | 0.25 | 0.69 | 0.65 | 0.50 |
| Great Britain . . . | 2.23 | 2.89 | 2.82 | 2.80 |
| Germany | 0.30 | 2.02 | 1.44 | 1.15 |
| France | 0.17 | 0.14 | 0.25 | 0.45 |
| Belgium | 0.87 | 0.87 | 0.98 | 0.80 |
| Total | 3.82 | 6.61 | 6.14 | 5.70 |
| Export excess . . . | 12.37 | 14.09 | 14.94 | 12.45 |

* Partly estimated. Luxemburg included in Belgian total. Scrap not included in these data.

See METALLURGY.

IRRIGATION. See RECLAMATION.

IRVINE, JULIA JOSEPHINE (THOMAS). An American educator and former president of Wellesley College, died in Grasse, Bouches-du-Rhone, France, Mar. 14, 1930. She was born in Salem, O., Nov. 9, 1848, and was graduated from Cornell University with the A.B. degree in 1875 and the M.A. degree in 1876. While studying for the latter degree she was married to Charles James Irvine. After Mr. Irvine's death in 1886 she began her teaching career in private schools in New York, and Boston, and in 1890 was appointed professor of Greek at Wellesley. In 1894 she became secretary of the Academic Council of the Faculty and a short time later was appointed acting president. The following year she was elected president. During her administration the schools of art and music were organized into departments and brought into closer connection with other academic work, and the chemical laboratory and chapel were erected. The degree of Litt.D. was conferred on her by Brown University in 1895. After her resignation in 1899, Mrs. Irvine removed to France but returned to Wellesley for the year 1913-14 as acting professor of French.

ISOSTASY. See GEOLOGY.

ISTANBUL. The name for Constantinople, formally adopted in 1929. See TURKEY; GREECE under *History*.

ITALIAN ART. See ART EXHIBITIONS.

ITALIAN LITERATURE. Recalling the sensation created two seasons previously on the appearance of the monthly journal, *Pègaso*, with material of polemical nature launched as an attack against the spirit or "domination of criticism on literary production (spirit of Croce)," it was of interest to note that the vitality and freshness that characterized the first issues of this magazine had in no wise dissolved or suffered dilution and, judging from the preëminence of the contributors and the quality of the contributions, the magazine continued to be flavored as representative of Italy's intellectuals and men of letters. Its success, thus far, was due, to a degree, to the eclectic personality of its editor and founder, Ugo Ojetti. In addition, two new

journals, among others, made their initial appearance during the year. Guido Stacchini assembled an ambitious weekly, *Giovedì* (Milan), dealing with literature, art, music, the theatre, and the cinema. Its special feature was in the way of exhaustive discussions on international culture. Luigi Russo, who edited for so many years the former *Leonardo*, found occasion to bring out *La Nuova Italia*, a magazine treating of literary criticism pertinent to Italian topics only. The bibliographical magazine of long-standing, *I Libri del Giorno* and the old *Leonardo* were fused into a new and augmented *Leonardo* published by Treves-Bestetti-Tumminelli (Milan-Rome). The bulk of its material was designed to be in the form of book reviews on such major topics as contemporary literature, philosophy, religion, history, philology (classical and modern), archaeology, law, economics, politics, and geography. The weekly, *Giornale dell'Arte*, during the year returned to schedule appearance; the art section, in which it specialized, took precedence over the literary.

Three activities of the literary season held attention. First came the *Pègaso Edizioni*, a "Series" launched under the direction of Ugo Ojetti and Pietro Pancrazi and published by Le Monnier of Florence.

Young Giulio Preda launched a series of books in a *Collection* of poetry past and present, *Raccolta di libri di poesia* (Milan), two volumes of which went into circulation (see below, *Poetry*). Another important publishing enterprise was undertaken by G. A. Borgese, director, and A. Mondadori, publisher, under the title of *Biblioteca Romantica*. This series called for a programme of 50 volumes translated from the masterpieces of the most representative masters of world literature in recent epochs, including among others, Balzac, Stendhal, Goethe, Tolstoy, De Musset, Wilde, Goldsmith, and Hawthorne. The list of translators numbered many of Italy's distinguished authors, Panzini, Bontempelli, Deledda, Borgese, to mention a few. Some six volumes were published, of which Stendhal's *Certosa di Parma* and Goethe's *I dolori del giovane Werther* headed the list. The collection was scheduled for completion by 1933.

The weekly, *L'Italia Letteraria*, during the year carried spirited articles in the field of criticism. Appearing as front page features there were over a score of articles treating some of the present day *letterati* from interesting angles of literary criticism. It also conducted a prize referendum among its readers as to their choice of the hundred best books produced in contemporary Italian literature. Some 1800 readers took part in the competition and the choice of the public tallied favorably with the hundred books selected by a committee of critics and writers. Critics were grateful for the list compiled as to the 100 "most beautiful books" on contemporary Italian literature. (For this list see issue of *L'Italia Letteraria* Nov. 2, 1930.)

FICTION. In the field of the novel it was apparent that the younger writers had scored again. The first novel that came to our attention, Piero Gadda's *Mozzo* ("Deck-hand," published at Milan), gained the Fiera Letteraria Prize. This youthful writer has extraordinary ability to tell a story. He injects vital and human interests with a style which shows no imprints of rhetorical or stylistic effects. *Mozzo* deals with different episodes of a boy's life and the sea

that beckons him, so that he runs away to become a deck-hand. Another sea story was contributed by Lorenzo Viani who gained nation-wide reputation several years previously through his book, *Angio, Man of the Seas. The Return to the Fatherland* (*Ritorno alla patria*; Milan), his 1930 contribution, shared the Viareggio Prize. The author lacks method and architectural structure in his compositions, but his creations possess, on the other hand, moments of intense inspiration and beautifully-worded prose. *The Return to the Fatherland* revolves about the chap Tarmito who, after many years of roaming the seas, comes back to the fatherland in a crucial moment. The call of nationalism is stronger than his previous beliefs in anarchy, and he fights in the World War. Still another sea novel was offered by Umberto Fracchia whose tragic end cut short a literary career in the making. *La Stella del Nord* (*North Star*; Milan) tells about a shipwreck and a family. The book was withdrawn by Fracchia from competition in the Thirty Publishers' Prize, which it would have gained undoubtedly. This prize went to Fabio Tombari for his *La vita* (*A Life*; Milan), which tells about a boy who, after being ordered from his house, sails about the Adriatic and the Mediterranean. The book was received with disfavor by some critics for its poor and capricious handling of an otherwise original theme. Young Pietro Solari wrote *Cuorin-gola* (Lanciano), his *coup d'essai* in the field of novel. It is a book saturated with mixed emotions whose plot centres about a poverty-stricken student trying to wrest a few moments of solace from a fortuitous situation. Though the story contains a thin layer of comic motives there is a powerful undertone of the melancholy and the tragic this life can offer. The book, barring one realistic scene, can be numbered as one of the best of the season.

Space precludes discussions on other contributions by Italy's young authors, and attention must be directed to a few novels by *letterati* of long-standing. The new Academician, Massimo Bon-tempelli, brought out *The Life and Death of Adria and Her Children* (Milan), a book spun about the lady Adria whose beauty, metamorphose-like, is converted into the abstract and icy beauty of a statue. Lucio D'Ambra was certainly involved in a prodigious amount of literary activity. In the season under review he found time to put out a trilogy of novels: *The Job of Being a Husband, The Profession of Being a Wife* (Milan), to be followed by *The Art of Being a Lover. The Profession of Being a Wife, La professione di moglie*, gained the "Zisa" 1930 Prize. Lucio D'Ambra can always be counted upon for some seasoned and pleasurable observations. Compared to his other work, this trilogy was in much lighter vein, and, if it lacks literary value, it offers by contrast pleasant reading. Virgilio Broochi gave as his contribution of the year *Gli Occhi Limpidi* (*Clear Eyes*; Milan). Mr. Broochi treated here an old theme in garb of sincerity and freshness, if in nothing else. Marino Moretti took us to Flanders, to Bruges, in his novel *La casa del santo sangue* (*The House of Sacred Blood*; Milan), couching it in a nordic atmosphere. In *Sudore e sangue* (*Sweat and Blood*; Milan) the distinguished historian, Guglielmo Ferrero, completed the second part of his trilogy of novels in which the author continued his politico-historical exposition of Italy of the latter part of the XIXth century. This novel deals principally with the

Abyssinian War, and specifically the battle of Adua, in which the young millionaire protagonist is taken prisoner, along with other officers. The vivid picture of the battle of Adua should replace some myths regarding this disaster in the minds of many Italians.

Another historical novel was Alessandro Varaldo's *Il Cavaliere errante* (*Knight Errant*; Milan), depicting Italy of the tenth century. Though not without dragging a little, the author imparted a melancholy tone to an epoch when a cavalier's profession was war and wandering. The undertone of historicity depicts Italy, in addition to internal discord, struggling against foreign dominion.

THE SHORT STORY. Though not connected with the short story, there is opportunity to speak of several books of sketches. Anselmo Bucci who devotes himself to painting as a vocation gave us *Il pittore volante* (*Flying Painter*; Milan), which shared the Viareggio Prize. It is a book of aphorisms told in telegraphic fashion. The hundreds of epigrammatic paragraphs on a wide range of topics give rise to some excellent conclusions and furnish abundant fun. *L'Esopo moderno* (*Æsop the Modern*) published at Florence by Pietro Pancrazi was brought out by the Pegaso Series. It brings us Æsop flesh and blood in modern garb. As a matter of fact, Æsop is here a good-natured philosopher speaking in chatty Italian. He does not offer an ostentatious moral at every turn, though he frequently suggests one. Three hundred and seventy-three fables make a happy book, indeed. The Bagutta Prize went to Vincenzo Cardarelli for *Sole a picco* (*Sun at Zenith*; Bologna), a series of sketches drawing upon style for their principal value. That the author shows certain virtuosity in handling the idiom is shown in the different sensations vividly registered as we pass from the sun-scorched pavements of Florence to the sun-baked vineyards of Capri. The book contains also a few poems.

Passing to the short story proper, the season witnessed no decrease in production. Antonio Beltramelli's *Le strade verdi* (*Green Paths*; Milan), was a selection of short stories collected posthumously. In these stories reality was disguised under fantasy, irony tempered by humor, nostalgia suggested under a touch of the poetic. Take next Giuseppe Lipparini's *Racconti di Cutigliano* (*Stories of Cutigliano*; Milan), a batch of stories molded from the art of story telling. Terseness and simplicity is in order for 15 plots that have charm and originality. The stories are characteristically Tuscan, as human as they are interesting, worthy to be mentioned along with Fucini's *Veglie*. The Pegaso Series sponsored Corrado Alvaro's *Gente in Aspromonte* (Florence), stories about mountain folk, shepherds, gypsies, and rustics. Grazia Deledda added to her score or more creations a collection of stories (some taken from newspaper contributions), *La casa del poeta* (*The House of the Poet*, published at Milan). The Deleddian technique of story telling relies on simplicity of plot, as against complication, characters molded from moral activity, as against psychology, style without artifice, as against erudition and sophistication. The Nobel Prize was bestowed on this distinguished Sardinian several seasons ago. In G. B. Angioletti's *Il buon veliero* (Lanciano), the introspective element stands in relief. Angioletti, let us recall, is a critic of high-powered men-

tality. He is chief editor of *L'Italia Letteraria*. There were stories from the futurist and Academican, F. T. Marinetti, in *Novelle colle labbra tinte* (Milan), 24 stories, different and "electrifying." Lastly may be included Paolo Monelli's *Questo mestieraccio* (*This Awful Job!* published at Milan), sketches in and about the Mediterranean showing the vicissitude of a newspaper job, and Luciano Zeccoli's *Paristiana* (Milan), a posthumous collection of sketches of Paris behind the scenes. Zeccoli knew Paris intimately. He died there in 1929.

THEATRE. Luigi Pirandello, indefatigable in matter of energy and productivity, furnished the season with dominant notes in theatrical activity. *Questa sera si recita a soggetto* (*Tonight We Improvise!*; Milan), *Lazarus* (Milan), and *Come tu mi vuoi* (*As You Desire Me*; Milan), were a trio of new plays performed in Italy and elsewhere. The most amusing of the three, *Tonight We Improvise!*, deals with the theatre *per se*, or to what extent does theatrical device and technique lend itself toward creating a work of art. The problem in the last play revolves about the transformation of the actors into their characters, who in turn, are transformed into Tom Jones, Henry Smith, anybody. This can be brought about by a clever director with the unlimited amount of theatrical devices and apparatus at his disposal. The feature in this play has been to have the actors play a good part of the time off stage and among the audience. As in the numerous other plays in the *Maschere nude* series Pirandello dramatized his theories via satire, paradox, poetry, philosophy, and like elements. Aside from the purely intellectual concept of the play it offers many amusing situations. In *Lazarus* (performed also in Germany and England), we have a theme on a man's life based on morality within religion. His whole system of living is to be shattered when, after an automobile accident, he is brought from the dead by a doctor's skillful injection of adrenalin. In a flash he turns bestial, ready to commit violence on people he previously tolerated. His morality and religion were wrong, he had not seen God in the after life! It takes his son to show him a true religion. This play is simpler in construction and is a departure from the usual Pirandellian formula. The plot of *Come tu mi vuoi* Pirandello constructed from the famous "caso Bruneri-Canella," the scandal that absorbed the Italian newspapers and public for so long a time. Only the rôle in this play goes to the woman, Cia. Cia is a dissolute dancer who is recognized (or supposed to be) as the lost wife of Pieri. On the scene is brought another Cia, a woman suffering from dementia. Which is which? But this is where Pirandello expounds: "Truth may have a double face; reality and non-reality have no definite line of demarcation."

From Luigi Antonelli there was *La donna in vetrina* (*Show-window Woman*). Here two beings try to live the moment in which they met: spiritually she was for him the queen he had seen in the show-window of her shop; for her he was the country lad with elementary poetry in his soul. All else was dead, their actual characters did not fit that first moment. Another play offered by Antonelli was *La casa a tre piani* (*Three Story House*), a drama spun on death, fear, poetry. *Chimere* in Luigi Chiarelli's *grotteschi*, performed a good many years back, was available in an edition put out by Treves of Milan. There

was a dramatic poem, Sem Benelli's *Fiorenza* (Milan) in blank verse, extolling Florence and Florentine genius of the thirteenth century. It was performed in Milan in the spring. Open air performances of classical tragedies continued to draw attention. Syracuse, Taormina, and Ostia were the principal centres for these productions. The famous "Thespian Car" with its stock company continued to bring good plays to different parts of Italy. The "Carro" was sponsored by Fascismo (1929) and directed by G. Forzano. See under *Critica—Varia* for other information on the theatre.

POETRY. By way of recording a few noteworthy contributions mention must be made of Aldo Palazzeschi's *Poesie* (Milan), reassembled and re-edited by Giulio Preda. The volume contains the author's poems chronologically arranged from 1904 upwards. Palazzeschi's poetry is personal and original, identified with the "futurists" in typographical structure, and the "crepusculars" in sentiment. From the same publisher came Riccardo Bacchelli's *Amore di poesia*, poems composed during 1914–1929. There are moments of inspiration, and in general, the volume has a certain sense of "dignity" and "literary tone." In the special edition of V. Nardelli's *Europa* (Rome) will be found 33 readable themes under title of Rome, Paris, Vienna, Spain, etc. Diego Valeri's *Poesie vecchie e nuove* (*Poetry Old and New*; Milan) is composed on complex emotions, on varied canvas, and verse structure. The poems are couched in an atmosphere of refinement. The poetess, Sibilla Aleramo, offered *La mia prima poesia* (*My First Poetry*; Milan). Dedicated to Italy under Fascismo there were *Il poema della nuova Italia* (*Poems of New Italy*; Florence), with poems on Mussolini, Cesare Battista, Alfredo Oriani, Marconi, among others.

Of interest is the fact that Salvatore Alonzo translated Charles Baudelaire's *Fleurs du Mal* (Leghorn) for all defiance poetry hurls at translation. Adriano Tilgher studied poetry in dialect in *La poesia dialettale napoletana, 1880–1930* (Rome), in which he speaks of the decadence of this poetry. There are essays on Salvatore di Giacomo, Ferdinando Russo, Galdieri. While speaking of this *genre* let us call attention to Trilussa's screamingly funny poems in Roman dialect, *Libro No. 9* (Milan). Record should be made of the death of Vincenzo Gerace, the Calabrese poet. He gained the Mondadori Prize for poetry several seasons previously and his recent contribution, *La fontana nella foresta* (1927), was typical of his poetry in mixed lyricism and mysticism.

CRITICA—VARIA. Briefly and at random may be considered the critical productivity of the year. A valuable volume was Giuseppe Ravagnani's *I contemporanei* (Turin) composed of a series of essays on the most representative authors of Italy from the latter part of the nineteenth century to our days. The book was accompanied with a foreword by Arturo Farinelli and a bibliographical list on the contemporary field. E. Falqui and E. Vittorini compiled an anthology, *Scrittori nuovi* (*New Writers*; Lanciano), in which 70 of the lesser known writers were included. Alpes of Milan published Enrico Piconi's second part of *La bancarella della novità*. The younger writers were discussed non-caustically; he has hope for their literary future. To honor Vittorio Rossi for his 40 years as an inspiring teacher his friends and students prevailed upon him to collect his scattered lectures and essays into three volumes,

Saggi e discorsi su Dante, Studi sul Petrarca e sul Rinascimento, and *Dal Rinascimento al Risorgimento*, published by Sansoni of Florence. Those who have read Vittorio Rossi's famous *History of Italian Literature* welcomed these essays for their scholarship and their artistic treatment.

Giuseppe Fanciulli wrote on the life and works of Dante in *Dante* (Milan). It is a "lucid and decorous vulgarization for the cultured but non-specialist reader who desires more of an understanding of the poet." Umberto Cosmo also prepared a book on *Vita di Dante* (*Life of Dante*; Bari). In *Petrarca* Luigi Tonelli devoted a whole book to an attempt at reevaluation of various mediæval and humanistic phases of Petrarch. Carlo Steiner (better known for his much-thumbed edition of the *Divine Comedy*) brought out with exhaustive notes and preface Alessandro Manzoni's *I Promessi Sposi* (Turin). A study, *Italy and the Italians of the Nineteenth Century* (Florence), with essays by some of the leading contemporary critics, was edited under the care of Jolanda de Blasi. A collection of essays dealing with the salient points of Italian literature from the Middle Ages to Manzoni were assembled by G. A. Cesareo in his *Studi e ricerche su la letteratura italiana* (Palermo).

On the theatre *I "Pupazzi"* (Milan) was prepared in a de luxe edition with illustrations in color and caricature. Mr. Onorato assembled here a lot of useful material on the Italian theatre and its actors. Franco Liberati gave memoirs on the vicissitudes of the venerable old actors of the first decade or so of this century. There is information on Eleanora Duse, Tommaso Salvini, Erneste Novelli, along with others. Giacomo Antonini prepared a study of the contemporary French theatre, *Il teatro contemporaneo in Francia* (Milan), and Francesco Pico wrote a book on *Molière* (Florence) which, for its careful preparation, was destined to serve as a reference book on the famous French dramatist.

Then mention must be made of a book on the United States, *Gli Stati Uniti di domani* (Milan), by Umberto Orsini Ratto; one on Russia, *L'Intelligenza di Lenin* (Milan), by Curzio Malaparte, praiseworthy for its concise elucidation on Lenin and Soviet Russia; two books on art: Ugo Ojetti's *Bello e brutto* (Milan), teeming with epigrammatic language and æsthetic judgments, and Margherita Sarfatti's *Storia della pittura moderna*, an outline of modern painting excellently prepared with over 150 illustrations.

In conclusion let us mention a few of the principal works published in English on Italian literature. Thomas Caldecot Chubb wrote an entertaining and instructive biography in his *The Life of Giovanni Boccaccio* (New York). Giovanni Papini's *Saint Augustine* (New York) was translated by Mary Prichard Agnetti. In this beautiful study on the great African, Papini presented his views, and for those who might think his conversion insincere, he unleashed some biting remarks in self-justification. Papini's *Laborers of the Vineyard* (New York) also was translated. Gertrude Leigh's book, *New Light on the Youth of Dante* (Boston), marks disapproval of much of the existent criticism on the great poet. There was a book on the Renaissance, *The Civilization of the Renaissance in Italy* (New York), by Jacob Burckhart, and a study of the early Italian theatre, *Italian Actors of the Renaissance* (New York), by Winifred Smith. A broad historical study, *Three Thousand Years of Rome* (New

York), was translated from the German version by Caroline Fredrick. It combines "popular interest with authority."

ITALIAN SOMALILAND, sö-mä'lëland. An Italian colony extending along the east coast of Africa from British Somaliland on the northeast to Kenya on the southwest, and bounded on the north by Ethiopia. Area, approximately 190,000 square miles; population, about 1,200,000, including approximately 1000 Italians. Mogadiscio, with a population of about 28,000, is the capital.

The colony is divided into Southern Somalia, formerly called Benadir, and Northern Somalia. Cattle raising and agriculture are the principal occupations. In Southern Somalia, there are Italian plantations with a cultivated area of about 70,000 acres. In 1928, exports amounted to 42,330,000 lire and imports to 134,158,000 lire (1 lira equaled approximately \$0.052). The chief exports are gum, oil, sesame, hides, butter, cotton and cottonseed oil, resin, kapok, and ivory. Revenues for 1929-30 were estimated at 78,108,715 lire, including a state contribution of 56,108,718 lire, and the total expenditure at 81,599,000 lire, including military expenses of 31,000,000 lire. Governor in 1930, De Guido Corni, appointed in 1928.

ITALY. A constitutional monarchy of southern Europe, comprising, besides Italy proper, the islands of Sardinia, Sicily, Elba, and some 70 other small islands, together with the territory on the eastern shore of the Adriatic acquired as a result of the Treaty of St. Germain, and arrangement with Yugoslavia in 1920. Capital, Rome. Reigning King in 1930, Victor Emmanuel III.

AREA AND POPULATION. The area of Italy before the World War was 110,632 square miles, with a total population on Jan. 1, 1915, of 36,120,118. The area as a result of the survey made at the time of the census of 1921 is 119,710 square miles and the population according to that census, 38,756,433; estimated at the end of 1930 at over 42,000,000, or a density of 350 inhabitants to the square mile. In the nine years from 1922 through 1930, the population increased by 4,000,000, or at the rate of over 450,000 annually. In 1929 births totaled 1,035,868 and deaths were 660,716, leaving a surplus of births of 375,152. The surplus of births in 1930 was estimated on the basis of preliminary returns at over 500,000. Italians living in foreign countries were estimated (1929) at about 9,168,000. In 1928 emigrants numbered 150,566, of whom 75,145 went to other European countries and 68,098 to North and South America. The leading cities, with their populations in 1929 were: Naples, 966,423 (1928); Milan, 961,979; Rome, 914,631; Genoa, 623,196; Turin, 591,316; Florence, 316,806; Catania, 281,500; Venice, 258,381; Trieste, 255,480; Bologna, 245,036; Messina, 203,609 (1928).

EDUCATION. Primary education is free and compulsory to the age of 14. In 1926-27, there were 3,493,715 pupils in 32,954 public elementary schools, 140,841 pupils in 2466 private elementary schools, and 607,891 pupils in 7076 infant schools. For secondary education, there were 1024 Government schools, with 181,066 students in 1926-27, and 611 private schools, with 46,517 students. The 21 state and four free universities reported a total of 36,391 students and 3950 teachers in 1927-28. There are higher institutes for commercial education, agriculture, engineering, and for the various other branches of the professions.

PRODUCTION. Agriculture was the chief support of more than 50 per cent of the population in 1930, although industry was of increasing importance in the national economy. Of a total of 76,633,803 acres in Italy, about 33,276,000 acres were devoted to seed lands, 16,996,250 acres to meadows and permanent pastures, 3,731,750 acres to horticulture, and 13,958,000 acres to forests. At the census of 1921, there were 1,113,106 landed proprietors. An extensive programme for the improvement of agriculture inaugurated by the Government in 1925 resulted in an increase of wheat production from 53,291,000 quintals in 1927 to 70,943,700 quintals in 1929 (1 quintal equals 220.46 pounds). The production, in quintals, of other leading crops in 1929 was: Corn, 24,083,400; potatoes, 20,111,500; rice, 7,335,000; oats, 7,110,620; beans, 4,958,700; barley, 2,585,340; rye, 1,732,870; olives, 17,637,200. Sugar beet production in 1928 was 28,613,000 quintals. Grapes and silk cocoons are other products. The crops in 1930 were generally below normal in quantity, but of good quality. The wheat yield was about 1,000,000 tons less than for 1929.

There were 7,100,000 cattle, 11,000,000 sheep, 2,750,000 swine, 1,000,000 horses, 952,000 asses, and 503,000 mules in Italy in 1928. The Parmigiana-Moglia land reclamation project, covering 217,452 acres in Northern Italy, was completed in July, 1930. In connection with the Government's land-improvement programme, projects costing 1,122,000,000 lire (\$59,000,000) were commenced or authorized for immediate construction during the fiscal year 1929-30. Of the total sum, 885,000,000 lire was spent on projects carried out entirely at Government expense, and 237,000,000 lire as governmental subsidies for work carried out by private individuals.

Industrial conditions, which became more unfavorable during the last half of 1929, continued to reflect the world-wide economic depression in 1930. The chief industries are mining (sulphur, mercury, zinc, and iron being the chief products), centred mainly in Sicily, Tuscany, Sardinia, Lombardy, and Piedmont, quarrying, cotton textiles, silk, sugar, shipbuilding, and dairying. At the industrial census of October, 1927, there were 731,888 industrial establishments in the country, with 5,012,824 employees. Of these, 10,406 factories and 642,654 employees were engaged in the production of cotton textiles.

The production of iron ore, pig iron, and steel ingots and castings increased steadily from 1923 to 1929. In the latter year the output of iron ore was 867,000 metric tons (826,000 in 1928); of pig iron, 672,000 metric tons (508,000); of steel ingots and castings, 2,133,000 metric tons (1,963,000); of sulphur, 354,700 metric tons (327,700). Coal production in 1928 included 133,000 metric tons of black and 703,000 tons of lignite. Cotton yarn production was 2,021,723 quintals in 1928 and 2,127,000 quintals in 1929. Chemical production figures in quintals for 1929, with figures for 1928 in parentheses, were: Sulphate of ammonia, 1,460,000 (1,275,000); calcium cyanamide, 800,000 (554,000); superphosphates of lime, 13,780,000 (11,250,000). The number of motor cars produced declined in 1929 to 54,096 from 55,010 in the previous year.

In the shipbuilding industry, 99 keels of vessels aggregating 45,834 tons were laid in 1929 (88 keels of 63,587 tons in 1928), while 97 vessels of 72,028 tons were launched, as against 68 vessels

of 66,788 tons in 1928. The number of unemployed in October, 1930, numbered 375,000, as compared with 217,000 a year earlier. In the same month a total of 395,849 laborers were employed on public works projects throughout Italy.

COMMERCE. Italian imports in 1929 amounted to 21,300,000,000 lire (1 lira exchanged at \$0.0523 in 1929), as compared with 21,920,000,000 lire in 1928, while exports were valued at 14,889,000,000 lire, as against 14,559,000,000 in 1928. The unfavorable balance of trade was 6,411,000,000 lire in 1929 and 7,361,000,000 lire in 1928.

The decrease of 2.9 per cent in the value of imports was due to a reduction of 42 per cent in foreign wheat imports and considerable declines of purchases of sugar, corn, vegetable oils, and copper. Imports of coal, machinery, iron and steel, and gasoline were larger. The export increase of 2.2 per cent was accounted for by larger shipments of canned tomatoes, almonds, olive oil, silk and rayon fabrics, and machinery. Foodstuffs and live animals represented 21.8 per cent of total imports by value; industrial raw materials, 37.7; partly manufactured articles, 20.7; manufactures, 19.8. Corresponding percentages for exports were 24.1, 10.8, 21.9, and 43.2, respectively. The United States furnished 16.7 per cent of the total imports (18.3 per cent in 1928); Germany, 12.6 (10.1); France, 9.6 (9.4); Great Britain, 9.6 (8.1). Italian exports were distributed as follows: Germany, 11.9 per cent (12.8 per cent in 1928); United States, 11.5 (10.5); Great Britain, 9.8 (9.2); France, 8.8 (9.3). Preliminary foreign trade figures for 1930 placed the import surplus for the year at about 5,100,000,000 lire, or the lowest since 1927.

Of 56,175 tourists entering Italy in the first six months of 1930, 21,926, or 39 per cent, were from the United States and 10,110, or 18 per cent, from Great Britain.

FINANCE. The budget estimates for the fiscal year ended June 30, 1930, placed total revenues at 19,226,199,201 lire and total expenditures at 20,117,460,533 lire. The budget operations closed with a reported surplus of 65,000,000 lire, as against an estimated surplus of about 9,000,000 lire. The revenues were 4 per cent below those of the previous year but 400,000,000 lire above the revenues budgeted. The chief revenue items in the 1929-30 budget were direct taxes, 4,650,000,000 lire; taxes on exchange of wealth, 2,967,620,000 lire; state monopolies, 2,934,000,000 lire; taxes on buildings, 2,070,000,000 lire; customs and maritime duties, etc., 1,446,324,500 lire. Of the expenditure budget, 6,202,985,000 lire went to the Treasury for the service of the debt and other expenses, 2,562,522,024 lire for the Ministry of War, 989,464,562 lire for the Navy, and 1,325,855,134 lire for education.

The budget for 1930-31, as presented to the Council of Ministers by the Minister of Finance, estimated revenues at 19,348,845,000 lire, or 77,923,000 lire more than budgeted revenues for the preceding year, and expenditures at 19,085,858,000 lire, an increase of 773,230,000 lire. The anticipated surplus was 262,988,000 lire.

The public internal debt on June 30, 1930, stood at 87,124,000,000 lire, of which 71,449,000,000 lire represented the consolidated debt, 13,175,000,000 lire the redeemable debt, and 2,500,000,000 lire the floating debt. Under a plan effective May 1, 1930, the Bureau of Amortization was to receive 500,000,000 lire annually for the purchase and retirement of the consolidated

5 per cent internal debt, which amounted to 71,421,000,000 lire (about \$3,750,000,000) on Mar. 31, 1930. The foreign debt on Sept. 30, 1929, amounted to 93,340,000,000 lire. The value of state property was estimated at 63,876,139,000 lire (June 30, 1928).

COMMUNICATIONS. Railways in operation on Jan. 1, 1929, totaled 13,442 miles, of which 10,352 miles were owned by the state (782 miles electrified). The Government had adopted a programme for the electrification of an additional 4000 miles of line. First-class highways, or those under the care of the State Highway Institute, totaled 12,955 miles in 1930. There were 24,840 miles of provincial roads and 55,890 miles of communal and secondary roads. In 1929-30 the Highway Institute built or repaired 994 miles of highway at a total cost of 390,000,000 lire (about \$20,528,300), and expended 60,000,000 lire on supplementary road work. Italian commercial air lines in 1929 extended 9831 miles, the distance flown was 1,835,076 miles, passengers carried numbered 24,935, and the express and mail traffic in ton-miles was 132,000,000. An air line from Trieste to Zara, Yugoslavia, by way of Fiume, was inaugurated by an Italian company early in 1930. The telegraph system and part of the telephone system are Government-owned.

The Italian merchant marine on Jan. 1, 1930, consisted of 1396 steamships of 3,212,302 gross tons (including 152 motor vessels of 439,682 gross tons), and 2692 sailing vessels, of 168,279 gross tons. A total of 246,106 vessels of 72,749,000 tons entered Italian ports in 1928, and 244,759 vessels of 72,474,000 tons cleared.

ARMY AND NAVY. Liability of military service beginning at the age of twenty and lasting for 19 years is compulsory and universal. The strength of the active army in 1928 was 16,570 officers and 234,700 of other ranks, including 60,000 Carabinieri. See **MILITARY PROGRESS.**

The Italian Royal Air Force, constituted in 1925 as a separate force under the Ministry of Aviation, had 2100 airplanes and a personnel of 20,422 of all ranks in 1929. The appropriation for 1929-30 was 700,000,000 lire.

The accompanying table from the *Statesman's Year Book* for 1930 shows the classification of the navy in 1928 and 1929. See **NAVAL PROGRESS.**

| | Completed at end of | |
|---------------------------------------|------------------------|------|
| | 1928 | 1929 |
| Battleships | 5 | 4 |
| Armored cruisers | 3 | 3 |
| Light cruisers | 9 | 9 |
| Flotilla leaders and destroyers | 73 | 80 |
| Torpedo boats | 52 | 40 |
| Submarines | 45 | 43 |

GOVERNMENT. The Italian Constitution vests executive power in the King, acting through a responsible ministry, and legislative power rests conjointly in the King and a parliament of two chambers. The Grand Council of Fascism is the supreme body which "controls all the activities of the régime," under a law promulgated in December, 1928. It "designates" the deputies for the lower chamber and "must give its opinion on all bills dealing with constitutional issues." Its members fall into three categories: (1) Life members, including the head of the Government (Mussolini), the "Quadrumvirate" who led the Fascist march on Rome, ex-ministers who have held office in the Fascist Cabinet for at least five years, and

those who have acted as secretaries-general of the Fascist party since the march on Rome. (2) *Ex-officio* members, including the President of the Senate, the Speaker of the Corporative Chamber, and the Cabinet Ministers. (3) Extraordinary members, i.e., "men who have deserved well of the national cause and the Fascist Revolution, or are experts on the questions under discussion in the Grand Council." There are 35 persons in the first two categories and an unfixed number in the third. All members of the third category and all of the second, except the President of the Senate and the Speaker of the Corporative Chamber, are designated by the head of the Government.

The franchise is granted to men 21 years and over and also to men aged 18 years and over, if married or widowers with sons, who pay a syndicate rate, or taxes to the amount of 100 lire, or who receive a salary or pension from any public institution. Candidates for the Chamber of Deputies, which has a membership of 400, must be at least 25 years of age. Candidates are proposed by the National Syndicate Confederation, by certain juridical persons, and by associations of a national character. From these lists of candidates the Grand Fascist Council selects 400 names to be included in the roll proposed to the electors. If the proposed roll is not approved by the electors, new elections must be held at least one month later, this time by the majority system and in accordance with the principle of proportional representation, formerly in use. The King has power to dissolve the lower house at any time.

The Senate on May 28, 1929, was composed of 451 senators including 11 members of the royal family. Under the Constitution the senators are appointed for life by the King on the proposal of the cabinet. Their number is not limited. Victor Emmanuel III, born Nov. 11, 1869, succeeded his father, Humbert I, July 29, 1900.

The Cabinet in 1930 was composed as follows: Prime Minister, Chief of the Government, and Minister of Interior, Benito Mussolini; Foreign Affairs, Dino Grandi; War, Pietro Gazzera; Navy, Giuseppe Sirianni; Air, Italo Balbo; Public Works, Araldo Di Crollanza; Corporations, Giuseppe Bottai; Education, Balbino Giuliano; Agriculture and Forests, Giacomo Acerbo; Colonies, Emilio de Bono; Finance, Antonio Mosconi; Justice, Alfredo Rocco; Communications, Constanzio Ciano.

HISTORY

Challenging the French military hegemony of Europe, Italy in 1930 assumed active leadership of the nations demanding revision of the peace treaties of Versailles, St. Germain, and Trianon. Strained relations between the states supporting and opposing the peace treaty settlements inevitably resulted. The tension between Italy on the one hand and France and her allies of the Little Entente on the other became sufficiently acute as to arouse fears of a new European war. Despite the discovery of a number of conspiracies against the Government, the Fascist régime retained its firm grip upon the nation and continued its vigorous programme of internal development. Relations with the Vatican were cordial, in general. On July 23, a large area in the southern Apennines was devastated by a severe earthquake, the loss of life being 1475. A second quake at the end of October, centring in Ancona,

killed 15 persons and caused damage estimated at \$15,000,000.

FOREIGN RELATIONS. Friction between France and Italy became acute following France's rejection of Italy's demand for naval parity at the London Naval Conference held during the Spring of 1930 (see *GREAT BRITAIN and FRANCE under History*, and *NAVAL PROGRESS*). The reiteration of Italian demands for revision of the peace treaties, following the failure of negotiations for a naval agreement, was viewed as an effort to force naval and territorial concessions from France under the threat of a military combination of the anti-treaty Powers against her. Treaty revision was first advocated by Premier Mussolini in 1928; in 1930 he assumed active leadership of the anti-treaty agitation through two separate pronouncements. The first, published as an interview July 3 in the *Petit Parisien*, was an unofficial reply to the memorandum of Foreign Minister Briand of France suggesting the formation of a European federation. The Duce declared that the nations which were victorious in the World War were not satisfied with their victory and that a general revision of the peace treaties must precede European federation. The second pronouncement was made before the Fascist directorates on the eve of the eighth anniversary of the Fascist march on Rome, the Premier declaring that the Italian policy of peace treaty revision aimed at avoiding war. The true violators of the League of Nations Covenant, he said, were "those who at Geneva wish to perpetuate two categories of nations—armed ones and defenseless ones."

A significant feature of Mussolini's speech to the Fascist directorates was his frank admission that Italy planned to create an outlet for her rapidly expanding population "on the Danube and in the East." "This," he said, "explains our friendships and our alliances." An important step in connection with this policy was the marriage of King Boris of Bulgaria and Princess Giovanna of Italy on Oct. 25, 1930. Early in the year a ten-year arbitration treaty was concluded with Austria, after which Italy relaxed the severity of her treatment of the German-speaking minority in the Italian Tirol. A visit of the Hungarian Premier, Count Bethlen, to Rome was regarded as evidence of increasing friendliness between the two countries. At the same time the Fascist press reported that an alliance of Italy, Hungary, Austria, and Bulgaria was under discussion.

Italian financial penetration of the Balkans continued. In Bulgaria the Italian Banca Commerciale assumed the task of financing coöperative societies organized for the production of silk and tobacco. Capital was advanced only on condition that Italian machinery be used in the industries aided. Meanwhile the Orient Tobacco Company of Rome had become an important factor in the Balkan tobacco market.

The alarm and excitement aroused in Yugoslavia by these developments was furthered by the Fascist government's severe repression of irredentist activities among the 600,000 Jugoslavs incorporated in the Italian Province of Venezia-Giulia. Refugees who fled from Istria across the Yugoslav border issued from Belgrade on September 9 an appeal to the civilized world to end the reign of terror which they said had been imposed on the Slovenian minority in Italy. They charged that in the previous eight years

20,000 Croat and Slovene subjects of Italy had been imprisoned and tortured and 2172 murdered by Fascist bands. The Fascists, in reply, stated that the Yugoslav elements had resorted to terrorism against the provincial authorities and that they had been abetted in this policy by nationalist organizations in Yugoslavia and indirectly by the Yugoslav government.

Four Italian subjects of Slav origin were executed on September 5 and 14 and others were condemned to serve terms of imprisonment varying from four to 30 years, following their conviction of terrorist activities by a Fascist military tribunal. The executions aroused furious anti-Italian outbursts not only in Yugoslavia but also in Czechoslovakia and Greece. War between Italy and Yugoslavia was considered imminent, but a press censorship in the latter country prevented the situation from getting out of hand. During the crisis military preparations were reported under way in Hungary, Italy's ally. The Italian Ministers in Prague and Athens protested at the anti-Italian tone of the press. The trial of 57 additional Italian subjects of Slav extraction during November on charges of high treason again aroused Slav resentment. The net result of these occurrences was to bind the Little Entente countries—Yugoslavia, Czechoslovakia, and Rumania—still more closely to France.

An amusing development of the year was the increasing cordiality manifested between such inherently antagonistic governments as Fascist Italy and Soviet Russia. A Soviet-Italian commercial agreement, under which the Italian government guaranteed 75 per cent of the credit for Soviet purchases made in Italy, was concluded, and at the sessions of the League of Nations Disarmament Committee in Geneva in November Russia supported Italy in demanding revision of the peace treaties and opposing the French disarmament thesis. Soviet-Italian coöperation, however, was attributed to a mutual fear of France rather than to a disinterested liking for each other. Both Italy and Russia were disappointed by the lukewarm attitude displayed by the German government toward their efforts at treaty revision. The Social Democrats and the moderate parties forming the Government coalition in Germany viewed Italy's policy with deep suspicion. The German Fascists under Hitler, however, promised their enthusiastic coöperation in the event of their accession to power.

INTERNAL PROBLEMS. An outstanding development in the internal political situation was the resignation on September 24 of Augusto Turati, secretary-general of the Fascist party since May, 1926, who was generally considered second only to Mussolini in secular power. Turati had offered to resign the previous year but Mussolini then refused to allow him to do so. He was succeeded by Giovanni Giuriati, president of the Chamber of Deputies and one of the earliest adherents of the Fascist movement. On October 8, the Fascist Grand Council strengthened its organization by adopting a new plan for an organization of Fascist youths between the ages of 18 and 21. The eighth anniversary of the Fascist march on Rome was celebrated in the usual way on October 28, with the inauguration of some 2000 public works project, representing an estimated expenditure of more than \$100,000,000. The Government announced November 7 that immediately preceding the anniversary about 20 persons were arrested in northern Italy on charges of conspiring with

anti-Fascisti in Paris against the Fascist régime. According to anti-Fascist circles in Paris those arrested included a number of prominent university professors and army officers. Among them were Prof. Bartolo Belotti, former Italian Minister of Industry and Commerce, and Prof. Ernesto Belloni, former Governor of Milan. Professors Belotti and Belloni were sentenced to five years' confinement on the penal islands of Lipari and Ponza, the Government announced November 28. On December 22, a special military tribunal sentenced Mario Vinciguerra and Renzo Rendi, leaders of an anti-Fascist organization, to 15 years' imprisonment on a charge of inciting rebellion. Five others, including Mrs. Adolfo de Bosio, American-born widow of the Italian poet, were acquitted. A number of imprisonments for communist activities were reported during the year.

The unfavorable economic situation increased the Government financial difficulties in 1930 (see under *Finance* above) and on November 18 the Cabinet Council decreed a cut of 12 per cent in salaries of all state employees, including Cabinet Ministers. It was believed that this measure would offset a threatened deficit in the 1930-31 budget. In June, the Cabinet Council increased the tax on foreign exchange transactions to 1½ per cent. Of the \$35,000,000 additional revenue anticipated, \$25,000,000 was allocated for a 10 per cent increase in the military budget. In March the Government lifted the embargo on the export of gold and abolished city customs barriers (*octroi*) throughout the country. These measures were designed to place Italy on a firm gold basis and to facilitate the internal movement of merchandise and greater uniformity of prices.

A new tariff schedule, which more than doubled the duty on imported motor cars, aroused concern among American automobile manufacturers as it left the Italian Fiat Company with a virtual monopoly of the Italian market. About the same time the Ford interests purchased the Isotta-Fraschini automobile factory at Milan for the establishment of a branch factory.

FASCISM AND THE VATICAN. Although relations between the Vatican and the Fascist government were on the whole cordial during 1930, evidences of a clash of policies and ideals were not infrequent. A papal encyclical on education, published on January 11, indirectly repudiated Fascist practices in education by asserting that education is preëminently the function of the Church. In an allocution delivered at a consistory for the creation of new Cardinals on June 30, Pope Pius was reported to have accused the Fascist government of aiding Protestants in their efforts to proselytize Italy, an attitude which he termed contrary to the spirit and letter of the Lateran treaties. He was understood to refer to newly-published regulations exempting non-Catholic clergy from military service, providing for religious aid to non-Catholic soldiers, allowing students in non-Catholic schools to postpone their military service, and exempting the children of non-Catholics from religious instruction. State and municipal subsidies for schools in non-Catholic communities and instruction in non-Catholic religions in school premises where non-Catholic students were sufficiently numerous to warrant it were authorized also.

The conciliatory policy of the Government toward the Church was indicated when Secretary General Turati of the Fascist party announced

that membership in the Catholic Action, the leading Italian Catholic organization, would no longer be considered an obstacle to membership in the Fascist party. Rome was bedecked with flags on the first anniversary (February 11) of the signing of the Lateran treaties. The Government joined in the commemoration of the Pope's golden jubilee the following day, and subsequently the Pontiff received Turati and Luigi Federzoni, president of the Italian Senate, in private audiences. See **VATICAN CITY**.

OTHER EVENTS. The 2000th anniversary of the birth of the poet Vergil was widely celebrated throughout Italy and the western world in October. See **CELEBRATIONS**; **VERGIL BIMILLENNIUM**.

See **FRANCE**, **GREAT BRITAIN**, **GERMANY**, **JUGOSLAVIA**, **BULGARIA**, **AUSTRIA**, **HUNGARY**, **CZECHOSLOVAKIA**, **AUSTRIA**, **BELGIUM**, **GREECE**, and **MALTA** under *History*; also **REPARATIONS**, **LEAGUE OF NATIONS**, **EARTHQUAKES**, **NAVAL PROGRESS**, **MILITARY PROGRESS**. Consult C. M. Cresswell, *The Keystone of Fascism* (London, 1929).

ITURBI, JOSÉ. See **MUSIC**, under *Artists*.

IVORY COAST. A French colony, forming a constituent part of the government-general of French West Africa, situated between Liberia and the British Gold Coast. Area, about 121,976 square miles; population, estimated in 1926 at 1,724,545, of whom 1614 were Europeans. Bingerville, the capital, had a European population of 98. The principal commercial products are cacao, mahogany, palm oil and kernels, dried and smoked fish, cotton, and rubber. The production of cacao is rapidly increasing. Some gold has been found. Imports in 1928 amounted to 235,689,000 francs (exchanging at \$0.0392), as compared with 193-305,000 francs in 1927, and exports were valued at 253,052,000 francs, as compared with 235,467,000 francs in the previous year. The budget of the colony for 1929 was fixed at 79,313,500 francs. In 1928, 1165 vessels of 3,676,767 tons entered and 1161 of 3,369,936 tons cleared the ports. There were 304 miles of railway and 3108 miles of motor highways (1929). See **FRENCH WEST AFRICA**.

JAIL OUTBREAKS. See **CRIME**.

JAMAICA. A colony of Great Britain, consisting of the island of Jamaica, which is the largest in the British West Indies, and the following dependencies: Turks and Caicos Islands; Cayman Islands; Morant Cays; and Pedro Cays. Area of Jamaica, 4450 square miles; of the dependencies, 224 square miles. Population of Jamaica, according to the census of 1921, 858,118, including 660,420 blacks; 157,223 of mixed race; 14,476 whites; 18,610 East Indians; and 3696 Chinese; estimated population at the end of 1928, 974,742. The movement of population in 1928 was: Births, 34,616; deaths, 19,062; marriages, 4348. Kingston, the capital, had a population of 62,707 at the census of 1921. In 1928 there were 672 public elementary schools, with 127,785 pupils enrolled. The area under cultivation (1927-28) was 1,157,586 acres, the chief crops being sugar cane, coffee, bananas, coconuts, cacao, and vegetables. Imports in 1929 were valued at \$32,867,412 (\$29,539,546 in 1928) and exports at \$22,276,490 (\$20,051,532 in 1928). The United States supplied 30.9 per cent of the imports and took 34.2 per cent of the exports in 1929. The principal exports were coconuts, logwood, logwood extract, sugar, coffee, rum, and cacao. The only rail transportation on the island is the Jamaica Government Railway, with a length of 210 miles.

Government revenue in 1928-29, £2,212,852; expenditure, £2,317,434; public debt, £5,040,699. Governor in 1930, Sir R. E. Stubbs (appointed in 1925). For efforts to relieve the depression caused by the decline of sugar prices, see GREAT BRITAIN under *History*. Kingston is a stopping point on the air line from Miami, Fla., to Colon, C. Z., opened Dec. 3, 1930.

JAN MAYEN. A volcanic island, 34 miles long and 9 miles wide, in the Arctic Ocean between Spitzbergen and Greenland; annexed by Norway, May 8, 1929. It is used as a weather forecast station and as a base for Norwegian whalers.

JAPAN. A Far Eastern empire, consisting of the five main islands of Honshu (mainland), Hokkaido, Kyusyu, Shikoku, and Taiwan (Formosa), together with some 600 smaller islands and island groups, the peninsula of Korea, or Chosen, and Karafuto (the southern half of the island of Sakhalin). Capital, Tokyo; reigning sovereign in 1930, Emperor Hirohito.

AREA AND POPULATION. The area of the Japanese Empire and the census populations in 1930 and 1925 are shown in the accompanying table.

JAPANESE EMPIRE: AREA AND POPULATION

| | Area, square miles | Population, 1930 census | Population, 1925 census |
|----------------------------|--------------------------|----------------------------|----------------------------|
| Japan proper | 147,327 | 64,447,724 | 59,736,822 |
| Chosen (Korea) | 85,228 | 21,057,969 | 19,522,945 |
| Taiwan (Formosa) | 18,840 | 4,594,161 | 3,993,408 |
| Karafuto | 18,934 | 295,187 | 203,754 |
| Total | 260,879* | 90,395,041 ^b | 83,456,929 |

* Including Pescadores.

^b Preliminary.

The figures show a total population increase of 6,468,550 during the five-year period, 1920-25. In addition, Japan had a 99-year lease of Kwantung (including Port Arthur and Darien in Southern Manchuria) with a population in 1928 of 837,219, and mandate territory in the South Seas with a population of 56,294 in 1925. The population of Japan proper at the census of Oct. 1, 1930, was 64,447,724 as compared with 62,938,200 on Oct. 1, 1929. The density of population in 1930 was 438 per square mile. The density of population per square mile for the entire Empire in 1925 was 320 and for Japan proper, 405. The total increase in population of Japan proper from 1920 to 1930 was 8,486,584, making the average annual increase 848,658. In 1928, births totaled 2,135,852; deaths, 1,236,711; marriages, 499,555; divorces, 49,119. The number of Japanese residing abroad on Oct. 1, 1928, was 717,529, of whom 104,022 men and 65,547 women were in North America. The number of foreigners in Japan on Jan. 1, 1929, was 34,917, of whom 25,963 were Chinese, 2104 English, 2281 American, and 1059 German. The populations of the leading cities at the census of 1929 (figures for the 1925 census in parentheses) were: Osaka, 2,408,800 (2,104,804); Tokyo, 2,294,600 (1,995,567); Nagoya, 904,700 (768,558); Kyoto, 755,200 (679,963); Kobe, 755,200 (644,212); Yokohama, 543,500 (405,888).

EDUCATION. Attendance at the elementary school course is compulsory for all between the ages of 6 and 14 years. In the school year 1925-26, there were 9,188,560 in the elementary schools, 598,258 in the secondary schools, 1,051,437 in preparatory technical schools, 58,596 in special schools, 49,634 in normal schools, 231,693 in tech-

nical schools, and 52,206 in the five imperial universities and the 32 other institutions of university rank.

PRODUCTION. Japanese industry has made rapid strides, but the country was still primarily dependent upon agriculture in 1930. Of the total area of 94,289,000 acres in Japan proper, only about one-sixth was cultivable, there being (in 1928) 7,286,000 acres of rice fields, 6,833,000 acres of upland farms, 4,315,000 acres of moors and pastures, and 21,053,000 acres of taxable forests. The fertile area is divided into small farms averaging about 2½ acres each and is intensively tilled but with largely primitive methods. About 54 per cent of the cultivated land is owned by large landowners and leased to tenants, who ordinarily secure only a bare subsistence. Rice is the largest agricultural crop of the empire and the principal diet of the people. The rice crop for 1930 was officially estimated at 334,361,000 bushels. As the domestic production is insufficient for local needs, an increasing amount of rice is imported annually. The area and production of the chief crops in Japan proper in 1928 and 1929 are shown in the accompanying table.

CROP AREAS AND PRODUCTION: JAPAN PROPER

| Crop | Area ^a | | Production ^b | |
|-------------------|-------------------|-------|-------------------------|----------------------|
| | 1928 | 1929 | 1928 | 1929 |
| Wheat | 1,201 | 1,214 | 30,812 | 30,496 |
| Barley | 2,242 | 2,202 | 81,479 | 80,360 |
| Oats | 285 | 289 | 11,518 | 10,413 |
| Rice | 7,822 | 7,847 | 534,249 | 529,132 |
| Tea | 106 | 105 | 86,172 ^c | 86,845 ^c |
| Tobacco | 92 | 88 | 147,159 ^c | 138,065 ^c |
| Cocoons | ... | ... | 775,965 ^c | 844,043 ^c |

^a Thousands of acres.^b Thousands of units—bushels except as indicated.^c Unit, pound.

The forested area (Jan. 1, 1928) aggregated 47,219,191 acres, of which 18,319,385 acres belonged to the state, and 2,922,963 acres to the Imperial household. The ordinary income from the state forests in 1927-28 was 35,227,919 yen (1 yen equaled about \$0.464 in 1928). The value of raw marine products in 1929 was placed at 227,292,000 yen; of manufactured marine products at 183,204,000 yen.

Japan's mineral deposits are varied, but limited in quantity. Copper is the only metal available in quantities more than sufficient for local needs. The chief minerals, with their production in 1928 and 1929, are shown in the accompanying table.

MINERAL AND METAL PRODUCTION (JAPAN PROPER)

| Product | 1928 | 1929 |
|---------------------------------|-------------------|---------|
| Coal | 1,000 met. tons | 33,860 |
| Iron pyrites | met. tons. | 593,972 |
| Crude petroleum | 1,000 hectolitres | 2,922 |
| Sulphur | met. tons. | 70,063 |
| Gold | 1,000 grammes | 10,390 |
| Silver | 1,000 grammes | 160,024 |
| Copper | met. tons. | 68,233 |
| Pig iron ^a | met. tons. | 110,108 |
| Steel ingots | 1,000 met. tons | 1,704 |

^a Exclusive of pig iron used for materials for steel manufacturing.

MANUFACTURING. Japanese industry was seriously curtailed during 1930 by the world-wide depression and other factors discussed under *History* below. The industrial inactivity was accompanied by increasing unemployment and labor unrest. A few large family groups control the

bulk of Japanese industry and commerce. In 1929, nine families controlled and operated 144 companies with an aggregate paid-up capital of about \$1,180,000,000. The textile industry is of primary importance, there being 18,041 cotton spinning factories at the beginning of 1928 employing 187,103 men and 811,344 women. Other leading industries are metals and metal products, machinery and vehicles, foodstuffs, clay products, paper, chemicals, lumber, and wood products. At the beginning of 1928, there were 53,680 factories, including 9954 not worked by motors, and a total of 1,898,872 employees. Electric power generated in Japan in 1927 totaled 3,470,000 kilowatts, of which 2,110,000 kilowatts represented hydro-electric power and 1,360,000 kilowatts steam power. In the same year the aggregate amount of electric power used was 9,757,000,000 kilowatt-hours.

Manufacturing output in 1928 was as follows: Cotton yarn, 870,925,000 pounds; spun silk, 12,821,000 pounds; wheat flour, 767,513 metric tons; crude camphor (Japan proper), 1,436,000 pounds; camphor oil (Japan proper), 2,416,000 pounds; cigarettes, 31,741,000,000; cut tobacco, 52,525,000 pounds; sake, 245,834,000 gallons; printing paper, 782,753,000 pounds; cotton fabrics, \$364,149,000; silk fabrics, \$224,013,000; wool fabrics, \$102,290,000; porcelain earthenware, \$35,609,000; vegetable oil, \$19,071,000; lacquered wares, \$16,690,000. In 1929, Japan stood next to Great Britain as a builder of motor-ship tonnage. A total of 69 new vessels, with a gross tonnage of about 180,000, were launched during the year.

COMMERCE. General imports and exports of Japan proper both showed an increase in 1929 over 1928. Exports from Formosa were lower and imports higher, while imports and exports of Korea both showed increases. For Japan proper imports in 1929 totaled 2,216,240,000 yen (\$1,021,687,000) and exports, 2,148,619,000 yen (\$990,518,000). Comparative figures for 1928 were: Imports, 2,196,315,000 yen (\$1,019,310,000); exports, 1,971,995,000 yen (\$915,184,000). The adverse balance of trade was \$31,174,000 in 1929 and \$104,126,000 in 1928. Preliminary returns for 1930 showed a drastic decline in both imports and exports, as compared with 1929.

In 1930, according to preliminary reports, Japan's exports totaled 1,470,000,000 yen and imports were valued at 1,546,000,000 yen, leaving an unfavorable merchandise balance of 76,000,000 yen, as compared with 67,621,000 yen in 1929. The favorable balance of invisible trade largely offset the excess of visible imports over exports.

The United States in 1929 was Japan's leading market while Japan ranked fifth among the principal markets for American merchandise, imports from the United States having increased 137 per cent in the 13 years ended in 1929. In the latter year, the United States took 42.5 per cent of all Japanese exports and furnished 29.5 per cent of all imports. China took 16.1 per cent and supplied 9.5 per cent; British India, 9.2 and 13; Great Britain, 3 and 7; Germany, 0.6 and 7.1. The value of leading exports in 1929, with comparative figures for 1928 in parentheses, was as follows: Raw silk, \$360,060,000 (\$340,045,000); cotton tissues, \$190,258,000 (\$163,464,000); silk tissues, \$69,129,000 (\$62,217,000); clothing and accessories, \$47,613,000 (\$38,906,000); sugar, refined, \$13,818,000 (\$17,828,000); drugs and chemicals, \$16,039,000 (\$17,779,000); pottery,

\$17,040,000 (\$16,078,000); paper and paper manufactures, \$15,352,000 (\$14,883,000); food in tins and bottles, \$21,277,000 (\$10,689,000). Corresponding figures for leading imports were: Raw cotton, \$263,987,000 (\$255,075,000); iron and steel, \$73,632,000 (\$69,329,000); wool, raw and tops, \$46,937,000 (\$51,912,000); cedar wood, \$37,146,000 (\$47,376,000); machinery and parts, \$55,825,000 (\$42,793,000); mineral oils, \$42,839,000 (\$41,739,000); oil cake, \$29,875,000 (\$34,048,000); wheat, \$32,683,000 (\$31,400,000); sugar, \$14,365,000 (\$30,147,000).

FINANCE. The budget for 1930-31, as approved by the Diet in May, 1930, balanced at 1,608,600,000 yen. Ordinary revenues were placed at 1,514,500,000 yen and extraordinary at 94,000,000 yen, while ordinary expenditures were estimated at 1,224,000,000 yen and extraordinary at 384,600,000 yen. An appropriation of 240,000 yen was made to guarantee banks against losses on export bills drawn on South and Central America, Russia, the Near East, and the countries of the South Seas and Africa.

The 1930-31 budget showed a reduction of 75,600,000 yen from the actual working budget of 1929-30. In contrast with preceding budgets, it was expected to balance without resort to Government loans. The budgets for 1928-29 and 1929-30 are shown in the accompanying table. The fiscal year ends March 31.

GOVERNMENT RECEIPTS AND EXPENDITURES [Thousands of yen]

| Item | 1928-29, actual ^a | 1929-30, budget estimates |
|--|---------------------------------|---------------------------------|
| ORDINARY RECEIPTS | | |
| Income tax | 206,742 | 202,664 |
| Land and business tax | 125,887 | 117,406 |
| Customs | 150,944 | 150,298 |
| Liquors, sugar, and textiles | 859,233 | 357,303 |
| All other taxes | 73,104 | 69,911 |
| Stamp receipts | 86,579 | 86,247 |
| Posts, telegraphs, and telephones (gross) | 233,413 | 249,599 |
| Monopolies (net) | 177,202 | 171,481 |
| Other public enterprises | 63,579 | 69,641 |
| All other | 28,330 | 32,102 |
| Total | 1,505,018 | 1,506,652 |
| Extraordinary receipts | 500,678 | 266,915 |
| ORDINARY EXPENDITURES | | |
| Debt service | 285,701 | 284,588 |
| National defense | 310,646 | 330,671 |
| Public instruction | 118,136 | 123,668 |
| Agriculture and forestry | 26,717 | 31,453 |
| Communications (gross) | 287,072 | 297,503 |
| All other | 155,970 | 164,442 |
| Total | 1,184,242 | 1,282,325 |
| Extraordinary expenditures | 630,613 | 541,242 |

^a Subject to revision.

Actual ordinary revenue in 1929-30 totaled 1,481,143,304 yen, a decrease of 23,563,453 yen from the estimates, while extraordinary revenue amounted to 345,301,447 yen, an increase of 168,947,270 yen over the estimates. Total revenues of 1,826,444,751 yen were thus 145,383,817 yen above the budget. Total expenditures were 1,736,317,000 yen, or 55,256,121 yen more than anticipated in the budget. Ordinary expenditures amounted to 1,212,726,860, a decrease of 10,962,110 from estimates, and extraordinary expenditures to 523,590,195 yen, an increase of 66,218,331 yen.

The public debt on Oct. 31, 1930, totaled 6,092,000,000 yen, as against 5,846,000,000 yen (\$2-

914,000,000) on Mar. 31, 1929. Domestic loans totaled 4,506,000,000 yen and foreign loans, 1,586,000,000 yen. The per capita debt on Mar. 31, 1929, was about \$46. In per capita savings Japan ranked fourth among the nations, with total savings deposits at the end of June, 1929, of 5,292,000,000 yen.

COMMUNICATIONS. Of a total of 12,198 miles of railway line in operation in 1929, 8509 miles were operated by the state railways and 3689 miles by private companies. Electrification of sections of the state railway system was under way in 1930, a stretch on the important Tokaido line having been electrically operated since 1925. In 1929 the railways carried 1,213,578,000 passengers and 103,204,000 tons of freight. Gross receipts were 611,549,000 yen, as compared with 581,141,000 yen in 1928. An air service linking the principal cities of the empire was established in 1929. In the same year, 18,320 vessels of 55,197,000 net registered tons entered Japanese ports and 18,313 of 55,387,000 tons cleared.

The merchant marine of Japan proper in March, 1929, consisted of 3323 steamers of 3,725,759 tons and 14,930 sailing vessels of 884,523 tons. The telegraph and telephone systems are government owned.

ARMY AND NAVY. Military service is universal and compulsory. Liability commences at 17, but actual service begins at 20 years and lasts for 20 more. The peace strength of the active army in 1929 was 15,540 officers and 198,800 of other ranks. The military budget for 1929-30 amounted to 225,256,000 yen. See **MILITARY PROGRESS.**

The accompanying table from the *Statesman's Year Book* for 1930 shows the classification of the Japanese Fleet for the three years ending with 1929.

JAPANESE FLEET

| | Completed at end of | | |
|---|---------------------|------|------|
| | 1927 | 1928 | 1929 |
| Battleships and battle cruisers | 10 | 10 | 10 |
| Armored cruisers | 7 | 7 | 7 |
| Aircraft carriers | 2 | 3 | 8 |
| Cruisers | 25 | 27 | 29 |
| First-class gunboats | 4 | 3 | 2 |
| Destroyers | 97 | 106 | 112* |
| Submarines | 65 | 71 | 65* |

* Including 62 first-class and 50 second-class.

† Including 21 first-class, 44 second-class.

See **NAVAL PROGRESS.**

GOVERNMENT. Executive power is vested in the Emperor who acts with the advice and aid of a ministry appointed by, and responsible to, himself; legislative power is in the Emperor and the Imperial Diet of two chambers, namely, the Upper House or House of Peers, composed of membership based on rank, wealth, and other qualifications, and numbering 407 members; and the Lower House or House of Representatives, elected for four years, unless sooner dissolved, and numbering 466 members after the election of Feb. 21, 1930. Emperor Hirohito, born Apr. 29, 1901, succeeded his father Yoshihito, Dec. 25, 1926. The cabinet as constituted at the beginning of 1930 was as follows: Premier, Osachi Hamaguchi; Home Affairs, Kenzo Adachi; Foreign Affairs, Baron Kijuro Shidehara; Finance, Junnosuke Inoue; War, General Kazunari Ugaki; Marine, Admiral Jakeshi Takarabe; Justice, Viscount Chiaki Watanabe; Education, Ryuzo Tanaka; Agriculture and Forestry, Chuji Machida; Commerce and Industry, Magoichi Tawara; Com-

munications, Matajiro Koizumi; Railways, Tasuku Egi; Overseas Affairs, Genji Matsudaira.

HISTORY

FOREIGN RELATIONS. Japan's foreign relations in 1930 were marked by increasing cordiality toward the Nationalist (Nanking) Government of China, the settlement of naval rivalry with the United States and Great Britain for a five-year period through ratification of the London Naval Treaty, and the revival of the agitation for elimination of discriminatory features from the American Immigration Act of 1924. The Hamaguchi Government evidenced its friendliness toward Gen. Chiang Kai-shek's régime in China by granting a request for a Japanese military mission to aid in training Nationalist troops (see **CHINA** under *History*). On October 21, the Japanese Government brought to an end a long controversy with Nanking by withdrawing the appointment of Torikichi Obata as Minister to China. Mr. Obata, the former Japanese Ambassador to Turkey, had been declared *persona non grata* by the Nanking Government for his part in forcing the notorious Twenty-one Demands upon China in 1915.

Plans of the Nanking Government for railway construction in Manchuria which would parallel the Japanese-owned South Manchuria Railway aroused serious concern in Tokyo, where it was feared that the Chinese intended to strangle the extremely profitable South Manchuria system. The Chinese project was considered a violation of the Sino-Japanese Treaty of 1905. Relations with Soviet Russia became somewhat strained as a result of a dispute over Japanese fishing rights off the coast of Kamchatka and the closing by Soviet authorities of the Bank of Korea branch in Vladivostok.

RELATIONS WITH AMERICA. That Japanese resentment still smoldered at the exclusion clause of the United States Immigration Act of 1924 was made plain by Foreign Minister Shidehara, in speaking before the Diet in January, and by Masanao Hanihara, former Japanese Ambassador to Washington, who on May 23 made his first statement on the subject since his recall from Washington six years before. Addressing a farewell banquet in honor of the retiring American Ambassador, William R. Castle Jr., Mr. Hanihara declared that the "Japanese Government and people deeply resented this (the American exclusion act) and the resentment is felt now as it was then, nor will it ever die out so long as the wound inflicted remains unhealed."

On the same day Representative Albert Johnson, chairman of the House Immigration and Naturalization Committee and author of the 1924 Immigration Law, announced in Washington that he would introduce an amendment to give Japan its proportionate quota, but that the admissions would be restricted to those eligible for naturalization under other provisions of the 1924 act. This, in effect, meant that only persons of white or Negro blood born in Japan and therefore designated as Japanese citizens might be admitted for quota purposes. Press opinion in Japan indicated that no amendment which failed to place persons of Japanese blood on the same quota basis as other races would be acceptable.

W. Cameron Forbes, former Governor General of the Philippines, was appointed Ambassador to Japan by President Hoover on June 12, 1930. Questioned with regard to the immigration issue

upon his arrival in Tokyo, Ambassador Forbes stated that the question was one for Congress to settle. He was charged with dodging the issue by leading Japanese papers.

THE KOREAN AGITATION. Events during 1930 indicated a definite trend toward Communism in the Korean nationalist movement. Widespread disturbances among Korean students in both Korea and Japan were reliably reported to have been inspired by Communist "cells" planted in the various schools. Viscount Saito, the newly appointed Governor-General of Korea, pressed for the extension of greater autonomy to Korea on several visits made to Japan early in the year. On March 11, the Cabinet approved the underlying principles of the Governor-General's autonomy plan. Vice Governor Ohira of the Japanese leased railway in South Manchuria reported in May that the extension of the Kirin-Kainei Railway toward Korea was being obstructed by anti-Japanese feeling. Later Japanese police fired on a threatening mob of Korean peasants at Tansen, Korea, killing four and wounding 26. Raids by bands of alleged Korean Communists against Japanese centres in South Manchuria were reported during May and June.

DOMESTIC POLITICS. The Hamaguchi Government's expected appeal to the country came January 21, when Parliament was dissolved by imperial rescript. The government had found its hands tied by the lack of a majority in the Diet which convened Dec. 23, 1930. Furthermore, the Minseito, or Liberal party, leaders considered the time unusually propitious for new elections, due to the revelations of widespread corruption in the previous administration of the Seiyukai under Baron Tanaka (see 1929 YEAR BOOK).

The general election for members of the lower house of the Diet held on February 20 resulted in a sweeping victory for the Minseito party. It won a total of 273 seats, the Seiyukai 174, proletarian parties 5, and other groups 14. Premier Hamaguchi's Ministry, which controlled only 178 seats in the previous Diet, was now assured of a clear majority of 80 seats over all other parties combined. The proletarian groups suffered a sharp defeat, due to competition among four different proletarian parties, numerical weakness of the Japanese trade-union movement, and dearth of funds (liberally supplied by the privileged interests to the Minseito and Seiyukai parties).

Although Japanese elections are largely fought over personalities, the Minseito landslide seemed to express the voters' approval of the government's policies of financial retrenchment, budget balance without recourse to loans, restoration of the gold standard, and conciliation toward China. The tendency toward a two-party system evidenced in the general election of 1928 was confirmed by a further decrease in the number of independents elected to the new Diet. Approximately 10,000,000 of the 12,942,597 voters in Japan went to the polls.

THE TREATY DEBATE. When Emperor Hirohito affixed his signature to the London Naval Treaty on Oct. 2, 1930, in formal ratification, one of the most bitterly contested and significant struggles in modern Japanese political history came to an end. The debate involved two primary issues—the terms of the treaty and the authority of the Cabinet to accept them. Admiral Takarabe, Minister of the Navy, expressed the prevailing opinion with regard to the first issue upon his return from London May 19. He said that while Japan

was not entirely satisfied with the London Treaty, the terms secured were the best obtainable. None of the other signatories was completely satisfied, he pointed out.

The Hamaguchi Ministry, which strove vigorously for ratification of the treaty, encountered its principal opposition in the "big navy" group of army and naval officers. Their opposition involved the long-standing constitutional controversy as to whether control of the nation's military and naval policies rested with the Cabinet or with the Supreme War Council. The Ministry, which upheld the principle of civilian control, had neglected to obtain the formal approval of the Naval General Staff before signing the treaty.

The government crushed opposition within its ranks by accepting on June 9 and 10 the resignations of Admiral Kanji Kato, Chief of the Navy General Staff; Vice Admiral Yamanashi, Vice Minister of the Navy; and Vice Admiral Suyetsuvu, Assistant Chief of the Naval Staff. Their respective posts were filled immediately by Admiral Soshin Taniguchi, Vice Admiral Kobayashi, and Vice Admiral Nagano. That a powerful section of the navy supported the Ministry in its fight for ratification of the treaty was evidenced by the prompt acceptance of appointments to the vacated posts by ranking officers. At the same time Admiral Takarabe ignored demands for his resignation as Minister of the Navy, issued by various military and reactionary organizations. The defeat of the militarists was considered a striking evidence of Japan's progress toward a liberal and more democratic political system. The press, with few exceptions, staunchly supported the government and the strong treaty sentiment of the public was shown by the reception accorded Reijiro Wakatsuki, chief delegate to the London Conference, upon his arrival in Tokyo June 18.

The Supreme Military Council on July 23 formally reported to the Emperor that they considered the London treaty defective in so far as the national defense was concerned. The Cabinet was temporarily endangered but the Minister of the Navy postponed his expected resignation until after ratification of the treaty. He then was succeeded by Admiral Abo, an adviser of the Japanese delegation to London, who had opposed acceptance of the treaty. The treaty was submitted to the Privy Council on July 24 and was finally approved after a bitter fight upon the constitutionality of the Cabinet's procedure. The dilatory tactics of the Privy Council in its consideration of the treaty led to the appointment of a special committee on October 9 to reform the Council's organization and procedure.

A tragic result of the naval controversy was the attempted assassination of Premier Hamaguchi on November 14 by a member of the reactionary Aikokusha (Love of Country Association). The Premier was shot through the abdomen but recovered from his serious wound.

THE NAVAL BUDGET. The dispute between the military and civilian elements over the disposition of some 508,000,000 yen (about \$254,000,000) calculated as the saving effected by the London treaty was finally settled by a compromise agreement on November 10. A new naval programme submitted to the Diet provided for the expenditure of 373,000,000 yen (about \$186,000,000) over the six-year term of the naval treaty. The programme authorized a 70 per cent increase in the naval aviation force and the expenditure of 50,-

000,000 yen for the modernization of capital ships. On the basis of the expenditure necessary had there been no limitation agreement, it was estimated that the new naval programme would permit a tax reduction of 135,000,000 yen (about \$67,500,000).

ECONOMIC POLICIES. The government continued its economic policy of reducing the general level of Japanese prices in an effort to stimulate the export trade. Rationalization of industry, encouragement of the tourist trade, restriction of imports, and the return of various enterprises intimately associated with the government to private operation, were part of the Ministry's programme. Foreign loans were discouraged and deflation in all lines of business was undertaken. Retrenchment in both government and private undertakings was urged to facilitate the readjustments necessitated by the removal of the gold embargo on January 11. The downward pressure on commodity prices and unfavorable conditions in overseas markets combined to intensify the business and industrial depression. In March, the unemployed numbered 351,589, an increase of 100,000 in six months. Thirty-six cotton mills, employing 40,000 persons, cut wages and salaries approximately 25 per cent early in April and other industries followed suit. A suicide rate averaging 500 per month for Japan proper was attributed primarily to unemployment (see UNEMPLOYMENT).

Japan's first legislative enactment limiting hours of labor went into effect Sept. 1, 1930. The law in question provided for a 10-hour mining day. On Nov. 12, 1930, the government announced its intention of raising an internal loan of between \$15,000,000 and \$25,000,000 for the relief of unemployment through public works construction.

OTHER EVENTS. An unsuccessful but significant step in the direction of woman suffrage was the passage by the lower chamber of the Diet of a bill extending the suffrage to women in village, town, and city elections. As was anticipated, the bill failed to emerge from committee in the House of Peers. A typhoon, which lashed Southern Japan and Korea on July 18, and a severe earthquake, which rocked the Izu peninsula of Central Japan on November 26, took a large toll of human lives and property. The typhoon was reported to have cost more than 125 lives and \$50,000,000 in property damage, while incomplete reports from the earthquake zone placed the deaths at 285, the injured at 143, and the number of houses razed or damaged at 5000. Completion of the reconstruction of Tokyo at a cost of \$369,500,000 following the disastrous earthquake of Sept. 1, 1923, was celebrated March 24, 25, and 26.

For the revolt of aborigines in Formosa, see FORMOSA. See also KOREA; KARAFUTO; CAROLINE ISLANDS; EARTHQUAKES; and BRAZIL under *Area and Population*.

Interesting discussions of Japan's current problems appearing during the year included: John E. Orchard, *Japan's Economic Position* (New York, 1930); Shiroshi Nasu, "Agriculture and the Japanese National Economy" in *Foreign Affairs* for July, 1930; Harold S. Quigley, "The Japan of To-day" in *Current History* for August, 1930.

JAPANESE BEETLE. See ENTOMOLOGY, ECONOMIC.

JAVA. See DUTCH EAST INDIES.

JEBEL DRUZE. See SYRIA.

JEBEL SHAMMAR. See ARABIA.

JEFFERSON, THOMAS, CELEBRATION OF THE BIRTH OF. See CELEBRATIONS.

JERSEY CITY. See CELEBRATIONS.

JESUIT ACTIVITIES. See ROMAN CATHOLIC CHURCH.

JEWETT, HENRY. An American actor, died in West Newton, Mass., June 24, 1930. He was born in Australia in 1862 and made his first appearance on the stage in Wellington, New Zealand, in 1880. Returning to Australia in 1882, he was for the next eight years leading man in several stock companies. In 1892 he went to the United States, appearing in San Francisco in *My Uncle's Will*. The following year he was leading man for Julia Marlowe, playing in her repertoire. During 1894-97 he was a member of Richard Mansfield's company and later supported Fanny Davenport and Viola Allen, appeared in *Arms and the Man*; *Diplomacy*; *Benedict Arnold*; *Julius Caesar*; *Othello*; *Joan of Arc*; and *The Christian*. In 1908 he organized the Henry Jewett Shakespearean Players in Boston, and also opened the Copley Theatre which he managed for eight years. He then became director of the Repertory Theatre of Boston, with which his own interests had been merged, holding this position until his death.

JEWS. According to Dr. H. S. Linfield, writing in the *American Jewish Year Book* for 1930-31, there were approximately 15,050,000 Jews, of whom 7,114,000 were residing in Central Europe. Over 4,380,000 Jews were living in North America; 300,000 were residents of Palestine and the surrounding countries of the Near East (Arabia, Iraq, and Syria); while 400,000 were living in the Arab-speaking countries of North Africa. Of the total estimated number of 15,043,788 Jews in the world, 9,290,017 were inhabitants of Europe, 542,009 lived in Africa, 568,585 in Asia, 24,783 in Australasia and 4,617,794 in America. The following constituted the proportions by continents: Europe, 62 per cent; America, 30.7 per cent; Asia, 3.78 per cent; Africa, 3.61 per cent; Australasia, 0.1 per cent. In the accompanying table, Dr. Linfield has compiled his figures for the more important countries of the world.

During the year ending June 30, 1929, a total of 12,479 Jews entered the United States and 189 departed in the same period. During the same fiscal period, 153 Jews were deported. The following were the countries from which the 12,479 Jewish immigrants came during the fiscal year 1928-29: Poland, 5906; other central European countries, 2656; from American countries, 2059; from Northern and Western Europe, 1001; Palestine, 550; from Balkan countries, 106. During the year ended Mar. 31, 1929, 3848 Jews entered Canada; during 1928, 4055 Jews entered Brazil; and during the same calendar year 6812 Jews entered Argentina. During the calendar year 1929, 5249 Jews entered and 1746 Jews departed from Palestine. During the same year, 1317 non-Jews entered that country and 1809 departed. From the date of the British occupation of Palestine (Dec. 9, 1917) to the end of 1929, a total of 104,000 Jews had entered that country as against an emigration from the country of about 30,000.

PALESTINIAN RIOTS. In March, Great Britain published the results of an inquiry made by Sir Walter Shaw bearing on the reasons for the killing of 133 Jews and 116 Arabs in the 1929 summer's riots in Palestine. The Shaw commission's report characterized the outbreak "as an attack by Arabs on Jews, for which no excuse in the form

WORLD DISTRIBUTION OF JEWS

| <i>Name of Country</i> | <i>Number of Jews</i> | <i>Name of Country</i> | <i>Number of Jews</i> |
|------------------------------|-----------------------|---|-----------------------|
| Abyssinia | 50,000 | Libya | 48,000 |
| Adnen and Perim | 3,747 | Lithuania | 155,125 |
| Afghanistan | 5,000 | Luxemburg | 1,771 |
| Alaska | 500 | Malta | 85 |
| Algeria | 100,000 | Mexico | 16,000 |
| Arabia | 25,000 | Morocco (French) | 117,512 |
| Argentina | 200,000 | Morocco (Spanish) | 15,000 |
| Australia | 21,615 | Netherlands | 150,000 |
| Austria | 250,000 | New Zealand | 2,591 |
| Azerbaijan | 24,676* | Norway | 1,457 |
| Belgium | 44,000 | Palestine | 161,270* |
| Brazil | 80,000* | Panama | 25* |
| British Empire | 720,540 | Panama Canal Zone | 750 |
| British Malaya | 703 | Paraguay | 400 |
| Bulgaria | 43,209 | Persia | 40,000 |
| Canada | 126,196 | Peru | 300* |
| Chile | 2,000 | Philippine Islands | 500 |
| China | 12,000 | Poland | 2,845,000 |
| Congo (Belgian) | 177 | Porto Rico | 200 |
| Crimea | 45,926 | Portugal | 1,000 |
| Cuba | 8,200 | Portuguese East Africa (Mozambique) | 100 |
| Curaçao | 565 | Rhodesia (Northern) | 110 |
| Cyprus | 195 | Rhodesia (Southern) | 1,289 |
| Czecho-Slovakia | 354,342 | Rumania | 900,000 |
| Danzig | 9,289 | Russia (R. S. F. S. R.) | 539,272 |
| Denmark | 5,947 | Russia (R. S. F. S. R.) in Europe | 2,672,398 |
| Dominican Republic | 55 | Russia (U. S. S. R.) | 2,820,429 |
| Egypt | 63,550 | Russia (U. S. S. R.) in Asia | 49,571 |
| Estonia | 4,566 | Saar Region | 4,554 |
| Finland | 1,715 | Siberia | 44,725 |
| France | 220,000 | S. W. Africa | 200 |
| France and Possessions | 551,000 | Spain | 4,000 |
| Georgia | 23,433* | Surinam (Dutch Guiana) | 756 |
| Germany | 564,379 | Syria and Lebanon | 85,000 |
| Gibraltar | 1,123 | Sweden | 8,469 |
| Great Britain | 300,000 | Switzerland | 20,979 |
| Greece | 125,000 | Tanganyika (German East Africa) | 10* |
| Guiana (British) | 1,788* | Tangier Zone | 15,000* |
| Hawaii | 77 | Trans-Caucasian Rep. | 62,194 |
| Hong Kong | 150 | Tunisia | 65,000 |
| Hungary | 476,860 | Turkey in Asia | 26,280 |
| India | 21,778 | Turkey in Europe | 55,592 |
| Indo-China (French) | 1,000 | Ukraine | 1,574,428 |
| Iraq | 87,488 | Union of South Africa | 71,816 |
| Irish Free State | 3,686 | United States (Contin'l) | 4,228,029 |
| Italy | 50,000 | United States and Possessions | 4,229,401 |
| Jamaica | 1,250 | Uruguay | 150 |
| Japan | 1,000 | Uzbek and Turcoman Republics | 87,834 |
| Jugoslavia | 72,946 | Venezuela | 411 |
| Kenya | 100 | Virgin Islands | 70 |
| Latvia | 2,120 | White Russia | 407,059 |
| Kirghizia | 95,675 | | |

* Based on latest official census.

of earlier murders by Jews had been established." The commission found that the fundamental cause for the outbreak was the Arab feeling of animosity and hostility toward the Jews as rising out of disappointment in their political and national aspirations and fear for their economic future. According to the commission, the Arabs were disturbed lest continued Jewish immigration and land purchase by Jews would deprive them of their economic well-being and would in time force them under Jewish political domination. The Shaw commission called upon the British government to define with "unequivocal clearness" its interpretation of its duties to Jews and Arabs under the Palestine mandate. Elsewhere in this article there is discussed the Passfield White Paper which in October sought to state again the British position with regard to the mandate. The Shaw report was accepted as a vindication of the Arab position by Arab spokesmen and was received with mixed feelings by Zionists. Dr. Chaim Weizmann characterized the report as "unsympathetic" and "a severe disappointment." Colonel Josiah Wedgwood, a member of Parliament and a friend of the Zionist cause, predicted that the Shaw report would create exasperation and annoyance with England among Jewish communities all over the world.

DISCRIMINATION. It was generally being recog-

nized that anti-Jewish prejudice was on the increase in the United States in the year 1930. Commentators were pointing out that Jews were finding it increasingly difficult to obtain employment, particularly in large corporations, and that Jewish white collar workers were finding themselves in the unfortunate rôle of an industrial reserve; that is to say, that it was being charged that Jews were not being employed for clerical and professional positions when other applicants, particularly non-Jewish ones, were available. In addition, charges were being broadcast that social and academic prejudice was on the increase. For instance, Dr. Frank Gavin, a professor in the General Theological Seminary, declared that it was three times as hard for Jewish boys to enter certain medical colleges as for other boys. He pointed out that in 1929 some 600 Jewish boys who were denied admission to American medical schools made application at Edinburgh, Scotland, and of these only 30 were allowed to matriculate. Of Americans studying medicine in Europe, a disproportionate number was made up of Jewish boys who were unable to obtain admission to American colleges. According to Dr. Gavin, discrimination of this kind made for the development of all those things against which religion was doing battle: embitterment of life, construction of personality,

frustration of vocation, cramping, and paralysis of capacity, incentive, and creative powers. Attention should be called to the activities of the National Conference of Jews and Christians which by round-table discussions and propaganda was seeking to dispel the growing race prejudice. This National Conference, for the twelve months ending August, 1930, succeeded in holding 200 meetings, 80 of which were at colleges and schools. In these conferences it was estimated that 2000 persons participated. In October, 1930, the Conference set up a research committee for the purpose of stimulating study into the causes and character of race discrimination among graduate students and in college seminars.

It is interesting to record the point of view of a non-conformist with regard to race discrimination. Michael Gold, editor of the *New Masses* and the author of *Jews without Money*, declared that race discrimination was part of the larger question of economic discrimination. According to Gold the grouping was fundamentally an economic one—discrimination by employer against employer, by the rich against the poor, indulged in equally by Jews and Christians. Said Gold: "There is no solidarity among the Jews. Half the Jewish firms in town discriminate against their own people. It is the rich Jews against the poor Jews, never the rich Jews helping the poor." Gold attributed the growing discrimination to the social climbers among the Jews who, because they have attained some measure of well being, insist upon claiming that social recognition which is part and parcel of the American scene. Gold believed that fully 2000 Jews through change of name and renunciation of their Jewish heritage were "passing" and were being lost among the larger Gentile majority. Gold believed that intermarriage and assimilation were on the increase.

IN OTHER COUNTRIES. The *Quebec* school question, which had been a topic of lively discussion in the Canadian Jewish community for a number of years, was settled in an amicable fashion. In *Australia*, beginning March, 1930, a complete ban on European immigration, excepting only wives and children of residents, was ordered. In *Germany* the anti-Semitism of previous years continued in full force. Discrimination against Jews was encouraged by Alfred Hugenberg, leader of the Nationalist Party, and Adolph Hitler, leader of the National Socialists. In the campaign preceding the municipal elections in Berlin the platform of the National Socialists included pledges to exclude Jews from employment in newspapers, theatres, motion pictures and other artistic enterprises and the withholding of housing facilities from Jews. Acts of personal violence were not infrequent.

The history of the Jews in *Austria* was largely the same. The *American Jewish Year Book* reported that the "catastrophic economic conditions which exist in Austria no doubt have much to do with the fact that anti-Jewish propaganda is the outstanding characteristic of the life of the Jews in that country. Political strife between extreme reactionaries on one hand and extreme radicals on the other is another factor which leads to attacks on Jews—each of the two conflicting groups accusing the Jews of being partisans of the other, whereas as a matter of fact the bulk of the Jewish population maintains sides with neither of the extreme parties." The sympathies of the Jews were said to be mainly with the moderate liberals.

The record was largely the same in the case of *Hungary*. While the government frowned upon manifestation of Jew-baiting in the universities, no real efforts were being made to interfere with the silent but effective boycott which had depopulated many villages and small towns of their Jewish residents. The hopes of Jews in *Rumania* that the ascendancy of the National Peasant Party headed by Dr. Maniu would bring better times for them were destined to prove baseless during the year. The *American Jewish Year Book* reported the continuance of outbreaks in the universities and of economic discrimination aimed against Jews in villages and small towns. Jewish leaders in Rumania complained against the government on a variety of grounds. They charged that it had failed to keep its promise to establish a Jewish teachers' seminary and to reopen Jewish schools that were established by previous cabinets; that the Ministry of Education had reduced the number of hours devoted to Hebrew or Yiddish in Jewish schools; that the Jews were being discriminated against in civil service employment; that Jewish officials were being dismissed in Bukovina and Transylvania; that the government was delaying the settlement of the political status of thousands of Jews who were not yet citizens of Rumania.

In *Poland* there apparently was a diminishing of anti-Jewish propaganda and discrimination. However, the economic life of the Jewish people was as serious as ever and it was necessary for the American Jewish Joint Distribution Committee to continue its work of succor in order to permit Polish Jews to survive economically. Much of the economic distress was due to the fact that the Polish government was extending its activities into fields formerly operated by private entrepreneurs. This was especially true of such industries as tobacco, alcohol, lumber and salt mining. The Polish government, too, was refusing to give Jews employment in public utilities. According to a correspondent in a New York Jewish daily paper of the total of 20,000 persons employed by the City of Warsaw only 50 were Jews. A number of anti-Jewish demonstrations took place at some of the prominent Polish universities, particularly Cracow and Warsaw Universities. The question of providing Jewish medical students with cadavers was a topic of lively discussion in the Jewish communities of the country.

Along with the adherents of other religions, the Jews of *Russia* were being made to suffer as a result of the intensive campaign of atheism which was going on hand in hand in this country with the five-year plan of industrialization. As in former years the anti-religious campaign took a variety of forms among which were the confiscation of synagogues, the conversion of cemeteries into public grounds; the punishment of teachers of religion; attempts to interfere with the celebration of holidays; discouragement of ritual practices, and the degradation of ministers of religion and other functionaries. Statistics published in December, 1929, showed that a total of 646 synagogues had been seized since the revolution. The most notorious case of persecution of religious functionaries was the arrest in February, 1930, of 14 leaders of the Minsk Jewish community including several rabbis. Eleven of the 14 persons were soon released not, however, before the whole Jewish community of the western world, hearing tales of the threatened execution of the arrested persons, was aroused and issued appeals

and memorialized the Soviet government to exercise moderation. After their release the rabbis signed a statement in which they denied that there was any religious persecution in Russia and in which they also expressed indignation at Jewish leaders abroad and at the Pope for their attacks upon the Soviet government's attitude toward religion.

The work of settling Jews on the land made considerable progress during the year. In February, Dr. Joseph Rosen, Director of the Agro-Joint, announced that in 1930 a total of 15,000,000 rubles was to be devoted by the Government to this work in addition to 4,000,000 rubles which was to be contributed by foreign organizations. The programme on which this money was to be spent, included the placing of over 30,000 persons in industry or under training to work in factories. Apparently the Bira Bidjan project in the Far East which was the favored scheme of the Ozet in Russia and of the Icor in America, appeared to have all but failed. In January the Far Eastern Council of the Communist Party openly charged that the Bira Bidjan colonization scheme had thus far been a failure owing to a mismanagement of the Ozet's representatives; and the society admitted that only 2500 hectares were being tilled and that only 400 families were actually permanently settled on the land.

In June the governments of *White Russia* and the *Ukraine* took a real step to ameliorate the condition of the declassed Jewish artisans. An order was issued declaring that all these artisans were eligible for employment in factories and were to be granted the same right of factory workers provided they worked in coöperatives of not less than 30 members and produced goods suitable for export. These artisans were to be relieved of special taxes and exempted from arrests and the confiscation of their goods. According to the Jewish Telegraphic Agency this decree meant that thousands of Jews that had heretofore been without political or economic rights were henceforth to be on a level with factory workers and members of labor unions. In other words they were to have the right to vote and the rights to the same ration and housing facilities as these other classes.

ZIONISM. The cause of Zionism was rendered a serious blow when the British Labor government, on October 20, issued the Sir John Hope Simpson report together with a White Paper setting forth the Government's future policy in the administration of its mandate of Palestine. The White Paper was the work of Lord Passfield (Sidney Webb), Secretary for the Colonies, and, in effect, denied that the mandate committed the British government to recognizing the claims of political Zionism. The White Paper attacked the too rapid transfer of land from Arab into Jewish hands, placed a ban on Jewish immigration until economic conditions warranted a more liberal policy, and proposed the creation of a legislative council to act as the administrative and law-making body for the country. The White Paper devoted particular attention to the condition of the Arabs on the land and declared:

The condition of the Arab peasant leaves much to be desired and a policy of land development is needed if the improvement of his condition of life is to be effected. The sole agencies which have pursued a consistent policy have been the Jewish colonization societies, private and public. The Jewish settlers had every advantage that capital, science and organization could give them. To these and the energy of the settlers themselves their

remarkable progress is due. On the other hand, the Arab population while lacking the advantages enjoyed by the Jewish settlers has been by an excess of births over deaths increasing rapidly, while the land available for their sustenance has decreased by about 250,000 acres. This area has passed into Jewish hands. . . . It can now be definitely stated that at the present time and with the present methods of Arab cultivation there remains no margin of land available for agricultural development by new immigrants, with the exception of such undeveloped land as the various Jewish organizations hold in reserve.

The new British policy, in other words, indicated the belief of the Labor government that too much haste had characterized the building of the Jewish homeland. While it was generally charged by Zionists and the defenders of the Jewish settlement of Palestine that the British White Paper was a repudiation of the Balfour Declaration of 1917 in view of the fact that the Balfour pledge was committed to the "establishment in Palestine of a national home for the Jewish people," the British government was able to point out that in 1922 it had clearly indicated that its definition of a national home could not prejudice the rights of the Arabs. In 1922 the British government had declared *inter alia*: (1) That it did not aim to make Palestine as "Jewish as England is English." (2) That it was not its intention "that Palestine as a whole should be converted into a Jewish national home, but that such a home should be established in Palestine." (3) That immigration should be subject to the country's economic ability to absorb new settlers.

The White Paper proposed that the legislative council consist of 22 members, of whom 10 were to be official persons and 12 unofficial, the latter to be elected by the Palestinian population. On the point of Arab-Jew hostility the White Paper had this to say:

It is only the closest coöperation between the government and the leaders of the Arab and Jewish communities that can prevent Palestine from drifting into a situation that would imperil on the one hand the devoted work of those who have sought to build up a Jewish national home, and on the other the interests of a majority of the population who at present possess few resources of their own with which to sustain the struggle for existence.

The Simpson report devoted itself to an examination of the economic programmes that Jewish groups had adopted for the development of the country. Sir John Hope Simpson declared that the terms of the mandate compelled Great Britain to see that the position of the Arabs was not being prejudiced by Jewish immigration, but that also it was Britain's duty to encourage the close settlement of the Jews on the land. To further these ends an intensive programme of agricultural works was necessary. The Simpson report praised the progress of small industries in the country but warned against the inauguration of large industrial planning. The Simpson report also attacked the boycott against the employment of Arab workmen by the Jews.

In conclusion Sir John Hope Simpson indicated his belief that the only way the terms of the mandate could be successfully carried out was by the intensive development of rural Palestine. He said:

It is my personal belief, founded on the inquiries which I have made and on my inspections that with thorough development of the country there will be room not only for all the present agricultural population on a higher standard of life than it at present enjoys but for not less than 20,000 families of settlers from the outside.

Lord Passfield's action was immediately assailed by outstanding Jewish groups the world

over. As a mark of protest Dr. Chaim Weizmann, President of the Jewish Agency for Palestine and of the Zionist World Organization, immediately resigned both offices. Dr. Weizmann indicated, however, that he would continue at the head of the Zionist World Organization until the meeting of the next convention in February, 1931. The American Jewish Congress, meeting in Washington at the time the British White Paper was issued, adopted a resolution declaring that the new Palestine policy was a repudiation of the Balfour declaration and of the terms of the British mandate of Palestine. Said Dr. Weizmann, in explaining the reasons for his resignation:

The promise of the Balfour Declaration and of the mandate was to the Jewish people in its diaspora and rested the claims of the people upon the historic connection of Palestine. It acknowledged their right to reconstruct a national home in Palestine. The pledge was given to the whole Jewish people who were to take their place in Palestine "by right and not on sufferance," to use the words of the White Paper of 1922. All this by implication disappears from the government's new statement of policy.

Following the action of Dr. Weizmann, Felix M. Warburg, chairman of the administrative committee of the Jewish Agency for Palestine, and Lord Melchett (q.v.), chairman of the council and of the political committee of the same body, also quitted their posts. Mr. Warburg characterized the White Paper "as a cruel betrayal of trusteeship" in Palestine, while Lord Melchett called that document "an unparalleled act of treachery."

Jewish hostility to the Passfield White Paper found unexpected support in the unequivocal statements of British political leaders. Thus, three outstanding representatives of the British Conservative party came to the defense of the Zionists. Stanley Baldwin, Sir Austen Chamberlain, and Leopold S. Amery attacked the MacDonald government for what they designated an abandonment of the terms of the mandate. The signatories of this statement paid high tribute to the work of Dr. Weizmann who, they declared, had for twelve years been identified with a policy of cooperation with the British government. Gen. Jan Christiaan Smuts too sided with the Zionists. He telegraphed to the MacDonald government reminding them that the Balfour Declaration of 1917 was an international pronouncement approved beforehand by the Allied and Associated powers, and declared that the repudiation of this pledge could not become operative without the consent of all those nations who had agreed to it. David Lloyd-George, leader of the British Liberal party, took his place beside Ex-Premier Baldwin and other Conservatives in their attacks on the Labor government. He, too, declared that the Balfour Declaration had been issued only after consultation with the Allied and Associated powers and he spoke concerning the reasons for its issuance as follows:

At a most critical moment in the war we were anxious to secure the good will of the Jewish community throughout the world and on the side of the Allies. The Balfour Declaration about Palestine was a gesture not merely on our part but on the part of the Allies to secure that valuable support. It was prepared after much consideration, not merely of its policy but of its actual wording by the representatives of all the Allied and Associated countries, including America and our Dominion premiers.

Jewish protests advocated the adoption of the following programme: an appeal to the League

of Nations to compel Great Britain to observe the terms of the mandate; Jewish noncooperation in the creation of the legislative council; and renewed pressure on the MacDonald government by private agencies and, if possible, public authority. Along these lines American Jews indicated that they would place their complaints against the British government before President Hoover. On the other hand, Palestinian Arabs expressed themselves as being favorably disposed toward the proposed legislative council.

In the middle of November, attacks against the Labor government were resumed. Lloyd George on November 17 characterized the issuance of the Passfield White Paper "as a truly amazing performance." Lloyd George charged that nobody interested or concerned had really been consulted in its formulation. Neither the League of Nations nor its Mandates Commission nor Mr. Stanley Baldwin, leader of the Opposition, was consulted. Lloyd George insisted that the Passfield Paper was a direct repudiation of the Balfour pledge, which gave the promise that if Palestine were conquered a national home for Jewish people would be established. The Labor government was justified by the Under Secretary for Colonies and by Prime Minister MacDonald himself. Dr. Drummond Shiels declared that the Labor government in its White Paper had only intended to elaborate and follow the interpretation issued by Winston Churchill in 1922. He declared that it intended to stand by the mandate and continued to hold a balance between conflicting interests. The White Paper in fact was—

Merely a fusion of the document of 1922, the Shaw report, and the John Hope Simpson report, and was put forward only as a basis for discussion with both sides. Meanwhile I will remove other misunderstandings. The Government will guarantee and for the first few years pay the interest in sinking fund charges of a loan of £12,500,000 for the development of works in Palestine and to provide land for 10,000 families. Landless Arabs will have their claim, and the land will then be open to both sides.

Mr. MacDonald, in defending the policy of his administration, gave assurance that Palestine would continue to remain a national home for Jews; that the mandate would be scrupulously carried out; that no change in policy was being contemplated; and that any doubts to the contrary were due to a misunderstanding. Premier MacDonald stressed the point that a Jewish national home could best be promoted by economic cooperation with the Arabs. In discussing reactions to the Passfield Paper he made the following statement:

The Jewish people and the Zionists may be disappointed. They were disappointed in 1922 but if they were disappointed it was because conditions rendered necessary a pull-up in the rapidity of development. If those admirable men like Dr. Chaim Weizmann who have given their whole lives and hearts are disappointed the circumstances are such that a pull-up is necessary. Will they take our word for it that the pull-up is in no sense an abandonment in the mandate or a change in the policy that has been pursued in order to carry out the mandate?

It was apparent that British sentiment was prepared in large degree to back up the stand of the MacDonald government. Thus, the *London Times*, which was in no sense an administration organ, commented on the November debates in the following fashion:

The extreme claims of political Zionists are inadmissible. They involve the establishment with the aid of the British administration, ultimately backed by British

troops, of Jewish ascendancy over the Arabs in Palestine, in obvious violation of the Mandate.

But the moderate Zionists, who loudly regret the setback to the policy of intensive colonization, will do well to remember, first, as Sir Herbert Samuel wisely said, that an Arab gain is not a Jewish loss, and secondly, that a Jewish national home requires a solid foundation of good-will to be secure.

The policy of the MacDonald government clearly aims at securing that good-will. It is a pity it was stated with so little precision in the first instance.

See PALESTINE and GERMANY under *History*.

JHERING, yä'ring, HERMANN VON. A German naturalist in Brazil, died in Budingen, province of Oberhessen, Germany, Feb. 24, 1930. The son of the German jurist, Rudolf von Jhering, he was born in Kiel, Oct. 9, 1850, and was educated at Giessen, Leipzig, Berlin, and Göttingen. He was *privatdozent* at Erlangen and Leipzig until 1880, in which year he went to Brazil to become naturalist of the Museu Nacional in Rio de Janeiro. From 1893 to 1916, he was director of the Museu Paulista in São Paulo and, after his return from South America, he was honorary professor of the University of Giessen. His special interest was zoögeography, the problems in relation to which he solved by experimental work with land and freshwater mollusca and with the social insects, the wasp in particular. He was noted for his contributions to South American biology and palæontology, though he wrote also on the Antarctic faunas and the German Selachii. He also grouped the Neomenia, Chetodermia, etc., under the new name *Amphineura* (1876), but erroneously assigned them to a division of worms. From 1895 to 1911, he edited the *Revista do Museu Paulista*. His published works include *Anatomie des Nervensystems und Phylogenie der Mollusken* (1877); *Anthropology of the State of São Paulo* (2d ed., 1906); *Les mollusques fossiles du Tertiaire et du Crétacé de l'Argentine* (in *Anales del Museo de Buenos Aires*, 1907); *Archhelenis und Archinotis* (1907); and *Die Geschichte des Atlantischen Ozeans* (1926). In this, his last general work, he summarized his former conclusions and suggested fundamental changes in both Atlantic and Pacific geography up to the middle of the Kainozoic era.

JOHNS HOPKINS UNIVERSITY, THE. A nonsectarian institution of higher education for men (women are admitted to certain courses) in Baltimore, Md.; founded in 1876. The enrollment for the autumn of 1930 was 5975, distributed as follows: School of higher studies of the faculty of Philosophy, 484; school of higher studies in education, 118; school of medicine, 278; school of hygiene and public health, 167; school of engineering, 363; school of business economics, 90; college of arts and sciences, 371; college for teachers, 1330; night courses for technical workers, 677; and evening courses in business economics, 956. The registration for the 1930 summer session was 1141. The faculty numbered 665. The productive funds amounted to \$26,826,975, and the income from all sources for 1929-30 was \$2,639,211.

Important gifts to the university during 1929-30 included: \$40,000 from the Rockefeller Foundation for research and graduate work in chemistry; \$100,000 from Mrs. Anne Archbold to endow the John D. Archbold fellowship in medicine; \$55,000 from the Chemical Foundation for the John J. Abel Fund for research on the common cold; \$500,000 from the General Education Board as an additional grant for the completion of the Osler and Halsted clinics; \$100,000 from Edward S. Harkness for the endowment fund for physiolog-

ical optics and \$30,000 from the same donor for the Harkness fellowship in ophthalmology; and \$200,000 from an anonymous donor and \$100,000 from Edwin G. Baetjer for the establishment of the Institute of Law. The university also received from the Rockefeller Foundation a pledge of \$500,000 towards the endowment of the departments of the biological sciences on the condition that it designate an equal amount and an appropriation of \$100,000 as a fluid research fund in the humanities to extend over five years.

The Walter Hines Page School of International Relations was inaugurated in February, 1930, John Van Antwerp MacMurray, former Minister to China, acting as director. Other members of the faculty of this school included John Holladay Latané, for some years professor of history in the university; Frederick S. Dunn; Col. S. C. Vestal; and Gilbert Chinard. See INTERNATIONALISM. In the school of medicine Dr. Alan M. Chesney succeeded Dr. Lewis H. Weed as dean on the latter's appointment as director of the school. The visiting professors were: Charles W. Metz of the Carnegie Institution of Washington (zoölogy); Henry Suzzalo, president of the Carnegie Foundation for the Advancement of Teaching (education); Isaac L. Kandel of Columbia University (education); E. Bompiani of the University of Rome (mathematics); Wilhelm Blaschke of the University of Hamburg (mathematics); and Carl W. Kockel of the University of Leipzig (geology). The main library contained 376,775 volumes. President, Joseph Sweetman Ames, Ph.D. See INTERNATIONALISM.

JOHORE. See NON-FEDERATED MALAY STATES.

JONES, MARY HARRIS ("MOTHER"). An American labor leader, died in Silver Springs, Md., Nov. 30, 1930. She was born in Cork, Ireland, in 1830, and migrated to Toronto, Canada, with her father in 1837. After teaching in Memphis, Tenn., she was married to an iron molder, but in 1867 lost her husband and four children in a yellow fever epidemic. On going to Chicago she became an active leader in the betterment of conditions among the laboring classes. She played a prominent part in the anthracite coal strike of 1900, and later became one of the principal organizers of the United Mine Workers of America. She was also an ardent crusader against child labor in the South.

JOSIAH MACY JUNIOR FOUNDATION. See UNIVERSITIES AND COLLEGES.

JUDITH, EMPRESS OF ETHIOPIA. See ZAUDITU (JUDITH).

JUGOSLAVIA. The official name attached by royal decree on Oct. 3, 1929, to the Balkan state formerly known as the kingdom of the Serbs, Croats, and Slovenes. Established Dec. 29, 1918, Yugoslavia comprised the formerly independent kingdoms of Serbia and Montenegro; Bosnia and Herzegovina; Croatia and Slavonia, former autonomous provinces of Austria-Hungary; portions of the Banat, Backa and Baranja, integral parts of Hungary proper; Dalmatia, a former province of the Austrian Empire; and Slovenia, composed of portions of former Austrian provinces. Capital, Belgrade; reigning King in 1930, Alexander I.

AREA AND POPULATION. According to the census of Jan. 31, 1921, the area of Yugoslavia was 96,134 square miles and the population 12,017,323, representing a density of 125 to the square mile. The estimated population on Feb. 1, 1930, was 13,600,000. It was distributed according to

the new administrative structure adopted in October, 1929, roughly as follows:

JUGOSLAV PROVINCES: AREA AND POPULATION

| Province | Capital | Area in square miles | Population |
|----------------|-----------------|----------------------------|------------|
| Drava | Ljubljana | 6,151 | 1,040,000 |
| Sava | Zagreb | 14,242 | 2,320,000 |
| Vrbas | Banjaluka | 7,935 | 850,000 |
| Littoral | Split | 7,495 | 800,000 |
| Drina | Sarajevo | 11,299 | 1,400,000 |
| Zeta | Cetinje | 12,476 | 740,000 |
| Danube | Novi Sad | 10,870 | 2,100,000 |
| Morava | Nish | 9,928 | 1,200,000 |
| Vardar | Skoplje | 15,272 | 1,405,000 |

Belgrade formed a special administrative unit.

Serbian and Croatian are the principal languages spoken, the minor linguistic groups comprising Slovenes, Germans, Rumanians, Hungarians, and Albanians. The principal cities, with their census populations, were: Belgrade, 225,000 (1929); Zagreb, 150,000 (1928); Soubotitz, 104,000 (1928); Skoplje, 72,000 (1927); Sarajevo, 64,500 (1925); Ljubljana, 57,000 (1928); Novi Sad, 51,000 (1929).

PRODUCTION. Agriculture engages about 85 per cent of the population; lumbering and cattle raising are the other chief occupations. Rich resources in minerals, timber, and water power remain to be exploited. Cereals constitute the principal crops. In 1928 there were approximately 15,796,000 acres of arable land, or 26 per cent of the total area; 1,396,000 acres of orchards, shrubs, and bushes; 10,777,000 acres of permanent pasture; and 18,745,000 acres of forests.

The harvest for 1929 showed great improvement over the two previous poor crop years, although profits were affected by lower world prices for agricultural products. Production of the leading crops, in metric tons, for 1929, with comparative figures for 1928 in parentheses, was: Corn, 2,870,000 (1,819,000); wheat, 2,585,000 (2,811,200); oats, 350,770 (366,300); barley, 314,590 (394,200); rye, 210,070 (191,200). The total area devoted to cereals in 1929 was 5,726,495 hectares, as compared with 5,307,390 hectares in 1928 (hectare equals 2.47 acres). The prune crop was estimated at 300,000 metric tons (460,260 in 1928); opium, 35,000 kilograms (200,000 kilograms in 1928).

Industrial progress was generally more satisfactory than in 1928, although the low purchasing power of the population resulting from low agricultural prices restricted the progress of industries manufacturing for home consumption. Lumber exports increased in value, and textile, cement, and paper factories continued to expand their output, due largely to tariff protection. Conditions in the leather, flour milling, metal, and electro-technical industries were less satisfactory. Other industries are sugar refining, pottery, iron working, carpet weaving, and brewing.

Production of practically all minerals increased in 1929, the output in metric tons, with comparative figures for 1928, being distributed as follows: Coal, 5,964,500 (5,051,800); iron ore, 450,800 (439,480); copper ore, 356,560 (327,800); bauxite, 93,000 (49,260); pyrites, 61,660 (64,270). There are large coal deposits of low caloric value. The estimated hydraulic power resources total 3,500,000 horse power, of which 212,000 horse power were developed in 1930.

COMMERCE. An increase of 23 per cent in the value of exports in 1929 and a decrease of 3 per

cent in imports resulted in a favorable balance of trade for the first time in three years. Exports were valued at 7,921,700,000 dinars (\$134,900,000), as against 6,444,700,000 dinars (\$113,400,000) in 1928, while imports totaled 7,594,800,000 dinars (\$133,700,000), as against 7,835,300,000 (\$137,900,000) in 1928, leaving a favorable balance of 326,900,000 dinars, as compared with an adverse balance of 1,390,600,000 dinars in 1928.

The increased exports were due to the larger harvest, increased mineral output, and a strong foreign demand for construction wood. While imports declined in value, the volume was larger than in the previous year. Construction wood was the leading article of export in 1929, with wheat, eggs, crude copper, hogs, cattle, and corn ranking in order. The chief imports were cotton, iron and iron articles, wool, machinery, food products, skins and hides, and coal.

Exports went chiefly to Italy (24.9 per cent of the total), Austria, 15.6 per cent; Rumania, 12.9 per cent; Germany, 8.5 per cent; Greece, 7.4 per cent; Hungary, 6.8 per cent, and Czechoslovakia, 5.4 per cent. Principal sources of imports were Czechoslovakia, 17.5 per cent; Austria, 17.4 per cent; Germany, 15.6 per cent; Italy, 10.8 per cent; Hungary, 6.5; Great Britain, 5.6; and the United States, 4.74. Imports from the United States decreased from \$6,784,000 in 1928 to \$6,341,000, while exports to that country increased from \$1,048,000 in 1928 to \$2,213,000 in 1929.

FINANCE. The budget for the fiscal year ended Mar. 31, 1930, anticipated receipts of 12,158,721,100 dinars and expenditures of 12,158,672,000 dinars. The respective figures for 1928-29 were 11,555,794,000 dinars and 11,952,794,000 dinars. Government revenues continued to show a slight surplus over expenditures during 1929 and dinar exchange remained steady despite the continued postponement of legal stabilization. The budget for 1930-31 again showed an increase, balancing at 13,348,000,000 dinars (about \$235,000,000). The public debt on July 1, 1929, stood at 32,085,282,000 dinars (\$564,701,000), as compared with 31,119,196,000 dinars (\$547,698,000) a year earlier. The dinar equaled \$0.193 at par.

COMMUNICATIONS. Yugoslavia in 1929 had 6280 miles of railway line, of which 5562 miles were operated by the government. Of the total length, 4225 miles were standard gauge and 2051 miles of narrow gauge. During 1930 Yugoslavia obtained from Germany and Hungary, on reparation accounts, 110 standard-gauge and four narrow-gauge locomotives; 1100 standard-gauge gondola cars and 600 standard-gauge box cars, and 1730 freight cars of various types for narrow-gauge lines. State and provincial highways in 1930 had an aggregate length of 24,855 miles (6214 miles being state roads), of which about 50 per cent were passable for motor traffic. The highway programme for 1930 called for the construction or improvement of 482 miles of highway at a cost of about \$13,000,000. Air lines extend from Belgrade to Zagreb and to Skoplje.

Waterways and canals extend 1242 miles. Entrances and clearances at the ports in 1929 totaled 183,916 vessels of 29,907,000 registered tons, as against 170,009 ships of 28,800,000 tons in 1928. In 1928, the merchant fleet consisted of 153 steamers of 242,000 gross tons, 14 motor ships of 366 net tons, 709 sailing vessels of 7313 tons, and 5449 fishing vessels of 10,219 tons.

GOVERNMENT. Under the Constitution adopted

June 28, 1921, executive power was vested in the King and a Cabinet responsible to a single legislative chamber, called Narodna Skupshtina (National Assembly). By an executive decree issued Jan. 6, 1929, the King abolished the Constitution, dissolved the Skupshtina, and assumed all executive powers, which he exercised through a cabinet appointed the following day. On Feb. 17, 1929, another royal decree established a supreme legislative council of 17 nominated members (11 Serbs, 4 Croats, and 2 Slovenes). The Cabinet appointed Jan. 7, 1929, was composed as follows: Premier and Minister of the Interior, General Pera Zivkovitch; Deputy Premier, N. Onzunovitch; Foreign Affairs, Dr. Voyislav Marinkovitch; Transport and Communications, Lazar Radivojevitch; Defense, General Stevan Hajitch; Finance, Stanko Shverljuga; Commerce and Industry, Juraj Demetrovitch; Education, Boza Maximovitch; Justice and Public Worship, Dr. Milan Srshkitch; Social Affairs and Health, Dr. Matya Drinkovitch; Mines and Forests, Father Anton Koroshetz; Posts, Telegraphs, and Public Works, M. Trifunovitch; Agriculture and Agrarian Reform, Professor Otto Frangesh.

HISTORY

NATIONAL UNIFICATION. Efforts of the military dictatorship to crush separatist tendencies and weld Serbs, Croats, and Slovenes into a unified nation continued to arouse serious opposition in 1930. Anti-Serb feeling in Croatia was deeply stirred by the trial of the Croat Peasant party leader, Dr. Vlatko Machek. Serb discontent with the dictatorship was revealed in connection with the frustration of a plot by members of the former Serb-Croat Peasant Democratic party to bomb a train bearing a loyal deputation to Belgrade on April 22.

During the Machek trial, the dictatorship took steps to conciliate the Croats by the appointment on May 19 of two additional Croat representatives to the Cabinet. Dr. Stanko Schipenik was named Minister of Agriculture and Nikola Preka Minister of Social Welfare. Two Croats whom they succeeded on the Cabinet were retained as Ministers without Portfolio. Seven Croats held Cabinet posts in June, 1930. The government, however, flatly refused to relax the drastic measures by which it sought to infuse a new spirit of nationality. Gen. Pera Zivkovitch, in a communiqué issued July 4, said that the old system of parliamentary government could not and would not be restored. The division of the country into nine banats or provinces was declared "final."

Hopes that the banats would be granted large powers of local autonomy were dashed by a decree issued later in the same month providing for the establishments of provincial councils. Members of the councils were to be appointed and dismissed by the central government. Duties of the councils were confined to economic and social matters and they were ordinarily to meet but once a year. Their apparent function was to serve as consultative assemblies only. The political parties dissolved in January, 1929, were formally prohibited for the future. State officials and teachers were ordered to strive to put into effect the new plan for a national state. The sokols, or athletic organizations, were taken under the wing of the government and reorganized along lines similar to the Balilla of Fascist Italy and the Young Pioneers (Communist auxiliaries) of Soviet Russia.

More effective than these methods in securing acceptance of the King's policy of national unification was the threat of war with Italy. The relations of the two countries reached an acute stage following the execution by Fascist riflemen in September of four Italian citizens of Slovenian blood, charged with terrorism in connection with the irredentist movement among the Slovenian minority in Italy (for further details see ITALY under *History*).

A national defense law, promulgated by the King July 18, was clearly intended to prepare the nation for the threatened struggle with Italy. The decree established a council of national defense, composed of the chief of the General Staff and the members of the Cabinet, to work out plans for the prompt mobilization of all financial, industrial, and labor resources. The threat of war apparently aided the dictatorship to win over a considerable section of Croatian opinion. On Dec. 8, 1930, a huge demonstration of Croat loyalty to the King was held in Zagreb under the leadership of Karl Kovachevich, a former member of the Croat Peasant party. On the other hand, widespread passive resistance to the dictatorship was reported among the Serbian peasants and observers agreed that the future of the dictatorship would be largely determined by the measure of success achieved in coping with the economic crisis. In line with its programme of national development, the Cabinet placed a special tax on all bachelors and exempted from all taxes fathers with more than nine children.

The development of a religious dispute between the Roman Catholics of Croatia and the Orthodox Serbs offered a further obstacle to King Alexander's hope of creating a united nation. An anti-Catholic movement among the Serbs had its origin in the conviction that the Pope, following the peaceful settlement of the Roman Question, was attempting to Catholicize the Orthodox nations of the Balkans. On the other hand Roman Catholic organs in Austria charged the dictatorship with attempting to establish a Pan-Serbian-Fascist system, which would be strongly anti-Catholic. Croat Catholics were accused in the Serbian press of carrying on an anti-Serb campaign at the behest of Rome. On February 2 a large delegation of Croatian Catholics, headed by the Archbishop of Zagreb, visited Belgrade to protest against the charges in the Serbian newspapers, which were vigorously denied.

THE MACHEK TRIAL. The trial of Dr. Vlatko Machek, Croat Peasant party leader and head of the opposition in Croatia to the dictatorship, opened at Belgrade April 24. Dr. Machek, with 23 others, was tried on charges of sedition and of belonging to a terrorist political organization. The Croat leader was one of more than 2000 persons arrested in connection with an alleged Croatian conspiracy to frustrate the celebration of the King's birthday on the previous December 17. The trial, which attracted widespread attention in Europe, was marked by sensational charges of police brutality. It ended June 14 with the acquittal of nine of the 24 defendants, including Dr. Machek and Colonel Begitch. Fifteen defendants were found guilty and sentenced to terms ranging from a few months' imprisonment to 15 years at hard labor. The court found that all the criminal activities mentioned in the charges had taken place, but that not all the defendants had been guilty of participating in them.

THE AGRICULTURAL CRISIS. Yugoslavia in 1930

coöperated actively with neighboring states in an effort to alleviate the agricultural crisis in the Balkans and central Europe resulting from low farm prices and American competition. An attempt by Yugoslavia, Rumania, and Hungary to form an agricultural selling pool at a conference in Bucharest in July failed (see *RUMANIA under History*). Early in August, however, Rumania and Yugoslavia reached an agreement at Sinai, Rumania, preliminary to the reduction of tariffs and the mutual exchange of excess products. Later Czechoslovakia was included in the agreement. An attempt to extend this virtual customs union to the other states of eastern Europe was made at a conference which assembled at Warsaw, Poland, on August 28 (see *POLAND under History*). A Yugoslav delegation attended the conference for Balkan unity held in Athens during October (see *GREECE under History*). Additional agrarian conferences were held at Bucharest in October, with a larger number of states in attendance, and at Warsaw in November. While little progress was made, these negotiations were regarded as paving the way to a system of regional unions, which in turn would furnish a basis for the proposed European federation.

THE MACEDONIAN QUESTION. The question of the treatment of the Macedonian minority in that portion of Yugoslavia detached from Bulgaria at the close of the World War again came to the fore in January when three Macedonians escaped from Yugoslavia and laid formal charges of Yugoslav oppression before the League of Nations. They demanded that a special League commission be established to insure that the Macedonians obtained the rights guaranteed them by the Minority Treaty signed at St. Germain, Sept. 10, 1919.

A convention was signed on February 17 by Bulgaria and Yugoslavia to regulate the administration of border populations in both countries. It provided that a permanent Mixed Commission of Control should be empowered to assess responsibility for future border incidents and to advise border authorities as to their policies with respect to the maintenance of peace. The agreement failed to exert the favorable effect anticipated, however. Hardly had it been signed when a series of bomb outrages in Yugoslavia, bearing strong evidence of the work of Macedonian revolutionaries, led to strained relations, and a demand from the Yugoslav Minister in Sofia that the guilty be punished.

Anxious to avert another Balkan outbreak such as that which touched off the World War, the British and French governments, joined later by Italy, made diplomatic representations to the Sofia government. Bulgaria then undertook in apparent earnest the task of breaking up the Macedonian revolutionary organizations (see *BULGARIA under History*). See also *REPARATIONS*, *LITTLE ENTENTE*, and *AUSTRIA and HUNGARY under History*.

JUNIOR COLLEGES. See *UNIVERSITIES AND COLLEGES*.

JUVENILE DELINQUENCY. See *CHILD WELFARE; CRIME*.

KAISER WILHELMSLAND. See *NEW GUINEA and GERMAN COLONIES*.

KAMERUN. See *CAMEROON*.

KANSAS. POPULATION. According to the Fifteenth Census, the population of the State on Apr. 1, 1930, was 1,880,999. According to the State census taken in 1925, the population was

1,812,986. The population on Jan. 1, 1920, was 1,769,257. The capital is Topeka.

AGRICULTURE. The following table gives the acreage, production, and value of the principal crops in 1929 and 1930.

| Crop | Year | Acreage | Prod. Bu. | Value |
|---------------|------|------------|-------------|---------------|
| Wheat ... | 1930 | 11,775,000 | 158,862,000 | \$ 88,945,000 |
| | 1929 | 11,516,000 | 138,060,000 | 138,053,000 |
| Corn ... | 1930 | 6,847,000 | 76,164,000 | 44,937,000 |
| | 1929 | 6,103,000 | 106,802,000 | 79,033,000 |
| Hay | 1930 | 2,234,000 | 8,437,000* | 31,007,000 |
| | 1929 | 2,282,000 | 3,971,000* | 41,026,000 |
| Oats | 1930 | 1,385,000 | 42,104,000 | 14,736,000 |
| | 1929 | 1,197,000 | 28,249,000 | 12,995,000 |
| Grain sorghum | 1930 | 1,100,000 | 14,300,000 | 9,295,000 |
| | 1929 | 1,091,000 | 19,638,000 | 13,747,000 |
| Potatoes . | 1930 | 45,000 | 4,955,000 | 4,460,000 |
| | 1929 | 47,000 | 4,375,000 | 6,125,000 |
| Barley .. | 1930 | 545,000 | 12,480,000 | 4,618,000 |
| | 1929 | 608,000 | 12,464,000 | 6,232,000 |

* Tons.

Farms in the State numbered 166,055 in 1930, their total being almost the same as in 1925 (165,879) and in 1920 (165,286). Irrigated lands totaled 69,841 acres in 1929, as against 47,312 in 1919.

MINERAL PRODUCTION. A period of diminished mineral production in Kansas culminated with 1928. By the results of that year the State ranked eleventh in the aggregate value of mineral production. This aggregate was, for 1928, \$113,279,524; for 1927 it had been \$120,368,526, a total in turn well below that of 1926. In 1929 the production of a number of the State's leading minerals rose. The petroleum wells yielded 42,875,000 barrels in 1929, as against 38,596,000 in 1928; the value of this product was \$63,500,000 (estimated) for 1929; for 1928, \$52,500,000. Zinc was mined to the quantity of 109,850 short tons in 1929; in 1928, of 107,251 short tons. The value of the zinc total rose to \$14,500,200 for 1929, from \$13,084,022 for 1928. Lead, the other important component in the State's lead-zinc ores, was also increasingly produced. There were mined 26,596 short tons of lead in 1929, as against 25,276 in 1928; in value, \$3,351,096 for 1929 and \$2,932,016 for 1928. Cement production was slightly higher, shipments from the cement mills totaling 6,855,861 barrels in 1929; in 1928 they had totaled 6,787,568. Their value was, for 1929, \$10,041,282; for 1928, \$10,091,330. Coal production, 2,975,971 net tons for 1929, was slightly above the 2,809,724 net tons of 1928. The value of coal mined was, for 1929, \$6,697,000; for 1928, \$6,861,000. As to the production of natural gas the figures for 1929 were not yet available. For 1928 the total produced was 45,044,000 M cubic feet of natural gas, as against 42,640,000 M for 1927; in value, \$14,144,000 for 1928 and \$12,833,000 for 1927. Gasoline extracted from natural gas totaled 33,800,000 gallons in 1929 and 36,765,000 in 1928; in value, \$2,060,000 in 1929 and \$2,444,000 in 1928. Clay products attained for 1928 the value of \$3,593,130, for 1927, of \$3,805,509. The output of salt, 840,370 short tons for 1929, was moderately above the 821,950 of 1928; in value it was, for 1929, \$3,761,894; for 1928, \$3,573,982. The production of gypsum, to the value of \$935,595 in 1928, was near the normal level. The total value of the State's mineral products was, for 1928, \$113,279,524 as compared with a total of \$120,368,526 in 1927.

TRANSPORTATION. The total number of miles of

railroad line under operation on Jan. 1, 1930, was 9342.06. No construction of additional line or trackage in 1930 was reported.

EDUCATION. The report of the State School Code Commission and that of the Tax Code Commission, both issued in 1929, were subjected to wide publicity, with a view to promoting some of the recommendations embodied, notably that for a plan of equalization for school expenditure.

CHARITIES AND CORRECTIONS. The State Board of Administration, as organized in 1905, was in 1930 the central administrative authority over the State institutions for the care or custody of persons. It was composed of the Governor and three other members, assisted by a business manager. In addition to general administrative duties it made frequent visitations of the institutions and discharged the function of recommending paroles for prisoners, while its business organization purchased institutional supplies. The State institutions under its authority, with their respective numbers of inmates as counted in November, 1930, were: Topeka State Hospital (insane), 1719; Osawatimie State Hospital (insane), 1466; Larned State Hospital (insane), 715; State Hospital for Epileptics, Parsons, 680; State Training School, Winfield, 984; State Sanatorium for Tuberculosis, Norton, 223; State Orphans' Home, Atchison, 195; Kansas State Penitentiary, Lansing, 1727; Kansas State Industrial Reformatory, Hutchinson, 953; Women's Industrial Farm, Lansing, 154; Boys' Industrial School, Topeka, 203; Girls' Industrial School, Beloit, 177. The State also maintained the following special schools: School for the Blind, Kansas City, 109; School for the Deaf, Olathe, 238; Western University, Kansas City, 160; Kansas Vocational School, Topeka, 164.

LEGISLATION. A special session of the Legislature was held, adjourning March 12. It dealt with matters chiefly of taxation, and particularly with the situation brought about by the intangible tax law, which was regarded as having enabled banking and other financial institutions to place themselves on a more favorable tax basis than town and farm property owners. The intangible tax law was repealed. An act was passed placing National, State, and savings banks, and loan, trust, finance and investment companies on the same basis for tax purposes. All were to be taxed, at the general property tax rate, on valuations determined by capital stock, surplus and undivided profits. Legislation was enacted to enable the State to take advantage of the exemptions allowed by the Federal estate tax.

POLITICAL AND OTHER EVENTS. The emergency cited by Governor Reed as his reason for calling the special legislative session arose from a decision of the State Supreme Court. The court rendered a majority opinion that the tax on intangibles, which had been attacked by stockholders in a State bank as discriminatory, was constitutional, but that State banks, like National banks, must be taxed at the rate of but 50 cents on the \$100. A dissenting opinion of one of the judges raised the point that if State banks could sue successfully for the restitution of excessive tax payments other institutions and corporations might do likewise, thus imperiling the financial condition of the State government.

A sharp discord developed in the labor organization of the Kansas coal-mining industry, which under the leadership of Alexander Howat clashed with the parent organization, the United Mine

Workers of America. The latter on March 26 revoked the charter of District 14 of Kansas.

The severe decline in the price of wheat that took place about the time of the gathering of the year's crop was a subject of general agitation in the State. Chairman Legge of the Farm Board made a speaking campaign through Kansas in July on behalf of his proposal that wheat growers generally throughout the country should reduce the acreage to be planted for 1931. He was opposed by Governor Reed, who made his criticism of the Farm Board's policy the chief feature of his primary campaign for renomination. In spite of agricultural antagonism to the Farm Board's proposals Governor Reed lost the Republican nomination to Frank Hauke, an ex-soldier.

ELECTIONS. For the full term as United States Senator, Arthur Capper, Republican, was re-elected on November 4 by an ample majority. For the partly expired term to which Henry J. Allen had been appointed *ad interim* on the elevation of former Senator Curtis to the Vice Presidency, Allen, a Republican, was defeated by the Democratic candidate, George McGill. The election for Governor was exceedingly close. Harry Woodring, Democrat, was reported to have defeated Frank Hauke, Republican, by the narrow margin of a few hundred votes. A delegation of seven Republicans and one Democrat was elected to the House of Representatives. With diminished majorities, Republicans retained control of both branches of the Legislature. The voters rejected a proposed constitutional amendment to allow a graduated income tax and a proposal to double the pay of legislators.

OFFICERS. Governor, Clyde M. Reed; Lieutenant-Governor, J. W. Graybill; Secretary of State, E. A. Cornell; Auditor, Will J. French; Treasurer, Tom B. Boyd; Attorney-General, William A. Smith; Superintendent of Public Instruction, George A. Allen, Jr.

JUDICIARY. Supreme Court: Chief Justice, William A. Johnston; Associate Justices, Rousseau A. Burch, John Marshall, John S. Dawson, W. W. Harvey, Richard J. Hopkins, William Easton Hutchinson.

KANSAS, UNIVERSITY OF. A State institution of higher education in Lawrence, Kan.; founded in 1864. The 1930 autumn enrollment was 4449, of whom 148 were registered in more than one school, leaving a total enrollment of 4301. Of this number, 1554 were women and 2747 men, distributed as follows: Graduate school, 276; college of liberal arts and sciences, 2423; engineering and architecture, 648; fine arts, 314; law, 145; pharmacy, 48; medicine, 355; education, 84; business, 156. The 1930 summer session had an enrollment of 1869, of whom 1031 were women and 838 men. The full-time faculty members numbered 250. The endowment fund amounted to \$236,000, and the income for the year, including the balance carried over from 1929, was \$2,631,179. There were 232,000 volumes in the library. Chancellor, Ernest Hiram Lindley, LL.D.

KANSAS WESLEYAN UNIVERSITY. A coeducational institution under the auspices of the Methodist Episcopal Church in Salina, Kan.; founded in 1885. The enrollment for the autumn of 1930 was 494, distributed as follows: College of liberal arts, 265; college of music, 54; business college, 175. The 1930 summer session had an enrollment of 125. The faculty numbered 30. The endowment amounted to \$100,000, while the income from the General Fund was \$129,946. A

gift of \$10,000 was made by Walter P. Chrysler. There were 15,000 volumes in the library. President. L. B. Bowers, D.D.

KARAFUTO. The name applied to the Japanese half of the island of Sakhalin (see **SAKHALIN**), which comprises that portion south of the 50th parallel of N. latitude. Area, approximately 13,934 square miles; population in 1929, 240,502. The chief industry is the herring fisheries, although the colony is suitable for agriculture and pasturage. Coal, gold, and oil are mined and six pulp factories were in operation in 1929. The herring catch averages more than 825,000,000 pounds annually, the greater part of which is manufactured into fertilizer. The total value of fishery products in 1928 was 20,557,432 yen. Oil production in 1928 totaled 539,481 tons. For the year ending Mar. 31, 1930, the approved budget balanced at 33,036,935 yen (1 yen equaled about \$0.46).

KARA-KALPAKIA, or **KARA-KALPAK** AUTONOMOUS AREA. See **SOVIET CENTRAL ASIA**.

KARIKAL. See **FRENCH INDIA**.

KAZAK REPUBLIC, or **KAZAKSTAN**. See **RUSSIA** and **SIBERIA**.

KEDAH. See **NON-FEDERATED MALAY STATES**.

KEEWATIN. See **NORTHWEST TERRITORIES**.

KELANTAN. See **NON-FEDERATED MALAY STATES**.

KELLOGG PACT. See **LEAGUE OF NATIONS**.

KENTUCKY. POPULATION. According to the Fifteenth Census, the population of the State on Apr. 1, 1930, was 2,614,589. The population on Jan. 1, 1920, was 2,416,630. The capital is Frankfort.

AGRICULTURE. The following table gives the acreage, production, and value of the principal crops in 1929 and 1930:

| Crop | Year | Acreage | Prod. Bu. | Value |
|------------------|------|-----------|--------------------------|--------------|
| Corn | 1930 | 2,909,000 | 31,417,000 | \$28,904,000 |
| | 1929 | 2,938,000 | 80,207,000 | 72,988,000 |
| Tobacco .. | 1930 | 507,500 | 331,699,000 ^a | 47,433,000 |
| | 1929 | 492,800 | 389,277,000 ^a | 68,123,000 |
| Hay | 1930 | 1,179,000 | 882,000 ^b | 17,224,000 |
| | 1929 | 1,272,000 | 1,802,000 ^b | 28,116,000 |
| Potatoes .. | 1930 | 45,000 | 2,831,000 | 3,539,000 |
| | 1929 | 50,000 | 4,395,000 | 5,933,000 |
| Sweet potatoes . | 1930 | 14,000 | 952,000 | 1,142,000 |
| | 1929 | 15,000 | 1,365,000 | 1,638,000 |
| Wheat ... | 1930 | 238,000 | 3,284,000 | 2,988,000 |
| | 1929 | 240,000 | 2,832,000 | 3,568,000 |
| Oats | 1930 | 218,000 | 3,488,000 | 1,849,000 |
| | 1929 | 290,000 | 6,235,000 | 3,679,000 |

^a Pounds. ^b Tons.

Farms in the State numbered 247,011 in 1930, as against 258,524 in 1925 and 270,026 in 1920.

MINERAL PRODUCTION. The renewal of activity in the coal-mining areas of the neighboring States of Illinois and West Virginia that occurred in 1929, following the close of labor troubles, was on the whole unfavorable to the coal mines of Kentucky. These mined but 60,462,600 net tons of coal in 1929, as against 61,860,379 in 1928 and 69,123,998 in 1927. The total value of coal mined was, for 1929, \$93,283,000; for 1928, \$96,722,000. As usual comparatively little of the product was coked in the State, and there was no sign of increase in the State's output of pig iron, of which blast furnaces shipped 194,150 long tons in 1929, as against 225,545 in 1928. Petroleum production was higher: 7,776,000 barrels in 1929, as against 7,359,000 in 1928; in value, \$13,300,000 (estimated) for 1929 and \$11,850,000 for 1928. Clay products attained for 1928 the total of

\$7,123,523; for 1927, of \$7,257,664. The production of natural gas increased to 15,383,000 M cubic feet, from 10,206,000 M for 1927; in value, to \$5,349,000 for 1928, from \$3,277,000 for 1927. Outside of these main products and of the normal output of stone, sand and gravel, Kentucky produced important quantities of native asphalt and of fluor spar. Asphalt production was 318,548 short tons in 1928 and 344,220 in 1927; in value, \$2,757,547 in 1928 and \$3,156,700 in 1927. Of fluor spar were produced, in 1928, 69,747 short tons, valued at \$1,426,766. The total value of the State's mineral products was, for 1928, \$131,969,907; for 1927, \$152,614,177.

TRANSPORTATION. The total number of miles of railroad line under operation on Jan. 1, 1930, was 4033.23. There were built, in 1930, 16.46 miles of first, 55 of second, and 1.28 of third track.

EDUCATION. The cause of State aid to public school education was advanced by the enactment in 1930 of an equalization law. This measure appropriated \$1,250,000 to be employed to make up deficiencies in teachers' salaries in school districts lacking the resources to pay the legal minimum rate of \$75 a month. There were enrolled in the public schools, in the year ended June 30, 1929, 581,511 pupils. Of these, 526,472 were in common schools or elementary grades, and 55,039 were in high schools. The year's expenditures for public-school education were: current, \$19,138,429; total, including capital outlay and debt service, \$27,357,550. Teachers' salaries for the year averaged \$767 in elementary and \$1406 in high schools.

CHARITIES AND CORRECTIONS. The control of eight State institutions for the care or custody of persons rested in 1930, as in previous years, with the State Board of Charities and Corrections. This body was a non-partisan board of eight members holding their places by appointment of the governor. It was required by law that two of the number be women. It had as executive officer a Commissioner of Institutions. The institutionalized persons under the authority of the board in 1930 numbered about 10,000, of whom about 60 per cent were inmates of mental hospitals and the remaining 40 per cent were in reformatory or penal institutions. The following were the institutions, with their populations as reported for Oct. 31, 1930; Eastern State Hospital (mental), Lexington, 1628; Central State Hospital (mental), Lakeland, 2202; Western State Hospital (mental), Hopkinsville, 1707; Feeble-Minded Institute, Frankfort, 621; State House of Reform for Boys, Greendale, 519; State House of Reform for Girls, Greendale, 156; State Reformatory, Frankfort, 2396; State Penitentiary, Eddyville, 1167;

LEGISLATION. The Legislature met in regular biennial session. It enacted a much discussed statute to the effect that the ballots cast in elections should no longer be counted on the night of the election, immediately after the closing of the polls, according to the custom prevailing throughout the country, but should be locked in boxes and taken from the polling places to the respective county seats. There they were to be opened and the count was to be made and tabulated on the day after the election. The declared purpose of the act was to check fraudulent counting of ballots. The legislature followed the example of Georgia in imposing a sales tax on the business of shops. It enacted a law subjecting retail merchants to an impost of one-twentieth of

1 per cent on gross sales of \$400,000 or less; of twice that rate up to \$500,000; and gradually up to the rate of 1 per cent on sales in excess of \$1,000,000 a year. Refusal of a retailer to file a return or permit his books to be examined was made a misdemeanor punishable by a fine of \$1000 and imprisonment up to six months. The statute forbids the maintaining of a suit at law to restrain or delay collection. The measure was regarded in some quarters as a blow against the chain store. The Clark Toll Bridge Act empowered the Highway Commission to sell \$4,000,000 of bridge bonds without bidding.

POLITICAL AND OTHER EVENTS. The State Court of Appeals invalidated in May the statute providing that transfers of property made within three years of the donor's death should be presumed to have been made in anticipation of death. It held that transfers made veritably in such anticipation should be held subject to inheritance tax, but that the State might not arbitrarily fix a period to establish a presumption. The Court of Appeals sustained in June the Clark Toll Bridge Act of 1930 and also an agreement between Kentucky and Indiana for the construction of a Henderson-Evansville Bridge, which had been attacked in a friendly suit to determine validity.

The law of 1931 for a central ballot count deferred until the morrow of election was first applied on August 1, the occasion of the Congressional primaries. The contest over the disposal of Cumberland Falls continued. T. C. duPont made an offer at the beginning of the year to buy the site of the Falls at his own expense as a gift to the State. The Legislature voted acceptance of this proposal; Governor Sampson then vetoed the acceptance. The lower chamber overrode his veto but the Senate sustained it. The State Attorney-General sought thereafter to negotiate with the Cumberland River Power Company, the holders of the site, for an agreement to yield it to the State. At the same time an effort was made to get the Federal Power Commission to refuse a permit for power development at the Falls, which Kentucky citizens wanted preserved for scenic reasons, but the Power Commission was advised by the Federal Attorney-General that it had no authority to take scenic matters into consideration. The power company refused late in July an offer from the State of \$230,000 for its property and rights at the Falls, and the State then set under way condemnation proceedings with the intention of thus dispossessing the company and converting the site into a State park.

Economically the State suffered severely for a time from the summer's drought, which however was in part relieved by rains in August. Lack of feed for the cattle threatened and in some cases brought the necessity for farmers to sell their dairy herds. Through the Red Cross were distributed among destitute farmers such aids as 100,000 bushels of rye seed and likewise kale and turnip seed with which to raise late greens for fodder. Prolonged labor troubles occurred over the efforts to reestablish a uniform unionized wage scale in the coal fields of Western Kentucky. At Providence in Webster County one of the collieries was bombed from an airplane, which was traced to Murphysborough, Illinois, and found to have been flown by a local aviator, who asserted that he had piloted the bombers under compulsion.

The National Bank of Kentucky, at Louisville, suspended on November 16, with liabilities of approximately \$54,700,000, including about \$41,-

000,000 in deposits. These included the \$3,250,000 proceeds of the State's sale of bridge bonds, which deposit, however, was reported to be protected by a surety bond. A number of smaller banks suspended in the same critical moment, which coincided with numerous bank suspensions in Tennessee and Arkansas.

ELECTIONS. Senator John M. Robison, Republican, failed of reelection, being defeated on November 4 by Judge M. M. Logan. The vote was unofficially reported as 329,623 to 302,625. Nine Democrats and two Republicans were elected to the Federal House of Representatives. Senator Robison, an appointee, was defeated also for the unexpired term, to which Ben Williamson, Democrat, was elected. In Lexington the voters approved the adoption of municipal government by city manager.

OFFICERS. Governor, Flem D. Sampson; Lieutenant-Governor, James Breathitt, Jr.; Secretary of State, Ella Lewis; Attorney-General, J. W. Cammack; Auditor, Clell Coleman; State Treasurer, Emma Guy Cromwell; Commissioner of Agriculture, Labor, and Statistics, Newton Bright; Superintendent of Public Instruction, W. C. Bell.

JUDICIARY. Court of appeals: Chief Justice, Gus Thomas; Associate Judges, William Rogers, Clay, W. F. Grigsby, R. P. Deitzman, M. M. Logan, William H. Reese, S. S. Willis.

KENTUCKY, UNIVERSITY OF. A coeducational, State institution of higher learning in Lexington, Ky.; founded in 1866. The enrollment in the autumn of 1930 was 3204, distributed as follows: Graduate school, 238; arts and science, 1284; agriculture, 274; engineering, 603; law, 105; education, 360; commerce, 340. There were 1758 students registered in the 1930 summer session. The faculty numbered 239. The productive funds amounted to \$184,075, and the income for the year was \$1,716,528. During 1930 construction of the education and dairy products buildings was completed. The library contained 116,531 volumes. President, Frank LeRond McVey, Ph.D., LL.D.

KENYA COLONY AND PROTECTORATE (formerly the EAST AFRICA PROTECTORATE). A British crown colony and protectorate in East Africa bordering on the Indian Ocean between Italian Somaliland and Tanganyika and extending inland to Uganda and Ethiopia. Area, 224,960 square miles; population in 1928, estimated at 2,891,691, including 12,529 Europeans, 30,583 Asiatics (about 25,000 Indians), and 10,557 Arabs. Capital, Nairobi, with 32,864 inhabitants (3612 Europeans). Mombasa, the largest town, had a population of 39,824 (869 Europeans).

Besides 2500 mission and native schools, there were 51 Government schools open in 1928. Agricultural products include rice, cotton, simsim, coconuts, groundnuts, and sugar cane in the lowlands and coffee, maize, wheat, and sisal in the highlands. The dairy and wool industries are expanding. The forested area of 4500 square miles contains valuable timber. Minerals so far discovered include gold, graphite, manganese, sodium carbonate, and diatomite. Kenya and Uganda form one administrative unit for Customs purposes. Preliminary figures of the Commissioner of Customs for 1929 showed imports into the two territories of £8,608,000 (£8,696,000 in 1928) and exports of £7,021,000 (£6,662,000 in 1928). Kenya's share in 1929 was: Imports, £6,290,000; exports, £2,746,000. The customs rev-

enne for Kenya and Uganda in 1929 was £1,390,000. In 1928 total Kenya revenues were £3,020,694; expenditures, £2,834,647. The public debt on Jan. 1, 1929, stood at £13,500,000. The state-owned Kenya and Uganda Railway in 1929 operated 1291 miles of line, a steamer service on Lakes Victoria and Kioga, and a motor-transport service. An additional 180 miles of railway line were under construction.

The colony is governed under the constitution of December, 1925, which provides for an executive and legislative council. Governor and Commander-in-Chief in 1930, Lieut.-Colonel Sir Edward W. M. Grigg, succeeded in October by Sir Joseph Aloysius Byrne, Governor of Sierra Leone.

HISTORY. After six years of delay and discussion, the British government on June 19, 1930, announced its policy with regard to the administration and development of Kenya, Uganda, and Tanganyika. In general, its programme followed the recommendations of the Hilton-Young report (see 1929 YEAR BOOK under *Kenya*). A High Commissioner for the three dependencies was to be appointed with wide dual powers—first, as chief adviser on native and other policies to the British government; and, secondly, as High Commissioner to administer and legislate with regard to ports, railways, customs, etc., in all three territories. In Kenya, the British government decided to leave the constitution of the Legislative Council substantially unchanged and to retain the official majority. It thus rejected the demand of the White Settler party of Kenya for an unofficial majority in the Kenya Legislature. The government further proposed to secure the natives in possession of their lands, to safeguard conversion of native lands to public uses, and to insure for the natives greater freedom in choosing their livelihood and place of work.

The Labor government's policy agreed in important respects with that urged by the Government of India on behalf of the Indian settlers in the three territories, and to which European settlers in Kenya and Tanganyika bitterly objected. Criticism was also voiced by German members of the Mandates Commission of the League of Nations, who feared that union of Tanganyika Mandate, formerly German territory, with Kenya and Uganda, would make it difficult to transfer the mandate back to Germany or to some other European power.

Evidences of native unrest in Kenya were reported during the year. In April, 1930, the Native Lands Trust Bill was passed by the Kenya Legislature. It granted the natives a charter which guaranteed their lands in perpetuity, vested control of the lands in a central board under the High Commissioner, and provided for eventual African representation in the Legislature. See **TANGANYIKA** and **UGANDA**.

KENYON COLLEGE. A college of arts and sciences for men in Gambier, Ohio; established in 1824 by the Protestant Episcopal Church and associated with it. The enrollment for the autumn term of 1930 was 218. The faculty numbered 22 members. The endowment funds amounted to \$1,671,000, and the income for the year was \$209,000. The value of buildings and equipment was \$1,755,000. The library contained 78,000 volumes. President in 1930, William F. Peirce, L.H.D., D.D., LL.D.

KIDNEY DISEASE, X-RAY DIAGNOSIS OF. Consult the article on **SURGERY, PROGRESS OF.**

KINDERGARTEN ASSOCIATION, NATIONAL. See **NATIONAL KINDERGARTEN ASSOCIATION.**

KINDERGARTENS. See **EDUCATION IN THE UNITED STATES.**

KING'S MOUNTAIN BATTLE, ANNIVERSARY OF. See **CELEBRATIONS.**

KIRBY-LUNN, LOUISE. A British contralto, died in London Feb. 17, 1930. Born in Manchester in 1873, she studied at the Royal College of Music, making her début in 1896 in Stanford's Irish opera, *Shamus O'Brien*, at the Opera Comique in London. She then toured with the Carl Rosa Company for three years, where she became especially distinguished in Wagnerian rôles. Becoming associated with the Covent Garden Opera Company in 1902, she achieved her greatest triumph two years later as Amneris in Verdi's *Aida*. In 1904 she also appeared as Kundry in the first English performance of *Parsifal* in Boston. Between 1906 and 1908, and again in 1912, she appeared with the Metropolitan Opera Company in New York City. In 1909, on her return to England, she created the rôle of Delilah in French at Covent Garden. She also appeared in opera in Germany and Hungary and toured America, Australia, and New Zealand in concert.

KIRGHIZIA, or KIRGHIZ AUTONOMOUS SOCIALIST SOVIET REPUBLIC. See **SOVIET CENTRAL ASIA.**

KIWANIS INTERNATIONAL. An organization of clubs made up of not more than two of the leaders in each business and profession, united for the rendering of civil and social service to the community. Each club enjoys autonomy but at the same time functions in direct connection with district and international administrations. There are 29 geographical districts, each with a governor, in the United States and Canada. The first club was organized in Detroit, Mich., in January, 1915. By 1917 the organization had spread into Canada. The name "Kiwaniis" was coined to express the constructive, unselfish work of Kiwanians. The motto of the organization, "We Build," is also an expression of this spirit. Its aims are to crystallize community sentiment for municipal improvements, to cultivate public opinion for purer politics, and to promote community coöperation in all good things. At the close of the year 1930 the international organization consisted of 1871 clubs, with an approximate membership of 100,000. Some 35,000 civic and welfare projects were carried out by these organizations during the year. Raymond M. Crossman, of Omaha, Neb., was the international president for 1930-31; Fred. C. W. Parker of Chicago, secretary; and Walter W. Weiser of Daytona Beach, Fla., treasurer. Headquarters are in the Federal Reserve Bank Building, 164 West Jackson Boulevard, Chicago.

KLEBELSBERGITE. See **MINERALOGY.**

KNIGHTS OF COLUMBUS. A fraternal society of Roman Catholic men, organized under a special charter granted by the General Assembly of the State of Connecticut in 1882. The order is composed of a supreme council, a board of directors, and State and subordinate councils. On June 30, 1930, there were 61 State councils and two territorial jurisdictions. The subordinate councils, numbering 2555, had a membership of 618,611, of whom 254,794 were insurance members and 363,817 associate members. These two classes were developed through deviation from one of the chief purposes of the organiza-

tion, to urge Roman Catholic men to insure provision after death for those dependent upon them, expansion in membership permitting others to join the associate class with certain restrictions as to their rights.

The four principles of the order, charity, unity, fraternity, and patriotism, emphasize to members the necessity of rendering service in time of illness, death, or distress; the gathering together of men for better citizenship; the value of mutual assistance; and loyalty to duly authorized civil government. Since the World War the society has offered to ex-service men evening courses in academic, commercial, and trade or technical subjects free of charge and has conducted correspondence courses for ex-service men and other members of the order.

The order's programme of boy-guidance work was organized in 1922 at the request of the bishops of America. It includes a two-year training course in boy-guidance work at Notre Dame University, established through the endowment of a chair by the order. Scholarships are furnished outstanding Catholic men graduates of colleges, who are particularly adapted to the work. The Circles of Columbian Squires, the junior order for boys between 14 and 18, in 1930 numbered 72 with a membership of 3200. The objectives of the junior order are: to develop a programme of activities most suitable for boys of the middle adolescent group; to train Catholic boys for future leadership; and to develop them through the five-fold programme into high-type-Catholic gentlemen.

The 1930 supreme convention was held in Boston, August 19-21, with an attendance of approximately 1500 members. By vote of the convention each council of the order was requested to appoint a committee to work for the general alleviation of the unemployment situation in the United States. Appropriations also were made by the board of directors, following the action of the convention, for relief work in the drought-stricken sections of the middle western States, and in Santo Domingo after the hurricane.

The officers reelected at the convention were: Martin H. Carmody, supreme knight; John F. Martin, deputy supreme knight; William J. McGinley, secretary; D. J. Callahan, treasurer; Edward F. Fahey, M.D., physician; Luke E. Hart, advocate; the Rev. John J. McGivney, chaplain; and David F. Supple, warden. The order publishes *Columbia*, a monthly magazine with a circulation of more than 625,000. The headquarters of the supreme council are in New Haven, Conn.

KOMURA, KIN-ICHI, SECOND MARQUIS. A Japanese statesman, died in Tokyo Dec. 29, 1930. Born in 1882, he was graduated from the Imperial Tokyo University in 1907, and then became attaché at the Japanese embassies in Peking (1907) and in London (1908-10). After serving as sectional chief of the political bureau, he was appointed in 1923 deputy-director of the information bureau of the Japanese Foreign Office. At the time of his death he was Vice Minister of Overseas Affairs.

KONGO BELGIAN, KONGO FREE STATE. See CONGO, BELGIAN.

KOREA or CHOSEN. A peninsula of eastern Asia annexed by the Japanese Empire under the treaty concluded between Japan and Korea on Aug. 22, 1910, and incorporated as an integral part of the Japanese Empire by an Imperial Rescript issued in 1919. Capital, Seoul (Keijo-fu).

AREA AND POPULATION. With an area of 84,949

square miles, Korea had a population of 21,057,969 in 1930. There were (1928) 18,667,334 Koreans, 469,043 Japanese, and 53,322 foreigners (including 743 Americans). The population of the chief cities at the end of 1926 was: Seoul, 315,006; Pusan, 113,092; Pyong-Yang, 119,729; Tai-Ku, 82,549; Chemulpo, 53,865.

EDUCATION. Less than 20 per cent of the population are literate. In 1927, common schools for the education of Koreans numbered 1395, with 401,992 pupils; private common schools, 81, with 19,460 pupils; higher common schools, 39 (18 private), with 13,143 pupils. For the education mainly of Japanese there were 459 elementary schools, with 56,671 pupils and 11 middle schools, with 5230 pupils. The University of Seoul had 597 students in 1927, of whom 422 were Koreans and 175 Japanese.

PRODUCTION. Korea is almost exclusively an agricultural country. At the end of 1929 there were 2,815,277 farming households, comprising a population of 15,210,204, or 78.6 per cent of the total population. Land under cultivation at the end of 1929 totaled 10,115,900 acres, or about 20 per cent of the total area; 36.5 per cent of the cultivated land was devoted to paddy fields. Japanese own nearly one-half of the tilled land, their holdings averaging 52.92 acres per household, as against 4.16 acres for Korean households. Rice, barley, wheat, beans, tobacco, cotton, hemp, ginseng, and various cereals are the leading crops. The rice crop for 1930 was estimated at 98,217,000 bushels (70,154,000 in 1929). Livestock raising, fruit growing, and silk culture are important subsidiary farm industries.

Gold, iron, graphite, and anthracite are the principal minerals mined, although considerable quantities of silver, zinc, copper, lead, tungsten ore, and kaolin are produced also. Mineral production has shown a steady expansion, the total value in 1928 being 26,360,834 yen, as against 24,169,229 yen in 1927. The value of sea products in 1928 was 44,886,136 yen (1 yen equaled \$0.4640 in 1928).

Industrial production in 1928 was valued at 392,533,876 yen, or 22,890,000 yen more than in 1927. At the beginning of 1929 there were 5342 power-equipped factories employing five or more workers per day and with an annual production value of 5,000,000 yen or more. Textile fabrics, paper, pottery, metal ware, manufactured tobacco, brewed drinks, and leather are the chief industrial products. The Government exercises a monopoly of ginseng, salt, and tobacco.

COMMERCE. The overseas trade in 1929, totaling 768,757,607 yen, was 11,211,960 yen less than in 1928. Exports to foreign countries amounted to 35,773,033 yen and imports to 107,767,710 yen, while exports to Japan proper totaled 309,891,023 yen and imports, 315,325,841 yen. As compared with 1928, the 1929 trade with foreign countries showed a gain of 3,623,846 yen in exports and a decline of 10,383,312 yen in imports, while the trade with Japan proper indicated a decline of 23,938,314 yen in exports and an increase of 19,485,920 yen in imports.

FINANCE. The finances of Korea are included in the Japanese budget as a special account. The budget for the fiscal year ended Mar. 31, 1930, as approved by the Diet, balanced at 246,852,843 yen (1 yen equaled \$0.4601 in 1929) for both ordinary and extraordinary items, or 24,105,864 yen more than the working budget for 1928-29. The working budget for 1929-30, subsequently

adopted by the new Hamaguchi Government, totaled 236,431,539 yen, or 10,421,304 yen less than the budget approved by the Diet. Actual returns for 1929-30 showed combined ordinary and extraordinary revenues of 240,579,267 yen (ordinary revenues, 184,069,530 yen) and total expenditures of 224,740,305 yen (ordinary expenditures, 160,905,956 yen). The working budget for 1930-31 was estimated to balance at 239,729,783 yen, with ordinary revenues of 202,057,540 yen and ordinary expenditures of 186,672,827 yen. The public debt outstanding on Mar. 31, 1930, totaled 377,136,235 yen.

COMMUNICATIONS. Railway lines open to traffic in Korea on Mar. 31, 1930, totaled 2150 miles, of which 1710 miles were owned and operated by the Government, and 440 miles by private interests. A 12-year programme for the construction of 860 miles of additional lines by the Government was under way in 1930.

At the beginning of 1929, there were 10,767 miles of first-, second-, and third-class highways completed as part of a projected highway system of 14,929 miles. Expenditure on roads during 1928 totaled \$1,100,000, of which \$700,000 was supplied by the Central Government and \$400,000 by local governments. Shipping entering the open ports in 1928 had an aggregate tonnage of 8,028,546; those clearing, a tonnage of 7,724,590. The extension and improvement of the port of Chemulpo was commenced by the Japanese Government-General in June, 1930.

GOVERNMENT. Korea is governed as an integral part of Japan through a governor-general entrusted with large administrative powers. In 1929, Viscount Minoru Saito, former Governor-General of Korea, was reappointed to that post as the successor to Gen. Hanzo Yamanashi. See JAPAN.

KOWEIT, or **KUWAIT**. See ARABIA.

KRAKATAO, ERUPTION OF. See DUTCH EAST INDIES.

KRAMERSITE. See MINERALOGY.

KU-KLUX KLAN, KNIGHTS OF THE. An American benevolent, eleemosynary, and fraternal institution, incorporated under the laws of the State of Georgia in 1915. Its membership decreased 8.1 per cent during 1930, but it continued its activity in all matters of civil government affecting its ideals or principles. "The membership is made up of white, male, Gentile persons, native-born American citizens, 18 years of age. They must be of sound mind, good character, commendable reputation, and respectable vocation; must believe in the tenets of Christian religion; and must owe no allegiance to any foreign government, nation, institution, sect, ruler, prince, potentate, people, or person, and whose allegiance, loyalty, and devotion to the Government of the United States of America in all things is unquestionable." The officers were: President, Hiram W. Evans; secretary, H. C. Spratt; treasurer, Sam H. Venable. Headquarters are in Atlanta, Ga.

KULAKS. See RUSSIA under *History*.

KURDISTAN, *kūr'de-stān*. A term applied to an indefinite region in eastern Asia Minor comprising portions of Turkey, Persia, Soviet Armenia, and Iraq and inhabited by semi-nomadic Kurds, a people related to the Persians in race and language. Their nationalistic aspirations resulted in a serious revolt among the tribes of eastern Turkey in 1930, which received assistance from the Kurds of Persia and Iraq (see TURKEY,

and IRAQ under *History*). Great Kurdish demonstrations for the establishment of an autonomous Kurdish state were reported from Northern Iraq in July, 1930.

KURIA MURIA ISLANDS. See ADEN.

KUWAIT. See ARABIA.

KWANG-CHOW-WAN, *kwāng'chō'wān*. A small territory on the coast of the Chinese Province of Kwangtung, leased to France in 1898, and two small islands commanding the bay leased to her the following year. Area, about 190 square miles; population estimated in 1926 at 205,000 (270 Europeans). Imports in 1928, 7,295,857 piastres; exports, 7,570,480 (1 piastre exchanged at \$0.4854 in January, 1929). The local budget for 1928 balanced at 680,000 piastres. The administration is under the Governor-General of French Indo-China. See FRENCH INDO-CHINA.

KWANTUNG, *kwān'tung'*, or **KWANTAO**. A territory at the southern part of the Liaoting Peninsula, leased to Japan by China, as a successor to Russia after the Russo-Japanese War. Area, about 538 square miles; population, Dec. 31, 1928, 837,219, of whom 733,711 were Chinese. At the end of 1927, there were 69 schools for Japanese, with 31,209 pupils, and 132 schools for Chinese, with 24,929 pupils. The agricultural products include rice, tobacco, hemp, and various grains and vegetables. The fishing industry is of importance. Salt is the chief manufactured product. Trade is mainly with Japan and China. Imports in 1928 were valued at 168,524,899 *haikwan* taels and exports at 199,363,559 *haikwan* taels (the exchange value of the *haikwan* tael in 1928 averaged \$0.71). The seat of the administration and the chief port is Dairen, formerly Dalny. The budget for 1929-30 was estimated to balance at 23,050,000 yen. The South Manchurian Railway connects Port Arthur and Dairen with Mukden, Harbin, and the Chinese Eastern Railway; its total length in 1926 was 691 miles. The territory is under the administration of a Japanese governor-general.

LABOR. The reader is referred to the following articles for discussions of the various aspects of the history of labor during the year: CHILD LABOR; COÖPERATION; LABOR ARBITRATION AND CONCILIATION; LABOR LEGISLATION; MINIMUM WAGE; OLD-AGE PENSIONS; STRIKES AND LOCK-OUTS; UNEMPLOYMENT; WOMEN IN INDUSTRY; WORKMEN'S COMPENSATION; and to the articles dealing with the respective countries. See also TRADE UNIONS and SOCIALISM for special aspects of the labor subject. The article which immediately follows discusses the history of the American Federation of Labor for the year 1930.

LABOR, AMERICAN FEDERATION OF. The American Federation of Labor held its fiftieth annual convention at Boston from October 6 to October 17. The executive council reported that there was a total membership for 1930 of 2,961,096 as compared with 1929's membership of 2,933,545 and 1928's membership of 2,896,043. During the year 1929-30 the executive council declared that the following new charters had been issued: Central labor unions, 11; local trade unions, 42; federal labor unions, 8. There was a total of 500 delegates in attendance during the sessions of the convention. Among the outstanding events were the address of President Hoover, the detailed discussion given the Federation's unemployment programme, and the speeches of Senators Wagner of New York, and Walsh of Massachusetts.

Appreciating the seriousness of the unem-

ployment emergency, the legislative council of the convention placed before the assembly delegates a programme for unemployment which consisted of the following nine points: (1) The creation of a national system of Federal and State employment exchanges for the registry of the unemployed. (2) The collection of comprehensive statistics on employment and unemployment. (3) Reduction in the hours of labor and the introduction of the 5-day week. (4) Formation of a national economic council for the purpose of stabilizing industry. (5) Collection of data on methods of regularizing production. (6) Speeding up of public works. (7) Introduction of vocational training courses. (8) The recommendation to President Hoover that he arrange for a special study of technological unemployment. (9) Recommendation that the legislative council be empowered to study all proposed plans of unemployment relief.

Early in the meetings of the conference it was apparent that the floor would see considerable discussion devoted to the American Federation of Labor's programme for the handling of unemployment. On October 7 two resolutions favoring unemployment insurance were submitted and on the next day four resolutions with the same end in view were placed before the delegates. The most radical proposal dealing with unemployment was a resolution presented by the Newport, R. I., Central Labor Union, which advocated compulsory unemployment insurance through governmental legislation. This particular resolution proposed the establishment of a plan by which a fund would be created from taxation on "the increased value of stocks and bonds above par or original selling value; increased dividends or earnings in business and increased bank deposits and reserves." However, the proposal for the American Federation of Labor support of unemployment insurance received a severe setback when it was announced that the New York State Federation of Labor, which at its own convention had gone on record as favoring such a plan, would not present such a resolution to the American Federation of Labor convention. It is interesting to note, too, that President William Green, of the American Federation of Labor, though he had endorsed the candidacy of Governor Roosevelt of New York, went on record as opposing the Governor's compulsory unemployment insurance measure.

Important resolutions advocating unemployment insurance under State and Federal supervision were offered by the United Textile Workers of America and the American Federation of Teachers. The sessions of the resolutions committee of the convention witnessed an animated discussion of the whole problem. Repeatedly, charges were made that unemployment insurance constituted a dole and that its lack of success in Great Britain was ample justification for the opposition being voiced by the American Federation of Labor leaders. On the other hand, the fraternal delegates of the British Trades Union Congress who were present presented a spirited defense. Allen A. H. Finlay, one of the British delegates, objected to the use of the word dole and insisted that unemployment insurance in Great Britain was on a contributory basis. His union of 1,000 members, he said, had itself contributed \$35,000,000 in unemployment insurance to its members in the last nine years. Arthur Shaw, General Secretary of the British National Union

of Textile Workers, also defended the British scheme.

Senator Wagner, of New York, on October 10 severely criticized the inaction of business and governmental leaders in handling the acute unemployment situation. He resented the use of the word dole as applied to governmental programmes and said: "Is not the dole in use to-day in every industrial community of the country? What else can we call the disbursements for unemployment relief by every charitable organization and even by many municipalities?" Senator Wagner devoted considerable attention, too, to the use of injunction in labor disputes, and charged that in many of the States of the Union the Constitution had been suspended and that local law was being superseded by injunction edicts handed down by Federal and State courts. He also attacked the yellow-dog contract.

On October 15 President Green defended the unemployment programme submitted by the executive council of the American Federation of Labor. Mr. Green called on entrepreneurs in industry to set their own house in order and warned them that serious trouble might impend if rigorous action was not taken. The executive council triumphed when the convention, after a prolonged debate, adopted its unemployment programme and agreed to submit to it for further study all resolutions favoring compulsory unemployment insurance. This implied that the executive council would be expected to bring in a detailed report on the subject before the 1931 convention. Said Mr. Green in defense of the stand taken by himself and the other members of the executive council:

The American Federation of Labor has a programme which you have just heard. We will point the way. Our recommendations are the most practicable yet made by a responsible body. I believe if we placed the moral force of the Federation behind that programme we can force the adoption of a remedy, but we cannot have these periods of unemployment and maintain peace and tranquility in this country. If we are to maintain the present social order that squares with advancing civilization, the managers of industry must help; if they are to live and be protected they must help us find a cure for unemployment. It is a reflection on our civilization that we have 3,000,000 in this country seeking and willing to work and yet have no work to do. It is indefensible, morally wrong, socially disgraceful and the American Federation of Labor must press on until a solution is found.

The resolutions committee, to which had been submitted all the proposals for unemployment insurance, attacked these programmes without qualification. Matthew Woll was chairman of this committee. The committee report characterized compulsory unemployment insurance as a dole. The report said that such a policy would deprive the worker of his liberty by placing him under the supervision of Federal and State bureaucracies. A system of unemployment insurance would interfere with the free movement of labor from one part of the country to another in search of work. Another argument advanced against the scheme was that workers would be prevented in joining in movements to increase wages lest they sacrifice their eligibility to insurance coverage.

Other arguments voiced from the floor against unemployment insurance were based upon the alleged failure of the British system. In England, it was pointed out, the worker had become a ward of the state because it compelled him to accept work offered him under the penalty of loss of insurance. There was heated opposition advanced against these remarks by delegates

from the floor. Max Zaritsky, of the Cloth Hat and Cap Makers' Union, objected to characterizing unemployment insurance as a dole and then pointed out logically enough that the acceptance of doles in the form of charity was no more self-respecting. Mr. Zaritsky proposed that the problem of unemployment be attacked at the source and the source lay in the fact that "the purpose of industry is to operate for profit and not for service." None the less, the resolutions committee's report, proposing the submission of these schemes to the executive council, was adopted with few dissenting votes.

As a result of the urging of the United Textile workers of America, the American Federation of Labor pledged its support to the continuance of an intensive campaign for the organization of labor in the South. The United Textile Workers called particular attention to the strike of 4000 textile workers in Danville, Virginia. A formal resolution pledging such financial and moral assistance was adopted by the convention. A number of speakers pointed out that the success of the Federation's organization programme in the South depended in large degree upon the outcome of the Danville strike. This particular strike, speakers from the South declared, involved the yellow-dog contract, government by injunction, and company unionism. In addition to giving its own support the Federation promised to send out an appeal for financial aid to the strikers from all affiliated unions.

The executive council gave its support to the United Mine Workers of America in their struggle against the insurgent miners of Illinois. The action of the executive council indicated that the American Federation of Labor was opposed to the dual unionism that had sprung up in this union, and it was apparent that the Federation was opposed to the secession movement which the insurgents were fostering. The insurgent movement had been formed in Illinois under the leadership of John H. Walker for the purpose of wresting control away from John H. Lewis, president of the United Mine Workers of America. The decision of the executive council indicated that the American Federation of Labor would stand by the organization in control of the miners.

Other resolutions adopted by the convention were the following: a resolution asking for the almost complete exclusion of immigration during periods of depression; a resolution asking for the legalization of beer with a 2.75 per cent alcoholic content. (In other words the convention was opposed to the repeal of the Volstead Act and the Eighteenth Amendment.) A resolution calling on Congress to place immigration from Mexico on a quota basis; a resolution calling for the exclusion of Filipinos and Amerinds coming from south of the Rio Grande; a resolution calling for the strict enforcement of Chinese exclusion laws and the extension of the provisions of the alien contract labor law to include musicians, singers, and other artists; a resolution characterizing the yellow-dog contract as a "legalistic fraud" which should have no standing in court; a resolution pledging the support of the American Federation of Labor to the pending Walsh-Blaine-Norris anti-injunction bill before Congress; a resolution opposing intervention in Cuba; a resolution favoring the complete independence of the Philippines; a resolution calling upon the governor of California to pardon Thomas J. Mooney

and Warren K. Billings; a resolution favoring the manufacture of war munitions and the construction of naval vessels in government arsenals and navy yards "so that the elimination of private profit will place this department of national defense beyond the baleful influence of those who seek to create sentiment for the production of war munitions so that they may make greater profits."

The convention adjourned on October 17, after having unanimously reelected William Green president. The other officers reelected were: Frank Morrison, secretary; Martin Ryan, treasurer; Frank Duffy, first vice-president; T. A. Rickert, second vice-president; Matthew Woll, third vice-president; James Wilson, fourth vice-president; John Coefield, fifth vice-president; Arthur O. Wharton, sixth vice-president; Joseph N. Weber, seventh vice-president; G. M. Bugniazet, eighth vice-president. Vancouver, B. C., was chosen as the convention city for 1931.

See UNEMPLOYMENT.

LABOR ARBITRATION AND CONCILIATION. During the fiscal year 1929-1930 the United States Conciliation Service of the U. S. Department of Labor handled a total of 557 cases of which it adjusted 386, was unable to adjust 60 and reported that 60 were still pending at the end of the year. In these disputes there was involved a total of 268,960 workers. Some of the more important cases handled by the Conciliation Service follow:

Boyce Thompson Institute, Yonkers, N. Y. In April, 1930, a dispute arose between the Westchester County Building Trades Council and the sub-contractor responsible for erecting the annex to the Boyce Thompson Institute, a \$400,000 project at Yonkers, N. Y. The building trades council charged that the contractor was a non-union concern and it refused to let the crafts work on building material furnished by the company. Through the intercession of a representative of the Conciliation Service the dispute was adjusted and the men returned to their employments.

Minnesota and Ontario Paper Company, International Falls, Minn. Here in May, 1930, a strike impended involving 2500 employees. The reason for the threatened strike was an attempt on the part of the management to maintain one of its mills on an open-shop basis. As a result of intercession of a representative of the Conciliation Service, the strike was averted.

H. C. Aberle Company Hosiery Mills, Philadelphia. In this plant a strike involving 1400 employees broke out on Jan. 7, 1930, in protest against reduction of wages alleged to vary from 8 per cent to 33 per cent. A representative from the Service made efforts to bring the two groups together but without success. The situation got out of control, much trouble followed and the intercession of the police was necessary. As a result of the insistent demand of the Philadelphia public both sides were compelled to resort to arbitration and there was created a board made up of Philadelphians. This board was in session for upwards of a month and laid down decrees reducing the wage cuts. The plant was shut down for four weeks after the decision, the management claiming that it was impossible for it to continue under the wage rates granted by the arbitrators. However, the plant opened under the terms of the agreement.

Moving Picture Operators, Buffalo, N. Y. In the spring of 1930 a strike of moving picture operators was called by the union in the City of

Buffalo against a dozen independent theatres. The reason for the strike was the employment of non-union men by these independent owners. Weeks of trouble followed in which the theatres were picketed and a considerable loss of business resulted. As a result of the intercession of a representative of the Conciliation Service agreements were entered into and the strike was accordingly called off.

Truck Drivers, Philadelphia. In May, 1930, there occurred in this city a strike of truck drivers which involved 700 men and threatened to include an additional 3000. Truck drivers were demanding an increase in wages, shorter hours and improved working conditions. The commissioner from the Conciliation Service was able to arrange joint conferences of representatives of the Truck Owners' Association and of the union with the result that a compromise was reached and the drivers were granted a rate increase of from \$30 to \$32.50 a week. A week's work was designated as 60 hours, time and one-half for overtime and double time for Sundays and for holidays.

LABOR CONFERENCE, INTERNATIONAL. The fourteenth session of the official International Labor Conference was held at Geneva, June 10-28, with 156 delegates representing 51 countries in attendance. The conference adopted two draft conventions, one aiming at the ultimate suppression of the use of forced labor, and the other providing that the hours of work of persons employed in commercial establishments and offices should not exceed 48 in the week and eight in the day. Among the recommendations adopted by the conference were three requesting the member countries to investigate the hours of work of employees in hotels and restaurants, in theatres, and in establishments for the care of the sick, the infirm, the destitute, or the mentally unfit.

LABOR LEGISLATION. In 1930 there were convened in regular session the legislatures of nine States, two insular possessions and two territories, and the Congress of the United States. In addition, in several States, the Legislatures met in special session.

Notable among new laws were the provision for old-age assistance in New York and Massachusetts, the regulation of private fee-charging employment agencies in Kentucky, the provision for collection of additional employment statistics by the United States Bureau of Labor Statistics, the regulation of home work in New Jersey, and the liberalization of the Virginia workmen's compensation law.

Idaho. (Special session.) No labor laws enacted.

Kentucky. Granting of private employment agency licenses made conditional upon good moral character and many abuses forbidden; policemen's and firemen's pension law amended.

Louisiana. Maximum hours of labor for women in certain establishments are reduced to nine a day and fifty-four a week.

Massachusetts. Investigation of stock purchasing by employees in cooperative shoe shops directed; one day of rest in eight authorized for members of police department; bootblackening on Sunday left to local option; unlicensed seamen's intelligence offices penalized; investigation of unemployment, particularly among workers over forty-five years of age, directed; investigation of textile industry and unemployment continued; granting of adequate assistance to deserving citizens seventy years of age or over provided for; study of State retirement system directed; policemen's and teachers' retirement laws amended; State retirement law amended; mothers' aid law amended; civil service law amended; maximum salaries of industrial accident board members raised;

boiler inspection law amended; division on necessities of life created; workmen's compensation law amended in minor respects to improve procedure.

Mississippi. Practice of barbering is regulated; group insurance for State employees is authorized; firemen's relief fund is extended to include policemen.

Nebraska. (Special session.) No labor laws enacted.

New Hampshire. (Special session.) No labor laws enacted.

New Jersey. Mechanics' lien law amended; leaves of absence for disabled municipal and county employees authorized; law regulating home work enacted; safety code for the construction industry established; commission to investigate old age dependency created; discrimination against persons forty years of age or over applying for State or county employment forbidden.

New York. Certain buildings not to be deemed factory buildings; mechanics' lien law amended; injunctions may be granted only upon such notice as the court may direct, certain salaries increased; hours of work on certain grade crossings regulated; motion picture operators granted one day of rest in seven; women's hour law amended; preference on public works to be given to State citizens; study of public employment offices authorized; demolition of buildings brought under labor law; safety devices must be provided for window cleaners; statewide system of old age relief established to grant assistance to citizens seventy years of age and over; public employees' retirement law amended; study of problems of social welfare authorized; salaries of certain labor department officials changed; occupational disease list extended and minor improvements made.

Porto Rico. Interference with employees' right to vote penalized; dismissal wage required upon discharge without fifteen days' notice; certain women in canning industry exempted from law prohibiting night work for women; work after 10 p.m. Saturday forbidden; employment service in New York City provided for; emancipated minors may engage in business; fruit packing factories exempted from law requiring dispensaries; teachers' retirement law amended; insular employees' retirement law amended; department of agriculture and labor made much more specialized.

Rhode Island. Sale of certain articles on Sunday may be authorized; appropriation for public employment offices no longer specified; firemen's pension law amended; salaries of boiler inspectors raised; grading of factory inspectors changed; law requiring certain revenue statements amended.

South Carolina. No labor laws enacted.

Utah. (Special session.) Additional sum appropriated to State building commission.

Virginia. Mechanics' lien law amended; corporations authorized to grant pensions to certain former employees; study of pensions and disability allowances for public employees directed; workmen's compensation law liberalized by increase in benefits payable and reduction of waiting period to seven days.

United States. Collection and publication of complete statistics on employment provided for; federal vocational rehabilitation act continued until June 30, 1933; federal employees' retirement act amended.

LABOR LEGISLATION, AMERICAN ASSOCIATION FOR. Founded in 1906, this membership organization of socially-minded economists, lawyers, journalists, labor leaders, and employers has worked along scientific lines, fearlessly attacking needless industrial evils from the general welfare viewpoint. It continues its work as the American arm of the International Association for Social Progress formed by the fusion of the three international organizations for labor legislation, unemployment, and social insurance. See SOCIAL PROGRESS, INTERNATIONAL ASSOCIATION FOR. Progress of the Association was recorded in its substantial quarterly, the *American Labor Legislation Review*, the December, 1930, issue of which contained a convenient annual summary and index of all new labor laws enacted in the United States.

The severity of business depression during the year brought renewed interest in the Association's unemployment programme. As in 1915 and 1921 a country-wide unemployment survey was made and standard recommendations concerning emergency relief measures, public employment agencies, long-range planning of public works, stabilization, and unemployment insurance were

stressed. After consultation with representative authorities throughout the country an unemployment insurance bill was drafted which the Association called "An American Plan for Unemployment Reserve Funds" and which was carefully framed to meet the special conditions of American industrial life. A campaign for the enactment of this bill was begun.

The Association continued its activities in the fields of workmen's compensation, old-age pensions, mine safety, regulation of private employment agencies and labor law administration. Legislative progress during the year included a more liberal compensation law for Virginia, old-age assistance laws for New York and Massachusetts, and an act regulating private fee-charging employment agencies for Kentucky. An intensive study of the administration of labor law in Rhode Island was made and a report published.

The Association held its third National Conference on Unemployment in connection with its twenty-fourth annual meeting at Cleveland, December 29-31. Subjects discussed included Federal-State cooperation in legislation, official unemployment committees, industrial changes and unemployment, the statistical measurement of unemployment, and unemployment insurance. The president in 1930 was Joseph P. Chamberlain; the secretary, John B. Andrews, with headquarters at 131 East 23rd Street, New York City. See *Labor Legislation*.

LABOR OFFICE, INTERNATIONAL. See INTERNATIONAL LABOR OFFICE.

LABOR UNIONS. See TRADE UNIONS.

LABRADOR. A large peninsula of British North America, lying between the Atlantic Ocean and Hudson Bay and forming the easternmost part of the North American Continent. The Atlantic watershed of the peninsula, a large part of which was claimed by Quebec, was awarded to Newfoundland by the Privy Council in 1927. The remainder comprises part of Quebec. The population of the section attached to Newfoundland was 4086 in 1928. Fishing and lumbering are the chief industries.

LABUAN. A small island off the northwest coast of Borneo, ceded to Great Britain in 1846. Area, 30 square miles; population, in 1928, 5904 (23 Europeans). Capital, Victoria, with a population of about 1500. Revenue in 1928, 187,172 Singapore dollars; expenditure, 222,264 dollars (1 dollar equaled about \$0.56). The island is administered under the supervision of the Governor-General of the Straits Settlements. See STRAITS SETTLEMENTS.

LACROSSE. The Flannery Cup, emblematic of international lacrosse supremacy which had been held by Syracuse since 1923, was won by a combined Oxford-Cambridge team during an invasion of the United States in the spring of 1930. The British team engaged in 15 games, winning 12, tying one, and losing two. A team of picked players from 13 American colleges was defeated by the Oshawa General Motors team of Canada in a two-game series for the international championship held in Toronto in July. St. John's College of Annapolis was recognized by the Inter-collegiate Lacrosse Association as foremost among American college teams. Although the Annapolis team was defeated by Johns Hopkins, three to two, it had a record of ten victories.

LADD-FRANKLIN, CHRISTINE. An American scientist and educator, died in New York

City, Mar. 5, 1930. She was born in Windsor, Conn., Dec. 1, 1847. After her graduation from Vassar College in 1869, she was engaged in teaching in the scientific departments of several schools. In 1878 she entered Johns Hopkins University, the only woman student, and four years later was married to Dr. Fabian Franklin, an associate professor in the mathematics department. Later, 1891-92, she studied at the universities of Göttingen and Berlin. She was an associate editor of *Baldwin's Dictionary of Philosophy and Psychology*, 1901-02, and lecturer in logic and psychology at Johns Hopkins University, 1904-09, and at Columbia University, 1910-30. Vassar conferred the LL.D. degree on her in 1887, and in 1926 she received the Ph.D. degree from Johns Hopkins. She contributed the doctrine of antilogism to logic, and in physics made a notable contribution with her theory of color-vision, first offered in 1892 and published in the *Zeitschrift für Psychologie*. In 1928 her collected papers on this theory were published under the title, *Colour and Colour Theories*. She also contributed to the *American Journal of Mathematics* and the *American Journal of Psychology*, and wrote the appendix to the English translation of Helmholtz's *Physiological Optics* (1924).

LAFAYETTE COLLEGE. An institution for the higher education of men in Easton, Pa.; founded in 1826. The registration in the autumn of 1930 was 1004, the enrollment being restricted. The faculty numbered 95. The productive funds amounted to \$3,467,985 on July 1, 1930, and the income for the previous year was \$577,140. The number of volumes in the library was 78,000. The Markle Hall of Mining Engineering and the Kirby Hall of Civil Rights were completed during the year. President, William Matthew Lewis, A.M., LL.D.

LAFLEUR, EUGENE. A Canadian lawyer, died in Ottawa, Ont., Apr. 29, 1930. He was born in Longueuil, Quebec, in 1856, and was educated at McGill University. For three years he read law in a private office and in 1881 became a partner of Lailleur and Sharp. He also practiced law alone and with other partners and, at the time of his death, was a member of Lafleur and MacDougall, Macfarlane and Barclay. He was created a Queen's Counsel in 1900 and appointed to the Montreal bar in 1904, becoming the same year Batonnier-General of the Province of Quebec. From 1880 to 1908, he was professor of international law at McGill University. In 1911 he was president of the International Boundary Commission, appointed to settle boundary disputes between the United States and Mexican governments. Appointed in 1929, with Justice Willis Van Devanter of the Supreme Court of the United States, he was to have acted as a board of arbitration to hear the *I'm Alone* Case, brought about by the sinking of the Canadian schooner, *I'm Alone*, by a United States Coast Guard vessel when the Canadian captain refused to allow his vessel to be searched for smuggled liquor.

LAJEUNESSE, lā'zhé'nēs', MARIE LOUISE EMMA CECILE. See ALBANI, EMMA.

LAKE TSANA, or TANA. See ETHIOPIA under *History*.

LAMBERT, GEORGE WASHINGTON. An Australian painter, died in London, May 29, 1930. He was born in St. Petersburg (now Leningrad), in March, 1873, and spent his boyhood in England and Australia. In 1891 he entered the Sydney School of Art where he studied under Julian Rossi

Ashton, the "father" of Australian painting. He also was engaged at this time with book illustration and pen-and-ink sketches for the *Sydney Bulletin*. In 1900 he won the traveling scholarship of the New South Wales Society of Artists, which enabled him to study for two years in Paris. The first picture which he exhibited was a self-portrait which was accepted by the *Société Nationale des Beaux-Arts* in 1901. His first appearance in London was in 1903 at an exhibition of the International Society of Painters, Sculptors, and Gravers. In 1904 his portrait of Thea Procter, an Australian artist, was accepted by the Royal Academy. Then followed such notable subject paintings as "Family Group" (1905); "Lotty and a Lady" (1906); "The Mother" (1907); "The Bathers" (1908); and "Holiday in Essex" (1910), with which he achieved a great success at the Academy. In all of these his wife and children were used as models. In 1911 his allegory, "The Mask," though rejected by the Academy was accepted by the Venice International Exhibition and was purchased for a gallery in Petrograd. By 1912 his reputation as a portrait painter had been definitely established, and he became recognized as one of the leading British portrait painters. In 1917 he was appointed by the Commonwealth War Records Department official artist to the Australian Imperial Forces in Egypt and Palestine. Typical of this commission are: "Charge of the Light Horse at the Nek"; "The Light Horse Sergeant"; and "Jericho during the War." More than 250 pictures and sketches which he produced as official artist are on exhibition in the War Museum in Melbourne. He was a foundation member of the Modern Society of Portrait Painters, and in 1922 was elected an Associate of the Royal Academy, the second Australian artist to receive this honor. His work was marked by a gift for composition and showed deliberation and restraint and meticulous attention to detail.

LAMBETH CONFERENCE. See CHURCH OF ENGLAND.

LAMBS. See LIVESTOCK.

LAND CLASSIFICATION. See SOILS.

LAND GRANT COLLEGES. See UNIVERSITIES AND COLLEGES.

LANDS, PUBLIC. The Commissioner of the General Land Office of the United States in his annual report for the fiscal year ending June 30, 1930, stated that the area embraced in original entries was 5,434,550 acres as against 4,612,722 acres the previous year and 3,243,446 in 1926. The area embraced in unperfected entries at the close of the year was 22,533,574 acres as against 21,347,505 at the close of 1929.

An important activity of the year was field examinations and subsequent adjudicative work to clear the records of speculative mining locations in the area to be flooded by the Boulder Dam. Also field examination and office adjudication of oil shale mineral locations in Colorado, Utah, and Wyoming were made and data compiled for the Department of Justice involving immense areas in connection with a large number of suits brought by Indian tribes in the Court of Claims. A plea was also made for increased funds for forest-fire prevention and for a special appropriation to combat coal fires on the public domain.

The total receipts of the General Land Office were \$6,801,409.95, and the total expenditures were \$2,222,785. Receipts under the mineral leasing act amounted to \$4,739,095.67. Over 20,000

filings were made in the district land offices, and 497 at Washington involving land in States where the district land offices have been discontinued. Of the 5,434,550 acres embraced in allowed entries, over 4,000,000 were allowed under the stockraising homestead law. Over 9500 patents were issued, involving 1,892,475 acres, including 1,433,905 acres patented under the homestead laws. Consideration was given to 195 applications for rights of way for railroads and 617 for rights of way for canals, ditches, telegraph, telephone, and power transmission lines.

Eighty-four oil and gas leases were issued, where required by statute or justified by particular equities, 133 applications for oil and gas prospecting permits were reinstated, 150 permits which had been canceled were reinstated, and 199 new permits were granted, after consideration of equities which had been alleged by the applicants and permittees. During the year 4474 oil permittees were called upon to show cause why their permits should not be canceled, 8358 permits were canceled for failure to conform to requirements of the mineral leasing act, and 4390 permit cases were examined on which further action was necessary. Sixty-eight coal prospecting permits were issued, 29 coal leases and 15 coal licenses, 41 potash permits, 3 potash leases, and 3 sodium permits.

Among the objects for which miscellaneous leases were issued pursuant to law were airports, fur farms and grazing in Alaska, mineral springs, etc. Title was conveyed to the States covering 274,230 acres involved in indemnity selections, and 113,146 acres of quantity selections. There were patented in satisfaction of grants to the railroads 73,311 acres, and 66,552 acres of selections were rejected. Ten railroad grants were finally adjusted. Ninety-nine sales of timber on the revested Oregon and California railroad grant lands were held, involving 285,019,380 feet of timber for which \$499,840.52 was received, and \$263,657.50 was received for timber on the Coos Bay wagon road grant.

The surveying service accomplished the survey of over 3,000,000 acres. Field examination was made of 16,860 cases, 11,634 being reported favorably and 5226 adversely, as a result of which over 129,000 acres were restored to the public domain by administrative action and over 4000 by decree of court. Twenty-nine indictments were secured and of the cases tried 22 convictions were obtained. The total amount of cash collected as the result of the work of the field examiners was \$81,306.63, principally in settlement of timber trespass, and \$1111.87 additional was recovered through suits, all this being in addition to the entries and selections which were not allowed to proceed to patent because of the facts disclosed by the adverse reports. The report covered the disposition of rights asserted or privileges claimed under practically every one of the numerous general and special public land laws.

LANDSDOWNE COLLECTION. See ART SALES.

LANGMUIR, IRVING. American chemist. See CHEMISTRY, INDUSTRIAL.

LANGUAGE, AND LANGUAGE STUDIES. See PHILOLOGY, MODERN; ANTHROPOLOGY.

LAOS. See FRENCH INDO-CHINA.

LAPUAN MOVEMENT. See FINLAND under History.

LARKIN, PETER CHARLES. High Commissioner for Canada in London, died in London, Feb.

3, 1930. He was born in Montreal, Can., May 13, 1856, and entered business. He organized the Salada Tea Company with offices in Canada, England, and the United States. In 1911 he was appointed Canada's representative on the royal commission to investigate the resources of the British Empire. Becoming in 1922 the Canadian High Commissioner in London, he organized and coordinated the Canadian agencies in London, secured the removal of the embargo on the landing of Canadian cattle in England, and supervised the building of Canada House in Trafalgar Square. He was a Liberal in politics and a member of the Privy Council of Canada.

LATIN AMERICA. See PAN-AMERICAN UNION.

LATIN STUDIES. See PHILOLOGY, CLASSICAL.

LATTER-DAY SAINTS, CHURCH OF JESUS CHRIST OF. A religious body commonly known as the Mormon Church, existing chiefly in the United States. It was organized Apr. 6, 1830, at Fayette, N. Y., by Joseph Smith to whom is credited by his followers the discovery, through divine revelation, of a set of metal plates, buried in a hill, from which by a special power received from God he translated the text of the Book of Mormon, the special sacred book of the church. The Mormon articles of faith include belief in God, Jesus Christ, and the Holy Ghost as individual beings, the punishment of men for their own sins, the atonement, divine authority, baptism, laying on of hands, prophecy, salvation for the dead, the Bible "as far as it is translated correctly," the common virtues, and obedience to constituted authorities. The membership of the church is largely in the Mountain States, owing to the early migrations of Mormons and their final settlement in Utah.

The administrative divisions of the church are known as the general, stake, ward, branch, and mission. A stake is a geographical division and comprises wards and branches, and is directed by a presidency of three. A ward is frequently a part of a city, and is directed by a bishop and two counselors. The branch, similar to the ward, is directed by an elder. In 1930 the church consisted of 104 stakes, 930 wards, and 75 independent branches. The estimated membership was 663,454. There were 12 missions in America with a membership of approximately 98,777; the missions in Europe had a membership of 29,000 and those in the Pacific Islands of 15,000. A mission is directed by a mission president. In 1930, 148 missionaries were at work in various countries, 899 being outside the United States.

The general authorities who have jurisdiction over the entire church are the First Presidency, the Quorum of the Twelve Apostles, the Presiding Patriarch, the First Council of Seventy, and the Presiding Bishopric. In 1930 these authorities were: First Presidency: Heber J. Grant, president; Anthony W. Ivins, first counselor; Charles W. Nibley, second counselor. Quorum of the Twelve Apostles: Rudger Clawson, president, and Reed Smoot, George Albert Smith, George F. Richards, Orson F. Whitney, David O. McKay, Joseph Fielding Smith, James E. Talmage, Stephen L. Richards, Richard R. Lyman, Melvin J. Ballard, and John A. Widtsoe, apostles. Presiding Patriarch: Hyrum G. Smith. Seven Presidents of the First Council of Seventy: Brigham H. Roberts, J. Golden Kimball, Rulon S. Wells, Joseph W. McMurrin, Charles H. Hart, Levi

Edgar Young, Rey L. Pratt. Presiding Bishopric: Sylvester Q. Cannon, presiding bishop; David A. Smith, first counselor; and John Wells, second counselor.

The church maintains seven temples which are devoted to sacred ordinances for the living and the dead, such as baptisms, endowments, and marriages. It also maintains Brigham Young University (q.v.) at Provo, Utah, five junior colleges, three collegiate institutes, two high schools, and 78 seminaries, small schools adjoining high schools and providing special religious instruction. The Sunday schools in 1930 had an enrollment of 252,544 pupils and 26,314 officers and teachers. Junior seminaries had an enrollment of 12,035. The auxiliary bodies included a women's relief society, numbering about 62,902 members, who care for the sick and poor. The Melchizedek Priesthood, a senior order, had 75,322 members, and the Aaronic Priesthood, a junior order, 77,116 members. The two mutual improvement associations, composed of young people, had an enrollment of 108,557. The primary association for those under 14 had 109,483 members.

The church holds two general conferences each year, one during the first week in April and the other the first week in October, at which the work of the general authorities is reviewed. The centennial celebration commemorating the organization of the Church of Jesus Christ of Latter-day Saints and the first century of its religious activity was held on Apr. 6, 1930, in every city, town, or village where a branch or local congregation of the church had been established. In Salt Lake City, the seat of the first presidency and headquarters of the church, a great centennial conference was in session four days, and during the month there was presented each evening in the Mormon Tabernacle a pageant called *The Message of the Ages*, depicting the history of religion.

LATTER-DAY SAINTS. REORGANIZED CHURCH OF JESUS CHRIST OF. After the death of Joseph Smith in 1844, several factions developed among the Latter-Day Saints. In 1852, in Wisconsin, some of these scattered congregations effected a partial reorganization, which in 1860 was completed under the name of the "Reorganized Church of Jesus Christ of Latter-Day Saints," and which claims to be the true continuation of that established by Joseph Smith in 1830. This claim has been successfully sustained in the Federal Court. In 1860 the Reorganized Church chose as its leader Joseph Smith, the son of the founder, who became presiding officer, a position which he held until his death in 1914, when his son, Frederick M. Smith, succeeded him. The Reorganized Church holds the same faith and religious practice which were established in the original church, but rejects as false and inconsistent with the doctrine, beliefs, and practices of the church prior to 1844 the doctrine of polygamy. The membership as reported in 1930 was 108,356, including members throughout the United States and in Canada, Great Britain, Australia, Germany, Isle of Pines, Holland, Switzerland, Norway, Sweden, Palestine, South Sea Islands, Hawaii, and New Zealand. The organization in 1930 comprised 745 churches, 6932 ministers, 730 Sunday schools, and 45,000 pupils; and maintained Graceland College in Lamoni, Iowa, the Institute of Arts and Sciences, home for the aged, and the Independence Sanitarium in Independence, Mo. Its official periodical, the *Saints' Herald*, is issued weekly. The world-

headquarters of the church are in Independence, Mo., where in 1930 an auditorium costing \$1,000,000 was in process of erection.

On Apr. 6, 1930, the Reorganized Church celebrated its centennial anniversary. More than 25,000 persons attended the two-weeks' celebration which was characterized by an historical pageant depicting the organization and development of the church in the last century and an oratorio entitled *The Course of Time* by John T. Gresty of Sydney, Australia. During 1930 the Reorganized Church devoted its activities to developing the doctrine of stewardship, stressing the social and economic aspects of religion, and in the vicinity of its headquarters made investments totaling many thousands of dollars for the purpose of carrying out practical demonstrations in the field of agricultural and industrial stewardships under group control.

LATVIA. A Baltic republic formed from territories of the former Russian Empire on Nov. 18, 1918; bounded by Estonia on the north, Russia on the east, and Lithuania and Poland on the south. Capital, Riga.

AREA AND POPULATION. The total area, excluding inland lakes, is approximately 24,400 square miles. The population at the beginning of 1930 was 1,899,000 as compared with 1,844,805 at the census of 1925. In 1928, the birth rate per 1000 of population was 20.65 and the death rate 14.41. Of the total population in 1925, 75.61 per cent were Letts, 12.32 per cent Russians, 4.48 per cent Jews, 3.39 per cent German, and 2.52 per cent Poles. Riga, the chief city, had 339,324 inhabitants in 1929. Other leading towns, with their census populations in 1925, are: Libau (Liepāja), 60,762; Dvinsk (Daugavpils), 40,640; Mitau (Jelgava), 28,321.

EDUCATION. Each national minority has the right to its own schools, with its own language of instruction. In 1928-29, there were 1931 elementary schools, with 157,810 pupils, and 137 secondary schools, with 23,042 pupils. The State supported 77 of the secondary schools and all but 111 of the primary schools. The Latvian University at Riga had 7974 students.

PRODUCTION. Agriculture is the primary industry, although manufacturing has shown a rapid growth. About 55 per cent of the total area, or 8,118,000 acres, were under cultivation in 1929 and 29.2 per cent consisted of forests. Harvests in 1929 were larger than for the poor crop year of 1928, with the exception of wheat. The yields, in quintals in 1929, with comparative figures for 1928 in parentheses, were: Wheat, 644,000 (680,100); rye, 2,381,000 (2,148,700); barley, 2,136,000 (713,100); oats, 3,430,000 (1,456,900). The potato crop in 1929 amounted to 1,125,670 metric tons. Due to the poor harvest of 1928, livestock in 1929 showed a decrease to the following totals: Cattle, 975,000; sheep, 900,000; swine, 388,000; horses, 360,000.

The number of industrial enterprises increased from 2887 in 1928 to 2948 in 1929, and the number of workmen employed from 67,098 to 71,736, respectively. Woodworking is the predominant industry, others being metal working, printing, and the manufacture of food, drink, tobacco, chemicals, textiles, and paper. The number of unemployed in June, 1930, was 779, as compared with 1236 in June, 1929. Mineral resources of the country are small.

COMMERCE. Both imports and exports showed a substantial increase in 1929 over 1928, and the

unfavorable balance of trade rose to \$9,005,000 lats (1 lat equals \$0.193 at par) from 46,116,000 lats in 1928. Excluding bullion shipments, imports in 1929 were valued at 361,808,000 lats (307,425,000 in 1928) and exports at 271,803,000 lats (261,309,000 in 1928). Imports in 1929 were divided by the value of principal classes as follows: Manufactured goods, 152,206,000 lats; foodstuffs, 117,845,000; raw and semi-manufactured materials, 89,823,000; livestock, 1,934,000. Exports consisted of: Raw and semi-manufactured materials, 117,372,000 lats; manufactured goods, 89,924,000; foodstuffs, 64,262,000; livestock, 245,000.

Trade is chiefly with Germany, Great Britain, Soviet Russia, Poland, the United States, Belgium, and the Netherlands.

FINANCE. The budget for the fiscal year ended Mar. 31, 1930, including ordinary and extraordinary receipts and expenditures, was estimated to balance at 186,500,000 lats. Actual returns, however, showed a surplus of 11,764,000 lats, according to the Ministry of Finance. The surplus was provisionally marked for distribution to the road building, social welfare, and agricultural promotion funds. The budget for the fiscal year 1930-31, as passed by Parliament Apr. 16, 1930, balanced at 178,649,000 lats (\$34,479,000). In the new budget, provision was made for meeting practically all ordinary and extraordinary expenditures from tax revenues, thus eliminating the supplementary budgets necessary in previous years. Taxes normally provide 56.5 per cent of the total revenues, and income from State monopolies and forests, 26.3 per cent. The public debt on Jan. 1, 1930, stood at 110,700,000 lats, of which 50,500,000 was owed to the British government, and 28,400,000 to the Government of the United States. The remainder consisted of a 31,100,000-lat 6 per cent foreign loan and internal loans aggregating 700,000 lats.

COMMUNICATIONS. Of the 1773 miles of railway in operation in 1929, built in five different gauges, all but 109 miles were state owned and operated. For the fiscal year 1928-29, the Latvian railroad administration reported operating expenses of 36,241,000 lats (about \$6,994,513), operating revenues of 45,002,000 lats (about \$8,685,386), and a net operating profit of 8,715,000 lats (about \$1,690,873). Latvian highways extended 15,540 miles, of which only 459 miles were macadamized and 110 miles paved. Construction during 1929 included 84 miles of first-class highways. The allotment for road maintenance and construction for the fiscal year 1929-30 amounted to \$2,900,000. The merchant marine in 1930 consisted of 146 vessels (both sailing and powered) of 105,336 net tons.

GOVERNMENT. Under the constitution adopted by the constituent assembly, Feb. 15, 1922, executive power is vested in a president, elected by Parliament for three years; and legislative power in the Saeima, or Parliament, comprising 100 members elected for three years, by universal direct suffrage (men and women), on the basis of proportional representation. President at the beginning of 1930, Gustav Zemgals (elected Apr. 8, 1927); Prime Minister, Hugo Cleminš (appointed Nov. 30, 1928).

HISTORY. Except for the election of a new president and increased activities of Communists, Latvia passed a comparatively uneventful year in 1930. Albert Kviesis, a member of the Farmers' Union and formerly Vice President of the Cham-

ber, was elected President April 9 to succeed Gustav Zemgals. A secret Communist meeting in the vicinity of the capital was reported to have been broken up April 13, with the arrest of 39 participants. A Communist demonstration in Parliament three days later resulted in the ejection of three deputies. Action to end Communist activities was urged by Premier Celminš in an address on May 16. He pointed out that although the Communist party was illegal, it was represented in Parliament. Minister of Agriculture Albering resigned March 4, following attacks upon him in Parliament. He was succeeded by V. Gulbis. In a review of Latvia's foreign relations on Jan. 1, 1930, Foreign Minister Balodis said that the country was on peaceful terms with all its neighbors, including Soviet Russia.

LAW, INTERNATIONAL. See INTERNATIONAL LAW.

LAW ENFORCEMENT. See CRIME; PROHIBITION.

LAWN TENNIS. See TENNIS.

LAWRENCE COLLEGE. A coeducational institution comprising a college of liberal arts and a conservatory of music in Appleton, Wis.; founded in 1846. For the autumn term of 1930, 853 students were enrolled in the college and 209 in the conservatory. There were 65 members on the faculty of the college and 25 on the faculty of the conservatory. The endowment, exclusive of buildings and equipment, amounted to \$1,869,920; the income from endowment for 1930 was \$98,139. There were 53,000 volumes in the library exclusive of government documents. President, Henry Merritt Wriston, Ph.D., LL.D.

LEAD. The U. S. Bureau of Mines reported that the domestic lead industry was less severely affected by the world-wide industrial depression of 1930 than either the copper or the zinc industry. The output of lead from domestic sources was 15 per cent lower than in 1929, while copper and zinc showed decreases of 25 and 20 per cent, respectively. Estimated withdrawals of lead from the total supply available for consumption were only 16 per cent less than in 1929, whereas withdrawals of both copper and zinc for domestic consumption were approximately 28 per cent less. The output of primary lead from domestic sources was the smallest recorded since 1924 and that from domestic and foreign sources the smallest since 1923. Indicated domestic withdrawals were lower than in any year since 1923; exports of refined lead and imports of lead in ore, base bullion, etc., were lower than in any year since 1922.

The output of primary domestic desilverized lead in 1930 was about 324,000 tons, of soft lead about 200,000 tons, and of desilverized soft lead about 45,000 tons, making a total output from domestic ores of about 569,000 tons of refined lead. Corresponding figures in 1929 were 381,481 tons of desilverized lead, 235,345 tons of soft lead, and 55,666 tons of desilverized soft lead, making a total of 672,498 tons. The output of lead smelted and refined from foreign ore and bullion was about 72,000 tons, as compared with 192,135 tons in 1929. The total primary lead smelted or refined in the United States in 1930 was thus about 641,000 tons, as compared with a total of 774,633 tons in 1929, a decrease of about 17 per cent. The output of primary antimonial lead in 1930 was about 11,000 tons, as compared with 25,669 tons in 1929.

According to the Annual Summary in the *Engineering and Mining Journal*, the World Pro-

duction of Pig Lead in the years 1928-30 was as follows:

WORLD PRODUCTION OF PIG LEAD
[In short tons]

| | 1928 | 1929 | 1930 |
|--|-----------|-----------|-----------|
| United States | 649,800 | 688,000 | 605,000 |
| Canada | 170,800 | 159,200 | 160,000 |
| Mexico | 260,700 | 274,300 | 267,000 |
| North America | 1,080,800 | 1,121,500 | 1,032,000 |
| Australia | 174,900 | 194,700 | 183,000 |
| Spain and Tunis | 156,000 | 167,000 | 106,000 |
| Germany | 95,900 | 107,900 | 126,000 |
| Burma | 87,800 | 89,900 | 89,000 |
| Others | 244,600 | 254,100 | 294,000 |
| Total | 1,840,000 | 1,935,100 | 1,830,000 |
| Average New York lead price, cents per pound | 6.305 | 6.833 | 5.517 |

The average price for lead at New York (outside market) was unchanged at 6.25 cents a pound during January and all but the last two days of February. The average monthly price dropped steadily to 5.23 cents in July, rose to 5.49 cents in September, and dropped again to a low for the year of 5.10 cents in November and December. The price held at 5.10 cents from October 10 to the end of the year. There was considerably less fluctuation in the price of lead in 1930 than in the prices of silver, copper, and zinc.

LEAGUE OF NATIONS. The fifty-eighth session of the Council of the League of Nations opened on January 13 with a declaration from Foreign Minister Arthur Henderson of Great Britain that Parliament would be asked to ratify the optional clause for compulsory jurisdiction of the World Court. Mandates were chiefly discussed; and Mr. Henderson asked the president of the Council to appoint a commission for the study of the crucial Wailing Wall controversy in Palestine. Plans discussed for Iraq's entry into statehood met with Italian opposition, presumably from Italy's fear of losing her oil rights there. Mr. Henderson denied that the League covenant was being made second to the Kellogg Pact, and asked only that the covenant be amended that the two might harmonize. A strong bid was made from Geneva for speedy American ratification of her signature to the World Court protocols, in view of the Court elections next September; but reports from Washington gave little hope therefor.

On January 16, the tenth anniversary of the first session of the League (January 16, 1920), the Council rose. Recalling the general political situation when the League was created, M. Zaleski said that the hope and faith placed in the organization had not been in vain, and that the work done during the first ten years of its existence had not disappointed the nations. He then described the essential features of this work, emphasizing the part played by the League in international politics.

Perhaps the most fundamental activity of the session was the decision taken with reference to harmonizing the League Covenant and the Kellogg Pact. The committee appointed to report on amendments to the Covenant necessary for this was composed of Adachi (Japan), Von Bülow (Germany), Lord Cecil (British Empire), Cobian (Spain), Cornejo (Peru), Cot (France), Scialoja (Italy), Sokal (Poland), Titulesco (Rumania), Unden (Sweden), and Woo Kaiseng (China).

In the discussion on this issue Arthur Henderson brought out an interesting point. He strongly

intimated that the reservations, sometimes known as the "British Monroe Doctrine," made by the previous British Government to the Kellogg Pact, are of much less significance than has heretofore been accorded them. Stressing the importance of the League Covenant, Mr. Henderson explained that no League member can go to war, with or without the Kellogg Pact, without first invoking the various arbitral steps set forth in the Covenant. The fact that the "gap" in Article 15, Paragraph 7, of the Covenant does permit war in certain circumstances is not to be taken as meaning that the various obligatory measures to settle all disputes peacefully are not binding. Therefore Sir Austen Chamberlain's reservations to the Kellogg Pact merely mean that Great Britain reserves, not complete freedom of action in certain areas, but only freedom of action in those areas in the event that the League machinery of peace has completely broken down.

The speech of M. Briand on the subject of reconciling Pact and Covenant was symptomatic of French thought on the necessity of sanctions:

In the future it will be necessary not merely to condemn war, to nail it to the pillory, but also to insure that it can never be born, and in consequence to envisage what obstacles other than words can be opposed to that terrible scourge.

A second committee was appointed by the Council to study reasons for the delay in ratification of conventions concluded under the auspices of the League. The difficulty here is one which is vital to the success or failure of the work of international coöperation in progress at Geneva.

On the subject of ratification it should be noted that Lithuania, during the Council session, acceded to the Optional Clause of the World Court Statute, making the twentieth accepting state, and also signed the World Court Protocols providing for the accession of the United States.

The Council decided to convene, on February 17, the International Conference contemplated by the tenth Assembly for the conclusion of a customs truce. Virtually all the European countries agreed to participate in this conference, designed to stabilize tariffs during a period in which negotiations looking toward their reduction can be carried on. In view of the "United States of Europe" discussion, it was interesting to see that opinion in favor of the proposed customs truce was largely confined to Europe. The overseas British Dominions broke with the lead of the mother country by refusing to participate in this conference.

A proposal of independence for Iraq (q.v) in 1932 met with certain objections from the Italian and German representatives, who held that it might not be an advance, from the international viewpoint, to have the impartial supervision of the League of Nations exchanged for a nominal independence that might in practice mean subordination to the interests of a single foreign power. Following this discussion the Council requested the Mandates Commission to make suggestions which would enable it to decide as to the general conditions necessary of fulfillment before a Mandate should be terminated in favor of independent status.

The closing hours of the session were largely devoted to a consideration of minority questions concerning Lithuania and Upper Silesia. To report on these, Viscount Adachi, long the Japanese representative to the Council, made a special trip from The Hague, where he had been the chief

spokesman for his country during the Reparations Conference in the Dutch capital.

Other meetings which took place in January included sessions of the Economic and Financial Committees and of the Permanent Central Opium Board and a consultation of agricultural experts. The Advisory Committee on Traffic in Opium and the Committee on the Organization of the Secretariat, the International Labor Office, and the Registry of the Permanent Court were in session at the end of the month.

Constitutional and economic questions, the relations between the Covenant and the Paris Pact and the European economic problem were the principal items on the League's programme for February. The Conference for Concerted Economic Action met on February 17 to consider the possibility of a "tariff holiday," i.e. an agreement not to increase tariffs during a certain period—and to draw up a programme of subsequent negotiations for the improvement of economic relations by the reduction of trade barriers. This Conference was attended by 30 states, mostly European, several of the delegates being the Ministers in charge of the commercial policies of their countries. Edwin C. Wilson, First Secretary of the American Embassy in Paris, was instructed by the United States Government to be present as observer at this conference.

Article XII of the League Covenant was unanimously amended on February 28 by the committee of 11 jurists assembled at Geneva to try to harmonize the Covenant with the Kellogg treaty. In this renunciation of war, the amendment goes beyond the Kellogg treaty in three points: (1) It emphasizes "in no case" shall League members resort to war; (2) it specifies "peaceful means," viz. arbitration, judicial ruling, or examination by the League Council; (3) it excludes all reservations as to defensive wars, or regions of vital interest. Viscount Cecil stated on March 7 that no changes were contemplated in the sanction provisions of Article XVI, and that modification of Article XVII, dealing with the position of states outside the League in case of a dispute, was also not called for.

Two general conferences—the first League Conference for the Codification of International Law (see INTERNATIONAL LAW), and the Conference for Concerted Economic Action—were the principal items on the League's agenda for March, which was almost wholly devoted to legal and technical questions. Other important plenary sessions were those of the Health and Transit Committees, as well as meetings of the Committee on the Relations between the Covenant and the Paris Pact.

The Conference for Concerted Economic Action came to an end on March 24. It adopted a Commercial Convention providing for some measure of tariff stabilization and a programme of negotiations to be conducted during the period of stabilization with a view to the improvement of economic relations.

Persia filed a protest on March 16 concerning the Bahrein Islands, in the Persian Gulf, allotted by "technical error" to Great Britain. See PERSIA.

At a meeting of the Conference for Concerted Economic Action, sitting in Geneva, a protocol dealing with economic peace was recommended on March 15 for consideration. In the meantime, Austria's refusal to sanction Article I of the tariff-truce agreement, providing against re-

nunciation of the truce before Apr. 1, 1931, threatened the collapse of the conference. Out of a roll-call it developed that only 17 delegations voted in favor of the article. Internal politics were blamed by the French Minister of Commerce, Pierre Flandin, for the obstruction. In Czechoslovakia, one of the abstaining states, powerful Socialist agitation against revision of the tariff found that country wholly unprepared for the Geneva customs-truce negotiations. Immense profits were derived by the Socialists of Czechoslovakia from the large coöperative food concerns which they manage.

An important event in the social and humanitarian sphere was the meeting of the Advisory Commission for the Protection and Welfare of Children and Young People with its Committees on Traffic in Women and Children and Child Welfare. This Commission met in April and examined numerous reports and pursued its inquiries regarding the traffic in obscene literature, the recognition and enforcement of maintenance orders, illegitimate children, juvenile courts, the cinematograph in its relation to children, and draft conventions for the repatriation and assistance of foreign minors.

The Committee on Arbitration and Security (a sub-committee of the Preparatory Disarmament Commission) began its sessions on April 28 at Geneva. Three questions were on the agenda: (1) The transformation of the model treaty, framed by the Committee in 1928, into a general convention. This treaty would give the League Council power to enforce certain recommendations for preventing the outbreak of hostilities in case of disputes. (2) The revision of the draft convention for financial assistance to a state a victim of violation of the League Covenant or the Kellogg pact. (3) The completion of projects for insuring prompt means of communications, e.g. by airplanes, with the concerned areas in case of emergency. Another recommendation was made by Señor Cornejo, Peruvian member of the Council, that the committee study the amendment to Article XVIII of the Covenant that he proposed at a recent meeting of jurists for the harmonization of the pact and the Covenant. The amendment would forbid the League to register any peace treaty imposed by force as a result of the war undertaken in violation of the pact and would thus render such a settlement illegal, since the Covenant already declares non-registered treaties invalid.

While unspectacular, the fifty-ninth session of the Council, which met in Geneva from May 12 to May 15 inclusive, was important from the point of view of business transacted. The somewhat prosaic character of the meetings was itself, as Felix Morley of the League of Nations Association pointed out, indicative of the degree of development which the Council has reached.

Several problems that have worried the League in the past were removed from the agenda as "finished business." Foremost among these was the elimination of the protracted Bolivia-Paraguay dispute, that started in December, 1928. On May 15 the President of the Council informed that body of the receipt of communications from both these Latin-American governments announcing the final settlement of their difficulties and the resumption of diplomatic relations (see BOLIVIA). Less dramatic, but none the less important, was the final winding up of the work of the Greek Refugees commission.

Two other items that now disappeared from the League's calendar were the Hungarian Optants dispute, which had been eliminated by the Eastern Reparations Settlement, and the winding up of the Commission of Control for Hungary, whose finances, thanks largely to League assistance, were now in sound condition. See REPARATIONS; HUNGARY under *History*.

Two resignations were accepted by the Council: that of Charles Evans Hughes, formerly a Justice of the World Court, and that of Dr. Ludwig Kastl, a former member of the League's Mandates Commission. As successor to Dr. Kastl the Council appointed another German, ministerial-direktor Dr. J. Ruppel, an official in the Administration of the Cameroons from 1908 to 1913 and who in this period drafted the constitutional laws of that German colony. The Government of Iraq, a mandated area that probably was to be the first of its kind to achieve independence, requested that it be allowed to accede to the League Convention for the Suppression of Counterfeiting Currency. The Council decided that this accession was permissible, thereby practically endorsing the Iraq claim to eligibility to League membership as a prerequisite of eventual independence.

Another point of political importance was the application of the Free City of Danzig for membership in the International Labor Organization. If that application were accepted it would definitely settle in the affirmative the question of whether a state can be a member of the International Labor Organization without enjoying League membership. To many this issue seemed already settled since both Germany and Austria were members of the I. L. O. before joining the League, and since Brazil had continued to be a member of the I. L. O. since resigning from the League. The case of Danzig, however, would define the issue a little more clearly. The question was put up to the World Court (q.v.), which was to give an advisory opinion on the subject.

The Secretary General was instructed to ask those members of the Court that had not yet ratified the Protocol for the revision of the statute to state whether they had any objection to the coming into force of the amendments, that were due to take effect on September 1. Governments were asked to give their objections, if any, before August 20.

Innovations of considerable importance with reference to the handling of the opium problem were made by the Council. It decided to add to the Advisory Committee on Opium Austria, Belgium, Egypt, Mexico, Poland, Spain, and Uruguay, as representatives of non-manufacturing states. Furthermore, the Council decided to convene a conference on limitation of drug manufacture on or about December 1, to be preceded by a preliminary conference of representatives of manufacturing countries only, at the end of July.

On May 22nd the Fiscal Committee met to continue its study of questions referred to it by the Conference on Double Taxation. Three important events marked the work of the League of Nations in June, the end of the International Conference for the Unification of Laws on Bills of Exchange and meetings of the Mandates Commission and the Economic Committee. The Conference for the Unification of Laws on Bills of Exchange sat from May 13 to June 7, adopting three separate conventions for the elimination of differences in laws of the Continental type of bills of exchange. These

conventions were immediately signed by 33 countries and were to come into force as soon as seven states, members of the League or not, including three permanent members of the Council, had ratified or acceded to them.

The Mandates Commission met from June 3 to June 21 and held an extraordinary session devoted to the examination of the Palestine incidents of August and September, 1929. This extraordinary session was followed by an ordinary session in the course of which the Commission examined the reports of the Mandatory Powers on Syria and Lebanon, Togoland under French Mandate, Tanganyika, Nauru, New Guinea, and Southwest Africa.

The principal event in July was the annual session of the Committee on Intellectual Co-operation which was of particular importance in view of the decisions adopted with regard to the general reorganization of the work and methods of intellectual coöperation. To carry out the necessary reforms, the Committee appointed a permanent executive body, to meet four times a year.

The first conference of the League Committee on Air Transport Coöperation was opened at Geneva on July 8. Statements from Col. Charles A. Lindbergh, Dr. Hugo Eckener, and Gen. Italo Balbo, Italian Air Minister, were read to the air experts of 13 countries by the chairman, Louis de Broekère, of Belgium. Colonel Lindbergh urged the international standardization of commercial aviation methods. A programme of study was adopted for the development of international civilian aviation.

Albania was the latest government to appoint a permanent delegate to the League. The Costa Rican Congress favored the reentry of that nation into the League of Nations, leaving to their President to decide the conditions, if any, of reentry. Costa Rica left the League in 1924 over the question of its financial contribution to the League and over the frontier question with Panama, which was later settled. The League Council in 1928, on the motion of Colombia, invited the country to return.

Economic and social questions constituted a major part of the League's August agenda. Double taxation and the taxation of foreign motor cars were studied by Sub-Committees at The Hague. The Committee of Inquiry into Traffic in Women in the East held a preliminary session at Geneva, and the Permanent Central Opium Board considered statistics of drug manufacture and traffic for 1929, as well as estimates for 1930.

The League's scientific study of double taxation was made possible by a gift of \$90,000 from the Rockefeller Foundation, bringing the total sum of money given or pledged to League activities from private American sources to nearly \$5,000,000.

Two documents affecting the development of Palestine under British mandate made their appearance in August. The first of these was the long-awaited report of the Permanent Mandates Commission criticizing British administration in Palestine. The second contained the comments of the British government on the Mandate Commission's report. Both documents were laid before the League Council during its September session (See PALESTINE).

The eleventh Assembly of the League was in session from September 10 to October 4. It was attended by delegates from 52 member states,

Argentina and Honduras alone not sending representatives. As usual, the General Debate opened the discussions. It showed a marked feeling of uneasiness. The optimism and ardor which characterized the debates of the previous year, particularly the remarkable speech made by Mr. MacDonald, was replaced by a certain skepticism and critical spirit. Several speakers reviewed the situation very frankly. At least two of the undertakings of the League had more or less failed during the year: the Paris Conference on the treatment of aliens ended in no positive result, and the first Conference on the Codification of International Law at The Hague was far from realizing the results hoped for. The "customs truce," which the 1929 Assembly initiated had not yet been fully put into execution, as certain states had refused to ratify the agreements prepared. The Preparatory Commission of the Disarmament Conference had not been called, and in spite of the results of the London Naval Conference, it was only too true that in the field of disarmament there was still serious opposition to be overcome.

To these facts was to be added the effect of the economic depression that was being manifested by ever-increasing unemployment, by the agricultural crisis both in Europe and in overseas lands, and finally by the disturbing impression caused by the German elections. A certain anxiety had been caused by the Briand Memorandum on European Federal Union. It will be remembered that this memorandum had suggested the formation of a special European organization, composed of a conference, a council, and a permanent secretariat. Many wondered if this would not mean competition with, or at any rate duplication of the League of Nations, that would be harmful and costly. This feeling was revealed in most of the replies from the European Governments, to such an extent that it might be said that these replies as a whole constituted a plebiscite in favor of the League of Nations. It was, however, a fact that at the opening of the session there was still some uncertainty as to the intentions of the French Government. Fortunately this uncertainty was soon dispelled. At a meeting of representatives of European States held before the opening of the Assembly, M. Briand accepted the British proposal to bring the European question before the Assembly itself, which he did on the first day of the General Debate.

Thus problems of a European nature became the object of a detailed exchange of views during the General Debate, so that it seemed superfluous to refer them to a committee for further consideration. The debate completed the elements set forth on one side by the Briand Memorandum and on the other by the replies of the Governments to this memorandum. Certain conclusions may be drawn from this discussion:

1. A sincere and unanimous homage was paid to M. Briand.

2. It was recognized that there was a series of problems concerning Europe alone which required urgent and detailed consideration.

3. This work was to be pursued within the framework of the League of Nations, to allow all European and non-European nations, members and non-members of the League, to submit their contributions. With this object in view the Assembly instituted a Study Committee, to which all the European states members of the League were invited to nominate representatives; other

states to send observers. The committee was to meet on Jan. 19, 1931, after the meeting of the League Council, and submit a report to the twelfth session of the Assembly.

4. The great majority of the governments and speakers recognized that this committee should in the first place devote its attention to economic problems, without, however, neglecting the political problems to which the memorandum wished to give priority.

The session was opened by the Acting President of the Council, M. Zumeta (Venezuela), with a speech in which, after setting forth the main features of the League's work during the past year, he reminded the Assembly that two questions still had a predominant claim on its attention, the organization of peace and the economic problem.

M. Titulesco (Rumania) was elected President of the eleventh Assembly by 46 votes out of 51 cast.

The Assembly adopted its agenda, and divided its work among the seven following committees, to which each of the states represented was entitled to send one delegate: 1. *Legal and Constitutional Questions*.—Chairman, M. Scialoja (Italy); 2. *Technical Organizations*.—M. Colijn (Netherlands); 3. *Reduction of Armaments*.—M. Politis (Greece); 4. *Budget and Financial Questions*.—Count Carton de Wiart (Belgium); 5. *Social and General Questions*.—Countess Apponyi (Hungary); 6. *Political Questions*.—Sir Robert Borden (Canada); 7. The chairmen of the six Assembly Committees are *ipso facto* Vice-Presidents of the Assembly. The Assembly elected six other Vice-Presidents who, with the Chairmen of the Committees and the Chairman of the Agenda Committee, constituted its *General Committee*. The six Vice-Presidents elected by the Assembly were Mr. Henderson (British Empire), M. Matsudaira (Japan), M. Briand (France), M. Costa du Rels (Bolivia), M. Curtius (Germany), M. Quinones de León (Spain).

The Assembly held 24 plenary meetings; the general debate on the work of the League during the year lasted from September 11 to 16, bringing some 40 speakers to the platform.

The principal results of the work of the Assembly and the Council may be summarized as follows: Increase of the number of World Court Judges from 11 to 15; formulation of proposals concerning the amendment of the Covenant in order to bring it into harmony with the Paris Pact, which will be communicated to Governments for examination; arrangements to secure the greatest possible number and the early deposit of ratifications of League Conventions; conclusion of a Convention for Financial Assistance, signed by 28 states, including 22 European states, and two permanent Members of the Council—France and Great Britain; creation of a special committee for the further study of the draft Convention for Strengthening Means of Preventing War; two resolutions designed to facilitate League communications in times of emergency; a resolution expressing the conviction that the Preparatory Commission would be able to finish its preliminary draft by November, so as to enable the Council to summon the Disarmament Conference as soon as possible.

Other results included: Enunciation of the necessity of concerted action by Governments with a view of remedying the general economic depression; an appeal to all states to accede to

the Commercial Convention of March, 1930, and proposals regarding the prompt execution of the programme of future negotiations drawn up by the Conference for Concerted Economic Action; the dispatch to Bulgaria of experts to study the question of agricultural cooperatives; the scheduled convocation early in 1931 of the first conference of representatives of central police offices in order to promote international cooperation in the prevention and suppression of counterfeiting currency; convocation of a European Conference on Road Traffic for March, 1931; preparation of a European Conference on Rural Hygiene; creation of an International School for Advanced Health Studies in Paris; reorganization and definition of the work of the International Committee on Intellectual Cooperation.

In addition there was: The invitation of the Polish and Lithuanian Governments to enter into direct negotiations with a view to restoring order and tranquillity in the region of the "Administrative Boundary"; arrangements for studying the conclusions of the Transit Committee with regard to the obstacles to freedom of transit caused by the present state of affairs between Poland and Lithuania; agreement between the German and Lithuanian Governments concerning Memel; appointment of an arbitrator to settle a dispute between Greece and Bulgaria; convocation of a General Conference for the Limitation of Drug Manufacture for May, 1931; establishment of the programme and methods of work of the Committee of Inquiry on Traffic in Women in the East; creation of an international refugee office; invitation to the British Government to take such measures as it may consider indicated to give effect to the conclusions of the Mandates Commission, on the Palestine incidents.

Then there was a unanimous report following a protracted debate in the Sixth Committee and settlement by the Council of specific minority cases in Upper Silesia; suppression of the Saar Defense Force and Railway Commission; decisions regarding the obligation of the staff, the duration of contracts, regulations instituting a pensions scheme, and creation of a committee to study questions concerning the principal officers.

During the eleventh Assembly, Albania, Luxemburg and Persia accepted the compulsory jurisdiction of the Court, no ratification being necessary. More than 30 states, i.e. half the Members of the League, including the majority of European states, had now accepted the compulsory jurisdiction of the Court. Eight European states had become parties to the General Act for the Pacific Settlement of International Disputes. Spain and Luxemburg acceded during the eleventh Assembly. France's accession had been voted by Parliament, and was before the Senate. The accession of the British Empire was to be discussed by the Imperial Conference. Guatemala, the Irish Free State, and Norway succeeded Cuba, Canada, and Finland as nonpermanent Members of the Council.

Owing primarily to the opposition of Cuba, the Assembly was unable to complete the amendment of the World Court Statute. The effect in this country of the failure to amend the Statute was being watched with anxiety by American friends of the Court.

The complicated technical question of amending the Covenant of the League of Nations to bring it into conformity with the Kellogg Pact was much discussed but no agreement was reached.

This difficult problem was, therefore, referred for consideration to the next Assembly.

The Assembly decided to call a meeting of the Preparatory Disarmament Commission in November, but it could not agree on a date for calling the General Disarmament Conference. Again, as in previous years, the German spokesmen expressed their dissatisfaction at the lack of progress, and criticized the Allies, particularly France and the countries associated with France, for their failure to carry out their pledge in the Armistice agreement and implicit in the Treaty of Versailles that Germany's disarmament would be followed by general disarmament. The League's prestige and usefulness would be seriously impaired if it did not bring about a reduction of the oppressive burdens of land armaments. The whispered apprehension, as reported by the Foreign Policy Association, so often heard in the cloak-rooms of the Assembly undoubtedly expressed the view of disinterested observers, that, unless the Allies reduced their armaments, Germany would sooner or later arm itself beyond the treaty limitations. Should that happen, Europe would be confronted with a crisis of the first magnitude, one that might wreck the League. That danger was from without. But it was evident in the Assembly that the League was threatened also from within. The Secretariat in fact was suffering from a degree of disillusionment natural at the end of its first decade.

The Committee of Inquiry into the Traffic in Women and Children in the Far East began its task of arranging for the investigation which was to be financed by a gift of \$125,000 from the Social Hygiene Bureau of the Rockefeller Foundation of New York. It was announced that the United States was willing that the Philippines be included in the inquiry.

The sixtieth and sixty-first sessions of the Council, held at Geneva during the month of September, were for the most part concerned with routine activities. It was an interesting illustration of the organic development of the League that the Council meetings, held while the Assembly was in session, seemed secondary in importance to the proceedings of the larger body.

In the opinion of many observers the most interesting of the sixtieth session's activities was its acceptance of the report of the Mandates Commission on its extraordinary session concerning Palestine. This report was received by the British representative, Arthur Henderson, with complete good will and a formal recognition that it was the duty of the commission to criticize, when facts justify, the policy of the mandatory power.

The League Conference on Buoyage and Lighting of Coasts sat at Lisbon from October 6 to October 23, and was attended by 32 states. It drew up recommendations concerning lighthouses and agreements on maritime signals and attended lightships.

The Liberian Government officially informed the League of Nations on October 23 that all the domestic slaves of the native tribes had been declared free. The Government also announced that it had abolished the system by which a tribesman pledged a member of his family as security for a loan, and had ended forced recruiting for foreign labor contracts. Liberia explained that its action was taken because of the report of the International Inquiry Commission, composed of Dr. Charles S. Johnson, of Fisk Univer-

sity, for the United States, Cuthbert Christy, of Great Britain, appointed by the League Council, and Sir Arthur Barclay, named by the President of Liberia.

Debates in the November session of the Preparatory Disarmament Commission only served to bring out increasing divergencies. In the eighteen months since the commission last met, General Kasprzycki, of Poland, said that the tendency toward peace and the feeling of security had grown weaker. The debate as to the choice of limiting navies by expenditure, to which the United States continued to declare itself for its own case unalterably opposed, or by direct enumeration, seemed to imply opening up the revision of the Treaty of Versailles. The action taken by Great Britain, France, Italy, and Japan urging reduction of the size of battleships below the maximum limit of 35,000 tons and 16-inch guns threatened the unity arrived at by the London Conference between the first-mentioned two Powers and the United States, whose chief delegate, Ambassador Gibson, said that nothing definite could be said by him on this subject. A vote, however, was taken on the proposal of the Soviet delegate, Maxim Litvinov, that the commission recommend reduction instead of mere limitation. Carrying a French amendment "to reduce as far as possible," the proposal passed by a vote of 11 to 1, with 12 abstaining. See MILITARY PROGRESS; NAVAL PROGRESS.

The tenth anniversary of the League of Nations was celebrated on January 10. It recalled ten years of diversified and stimulating activity. Elihu Root said: "For these years the League in the political field and the Court in the judicial field have been rendering the best service in the cause of peace known to the history of civilization, incomparably the best." In a statement, President Nicholas Murray Butler of Columbia University emphasized the point that consultation is capable of keeping open the highroad of established peace.

Americans displayed keen interest in the League. During the tenth session of the Assembly James T. Forstall, of Chicago, gave 25,000 francs toward a revolving fund to facilitate the circulation of League literature; the Rockefeller Foundation contributed to the publication of banking laws and to the Health Section and gave \$2,000,000 to the building and endowing of the new League Library, the cornerstone of which has been laid; some 40 American citizens have served on various committees of the League; the United States government has coöperated with the League in a variety of ways.

Each year the International Federation of League of Nations Societies becomes more firmly established, and more competent in its programme of unifying world opinion behind the aims and ideals of the League of Nations. The price paid for increasing efficiency would seem to be an increasing conservatism in the pressing of concrete programmes. This conservatism was particularly pronounced at the fourteenth Plenary Congress of the Federation, held in Geneva, June 5 to 9, 1930. The resolutions adopted were much more in the direction of supporting policy already agreed upon by the League, than in urging the League to rapid advance along lines which are not yet demonstrated as practicable.

After a special discussion in committee, the proposal to move the headquarters of the Federation from Brussels to Geneva, supported by the

American, British, and German delegations, was again defeated. A branch office was opened in Geneva at 8 Rue de la Cloche, in June, 1930. Close relationship between the Federation and the League was emphasized by the appearance before the Plenary Congress of both the Secretary General, Sir Eric Drummond, and the Director of the International Labor Office, M. Albert Thomas.

Certain controversial resolutions were passed by the congress including a motion of protest against alleged persecutions in the Ukraine on the part of the Soviet government; a resolution demanding "all necessary measures" to restore Armenian property confiscated by Turkey; and a resolution on the situation in Palestine. A somewhat controversial Monroe Doctrine resolution was placed on the agenda by the Argentine society, but no Argentinian delegation attended to support it, and consideration of the resolution was postponed for another year.

Esther Lawrence, 17-year-old senior in the Bennett High School, Buffalo, N. Y., won the first prize of a trip to Europe in the Fourth National Competitive Examination on the League of Nations from among the 1277 papers submitted. In the Second National Contest for students at teacher-training institutions, Edward Heyman, of the Michigan State Normal College at Ypsilanti, won the European trip for his thesis on "The Growth of International Cooperation through the League of Nations."

The 1929 award of the Woodrow Wilson Foundation was made to the League of Nations June 19, 1930, for its ten years' work in the cause of peace. The award consists of a bronze plaque designed by the Yugoslav sculptor, Ivan Mestrovic, and a sum of \$25,000. At its January meeting, the Council decided that the gift should be used for the erection in the new League buildings of a monument to President Wilson.

A proof of the interest of the United States in the League of Nations was to be found in the appointment of Prentiss B. Gilbert as American Consul at Geneva with diplomatic rank. The selection of an experienced diplomat and his investiture with diplomatic rank were generally conceded to indicate that Mr. Gilbert would be in fact, if not in name, the official American observer at Geneva, and seemed to promise more direct contact between the State Department and the League. Before going to Geneva, Mr. Gilbert visited the leading capitals of Europe and spent a brief period as First Secretary of the United States Embassy in Paris. See INTERNATIONAL LAW.

LEATHER. During 1930 there was in the United States and throughout the world generally, decreased production of leather and leather manufactures. This is seen in the accompanying figures compiled by the U. S. Department of Commerce for the leading classes of product in the United States. As discussed under LIVESTOCK (q.v.), the number of animals slaughtered in the United States during the year showed a decrease from 1929, while the imports of hides and skins in 1930 were considerably less than in the previous year when the imports represented the largest volume since 1923.

The enactment of the Hawley-Smoot Tariff, which went into effect June 18, 1930, placed a duty of 10 per cent ad valorem on hides and skins of cattle, and 12½ per cent on sole, belting, and other leathers, with the exception of upper or patent leathers, which had a duty of 15 per cent,

and glove, strap, and other similar or finished leathers which had duties ranging to 30 per cent.

U. S. LEATHER PRODUCTION BY PRINCIPAL CLASSES, 1929-1930

| | 1929 | 1930 |
|--|------------|------------|
| Sole leather (cattle)sides. | 15,518,124 | 14,516,339 |
| Belting leatherbutts. | 1,431,779 | 2,067,875 |
| Side, upper, and patent (cattle)sides. | 15,738,312 | 18,563,515 |
| Harness leatherdo.. | 505,525 | 641,895 |
| Bag, case, and strapdo.. | 750,958 | 846,630 |
| Upholsterypieces. | 711,978 | 1,205,626 |
| Calf and kidskins. | 14,172,449 | 15,367,726 |
| Goat and kiddo.. | 55,443,901 | 55,684,501 |
| Sheep and lambdo.. | 80,390,739 | 38,980,687 |

According to a preliminary tabulation of the U. S. Census of Manufactures, the total output of leather in 1929 by tanners and finishers in the United States, exclusive of that produced on contract from hides and skins owned by others, was valued at \$458,995,685 (at f.o.b. factory prices), an increase of nine-tenths of 1 per cent as compared with \$454,904,813 reported for 1927, the last preceding census year. The chief items in the total for 1929 were: Sole and belting leather, \$136,524,951; harness leather, \$6,117,336; bag, case, and strap leather, \$7,307,793; upholstery leather, \$15,401,442; upper leather (other than patent), \$183,471,019; patent leather (other than upholstery), \$24,111,991; glove and garment leather, \$23,024,659; fancy and bookbinders' leather, \$15,395,595; finished splits (other than upholstery), \$19,246,240.

The imports of raw hides and skins, except furs, into the United States in 1930 aggregated 399,864,441 pounds valued at \$92,268,412, as against 515,658,541 pounds valued at \$137,281,386 in 1929. The value of cattle hides in 1930 was \$24,269,325 as compared with \$42,598,865 in the previous year. As in previous years, Argentina was the leading source of supply, providing hides valued at \$12,304,708 in 1930, as compared with \$23,197,540 in 1929. In 1930 kip and calf skins to the value of \$8,911,650 were imported, as against \$16,400,157 in 1929. Sheep and lamb skins to the value of \$14,368,774 were imported in 1930, as against \$21,904,919; goat and kid skins in 1930 to the value of \$38,098,645, as against \$47,500,323 in 1929.

The imports of leather into the United States in 1930 were valued at \$23,727,904, as against \$44,559,116 in 1929, while manufactures of leather imported were valued at \$31,169,901 in 1930, as against \$41,563,220 in 1929. Of the 1930 imports, the value of leather gloves, \$15,195,261, constituted 48.7 per cent and that of leather footwear, \$11,263,384, 38.1 per cent. See BOOTS AND SHOES. In 1929 footwear imports were valued at \$18,773,000, and leather gloves at \$16,551,000. Of the 14,498,278 pairs of leather gloves, valued at \$15,195,261 imported in 1930, Germany supplied 33.5 per cent (4,849,691 pairs) and France 33.3 per cent (4,821,942 pairs). In 1929 these countries furnished 5,568,741 and 5,571,351 pairs, respectively. The other important countries of origin were Italy, 15.8 per cent (2,295,497 pairs); Belgium, 7.8 per cent (1,127,009 pairs); United Kingdom, 0.8 per cent (125,121 pairs); and other countries, 8.8 per cent. The United Kingdom supplied almost identical quantities in 1929 (125,796 pairs) and in 1930 (125,121 pairs). Trade with the other countries declined.

The United States during 1930 exported to foreign countries and the noncontiguous territo-

ries of Alaska, Hawaii, and Porto Rico, leather manufactured goods valued at \$16,874,000, compared with \$22,353,000 for 1929, and imported similar commodities to the value of \$31,169,900. Exports to foreign countries alone were valued at \$12,630,197 compared with \$17,734,224 in 1929. The decreased exports reflect the unfavorable conditions existing throughout 1930 in the foreign markets.

wrote *Chotscho* (1913); *Volkskundliches aus Ost-turkistan* (1916); *Die buddhistische Spätantike Mittelasiens*, his most important work (5 vols., 1922-26); *Bilderatlas zur Kunst-und Kulturgeschichte Mittelasiens* (1925); *Auf Hellas Spuren in Ostturkistan* (1926); and *Buried Treasures of Chinese Turkestan* (1928), a semipopular and illustrated account, written in English, of the results of his excavations.

LEATHER MANUFACTURED GOODS EXPORTED TO FOREIGN COUNTRIES AND SHIPMENTS TO NONCONTIGUOUS TERRITORIES

| Item | 1929 | | 1930 | |
|----------------------------------|-----------|--------------|-----------|--------------|
| | Quantity | Value | Quantity | Value |
| FOREIGN COUNTRIES | | | | |
| Leather footwear .....pairs... | 4,807,212 | \$11,647,583 | 3,684,113 | \$ 8,290,869 |
| Gloves .....dozen pairs... | 23,455 | 202,730 | 16,917 | 156,458 |
| Harness and saddlery ..... | ..... | 233,068 | ..... | 164,076 |
| Bags, etc. ....number... | 30,456 | 166,429 | 16,222 | 88,615 |
| Pocketbooks, etc. ....do... | 516,565 | 574,925 | 281,545 | 287,714 |
| Beltng (new) .....pounds... | 1,294,165 | 2,038,396 | 885,578 | 1,416,466 |
| Other leather manufactures ..... | ..... | 2,871,093 | ..... | 2,125,999 |
| Total ..... | ..... | \$17,734,224 | ..... | \$12,530,197 |
| NONCONTIGUOUS TERRITORIES | | | | |
| Leather footwear .....pairs... | 2,129,000 | \$ 4,156,000 | 2,073,000 | \$ 3,716,000 |
| Other leather manufactures ..... | ..... | 463,000 | ..... | 428,000 |
| Total ..... | ..... | \$ 4,619,000 | ..... | \$ 4,141,000 |
| Aggregate ..... | ..... | \$22,353,000 | ..... | \$16,674,000 |

Prevailing economic conditions seriously affected the leather belting export trade, which declined from 1,294,165 pounds in 1929 to 885,573 pounds valued at \$1,416,466 in 1930. British India, the leading market, was supplied with 192,142 pounds, or 21.7 per cent of the total exports. China and Mexico were supplied, respectively, with 171,232 and 80,990 pounds. Trade with the Philippine Islands increased from 24,803 to 35,063 pounds. Other important markets were Canada and the United Kingdom, which were supplied, respectively, with 57,932 and 49,673 pounds. The noncontiguous territories of Hawaii and Porto Rico were shipped, respectively, 14,128 and 22,524 pounds of new leather belting, or a total of 36,652 pounds valued at \$65,364. Foreign countries were supplied with 16,917 dozen pairs of leather gloves valued at \$156,458; harness and saddlery, \$164,076; traveling bags, etc., \$88,615; leather pocketbooks, \$287,714; and miscellaneous goods, \$2,125,999. In 1930 trade in these commodities also declined.

LEBANON. See SYRIA.

LE COQ, ALBERT AUGUST VON. A German archaeologist and ethnologist, died Apr. 25, 1930, in Berlin, where he was born Sept. 8, 1860. In 1904 and 1905, and again in 1913-14, he conducted expeditions to Asia to explore an area at the foot of the eastern Tian-Shan Mountains, being accompanied on one of the earlier journeys by Dr. Albert Grünwedel, the archaeologist. From the excavations of ruins buried in sand, he brought back to Berlin Buddhistic wall-paintings and other relics and, more important still, a number of documents written on Chinese paper, vellum, and wood. Written in a variety of alphabets, the documents revealed links between Hellenism, Persia, India, and China and led to the discovery of a new Aryan language, Tocharian, with two distinct dialects. From 1914 to 1925, he was assistant director and, later, director of the Berlin Museum für Völkerkunde. In addition to contributions to the publications of the Prussian Academy of Sciences (1908-09, 1911-12, 1919-22) and to other compilations and journals, he

LEEWARD ISLANDS. A group of islands belonging to Great Britain in the West Indies; the most northerly group of the British Lesser Antilles, lying to the north of the Windward group and southeast of Porto Rico, comprising Antigua, Dominica, Montserrat, St. Christopher or St. Kitts (with Nevis and Anguilla), and the British Virgin Islands. Total area, 715 square miles; population at the census of 1921, 122,242, as compared with 127,193 in 1911. The estimated population in 1928 was 123,000. The two largest islands with their area and estimated population in 1928 were: Dominica, 305 square miles and 41,671 inhabitants; Antigua, 108 square miles, but with Barbuda and Redonda, 170 square miles, with a population of 30,442. The chief towns are Roseau (Dominica), 7374 inhabitants; St. John (Antigua), 6997 inhabitants; and Basse-Terre (St. Kitts), 7736 inhabitants. The British Virgin Islands comprise all those in the group which do not belong to the United States; area, 58 square miles; population (1921), 5082. The staple products in most of the islands are sugar, cotton, and molasses. Cacao and onions also are grown. The culture of tobacco is successfully carried on in Dominica. On that island and on Montserrat, lime juice and citrate of lime are important products. In the calendar year 1928, exports totaled \$4,220,000 and imports, \$4,040,000. In 1928 the receipts for Antigua, Montserrat, St. Christopher, and Dominica totaled £278,000, the expenditures £277,000, and the public debt, £201,000. The islands are divided into five presidencies under a governor, who is commander-in-chief, a Federal executive council, and a Federal legislative council. Governor in 1930, Lieut.-Colonel T. R. St. Johnston.

LEGISLATION. See LABOR LEGISLATION; paragraphs on *Legislation* under the several States; and the article UNITED STATES.

LEGION, AMERICAN. See AMERICAN LEGION.

LEHIGH UNIVERSITY. A nonsectarian institution for the higher education of men in Bethlehem, Pa.; founded in 1866 and composed of the colleges of engineering, business administra-

tion, and arts and science. The enrollment for the autumn of 1930 was 1532, the largest autumn enrollment in the history of the university. The enrollment for the summer session of 1930 was 467. The faculty numbered 179, including 22 persons on the administration staff. The endowment amounted to \$5,285,029, while the total income for the year was \$1,448,458. There were 190,000 volumes in the library. The new addition to the library was dedicated on Apr. 25, 1930, and the James Ward Packard laboratory of electrical and mechanical engineering on October 15-17. On the latter occasion conferences on the relation between the industries and the technical schools and on the future of American industry were held. President, Charles Russ Richards, Eng.D., LL.D.

LEHITE. See MINERALOGY.

LEIPZIG FAIR. See EXPOSITIONS.

LELAND STANFORD UNIVERSITY. See STANFORD UNIVERSITY.

LENA GOLDFIELDS CASE. See RUSSIA under *History*.

LEONARD, THE RT. REV. WILLIAM ANDREW. Protestant Episcopal Bishop of the Diocese of Ohio, died in Gambier, Ohio, Sept. 21, 1930. He was born in Southport, Conn., July 15, 1848, and attended St. Stephen's College and the Berkeley Divinity School, being graduated from the latter in 1871. On ordination as deacon in 1871 he became assistant at the Church of the Holy Trinity in Brooklyn, N. Y. Two years later he was ordained priest, serving as rector of the Church of the Redeemer, Brooklyn, until 1880 and as rector of St. John's Church, Washington, until 1880. He was consecrated Bishop of Ohio on Oct. 12, 1889, and for more than 40 years was a dominant force in the Protestant Episcopal Church in the Middle West. For a number of years he was also administrator of the American churches in Europe. In 1925 he was presiding bishop during the trial of the Rt. Rev. William Montgomery Brown of Arkansas for heresy. At the time of his death he was senior bishop of the Protestant Episcopal Church. The D.D. degree was conferred on him by St. Stephen's College in 1870 and by Washington and Lee University in 1885, and the LL.D. degree by Kenyon College in 1919. His works include: *Via Sacra, or Footprints of Christ* (1875); *History of the Christian Church* (1878); *A Faithful Life* (1888); and the Bedell lectures on the *Witness of the American Church to Christianity* (1894).

LEOPOLD, MAXIMILIAN JOSEPH MARIA ARNULF, PRINCE OF BAVARIA. A German soldier, died Sept. 28, 1930, in Munich where he was born Feb. 9, 1846. Entering the Bavarian army in 1861, he took part in the Prussian campaign against Austria in 1866 and the Franco-Prussian War of 1870-71. On receiving his commission as first lieutenant in 1871, he was promoted through the ranks to inspector-general in 1891, general in 1896, and field marshal in 1905. He participated in the World War on the eastern front, being appointed in 1915 head of the 9th Army and playing an important part the following year in the German victories in Poland and Russia. The capture of Warsaw, in particular, was one of the greatest strategic movements of the early part of the War.

LESSINGITE. See MINERALOGY.

LEWIS, ARTHUR. An American actor, died in New York City, June 13, 1930. He was born in Hampstead, England, Aug. 19, 1846, and made his first appearance on the stage in Paris in 1872,

appearing two years later in London. From 1876 to 1878 he was a member of the Dublin Theatre Stock Company and toured the English provinces during 1879-81. He came to the United States in 1882 and was a member of Mary Anderson's company from 1883 to 1889, appearing with her in *Pygmalion and Galathea*; *Comedy and Tragedy*; *Romeo and Juliet*; *The Hunchback*; and *A Winter's Tale*. His outstanding successes on Broadway, from 1902 to 1929, were in *Monsieur Beaucaire*; *The Hypocrites*; *The House Divided*; *The Garden of Allah*; *The Legend of Leonora*; *The Witness for the Defense*; *Three Wise Fools*; *Decameron Nights*; *The Servant in the House*; *The School for Scandal*; *The Captive*; *Interference*; and *A Hundred Years Old*. He also was manager in London for Mme. Réjane, Mme. Sarah Bernhardt, Coquelin, and Antoine.

LEWISTONITE. See MINERALOGY.

LEXICOGRAPHY. See PHILOLOGY, MODERN.

LIBERIA. A Negro republic on the west coast of Africa, extending from the British colony of Sierra Leone on the west to the French Ivory Coast on the east, with about 350 miles of coast line. Area, about 43,000 square miles; population, estimated at 2,000,000 to 2,500,000, most of whom live in the interior. They belong to about 40 tribes and speak as many languages. The civilized inhabitants, reported at about 60,000, live along the coast and speak English. Capital, Monrovia, with 10,000 inhabitants (including Krutown). There are 62 mission schools, with 5360 pupils, and 64 Government schools, with 3552 pupils.

Agriculture, mining, and industry are comparatively undeveloped. Cacao and cotton are produced in small quantities, but the staple product is native coffee. Other products are piassaba fibre, palm oil, palm kernels, chillies, and beniseed. In 1930 over 30,000 acres of the 1,000,000-acre Firestone rubber concession, granted in 1926, had been planted to rubber trees. The undeveloped mineral resources include: Gold, copper, tin, zinc, monazite, lead, corundum, lignite, and iron. The last named is worked by natives. Some diamonds have been found.

While imports mounted steadily from 1924 to 1928, exports declined after 1925. In 1928 imports totaled \$4,029,506 and exports, \$1,465,568. Rubber, palm oil and kernels, piassaba fibre, coffee, and ivory are the leading exports. The budget for 1927-28 provided for revenues of \$1,267,437 and expenditures of \$1,712,709. By the terms of a \$5,000,000 loan obtained in the United States in 1927, Government finances are supervised by an agent appointed by the President of the United States. There are less than 250 miles of motor highways. These, with cart roads, and the navigable portion of the St. Paul River (25 miles) offer the only transportation facilities. In 1928, 1162 ships entered and cleared.

The constitution, modeled after that of the United States, vests executive power in a president, assisted by a cabinet of six, and legislative power in a congress of two houses. Suffrage is restricted to Negroes owning land. English is the official language. President in 1930, Charles D. B. King (1928-32).

HISTORY. Charges that slavery and forced labor were practiced in Liberia were investigated in 1930 by a commission appointed by the League of Nations, at the request of the Liberian government. A dispute between Liberia and the British government over the Sierra Leone boundary was ended in January, 1930, by an exchange of

notes. The British agreed to withdraw from the territory under dispute, and to redemarcate the boundary. See LEAGUE OF NATIONS.

LIBIA. The name of an Italian colony on the north coast of Africa. In 1919 for administrative and military purposes, it was divided into Cyrenaica and Tripolitania. The temporary southern frontier was pushed to or south of the 29th parallel in 1928 and the pacification of the desert tribes was considered virtually complete in 1930. The Government sponsored a vigorous policy of economic development and colonization. See CYRENAICA and TRIPOLITANIA.

LIBRARY ASSOCIATION, AMERICAN. The official organization of librarians in the United States and Canada, founded for the purpose of promoting library service and librarianship. In 1876 its membership was 103; in 1930 it was more than 12,000. The activities of the association are carried on by its officers; by its more than 60 voluntary committees engaged in studying the problems of book buying, book selection, cataloguing, library work with the blind, and the foreign born; by its boards; by hundreds of volunteer workers; and by the members of the headquarters staff, which numbered more than 60 in 1930, including the executive assistants to the A.L.A. committee on library extension, the board on the library and adult education, and the board of education for librarianship.

The association publishes books and pamphlets on library work, buying-lists for libraries, and so forth. Important publications of the year included *Reference Work*, by James I. Wyer; *Introduction to Cataloging and the Classification of Books*, by Margaret Mann; *The Library in the School*, by Lucile F. Fargo; *Book Selection and Order Work for Libraries*, by F. K. W. Drury; *American Library Laws*, compiled by Milton J. Ferguson; and *Library Service for Children*, by Effie L. Power. Reading with a Purpose courses, published by the association during 1930, were: *English History*, by George H. Locke; *Invention and Society*, by Waldemar Kaempffert; *Scandinavian Literature*, by Hanna A. Larsen; *Shakespeare*, by Felix E. Schelling; *International Relations*, by Isaiah Bowman; *Short Story Writing*, by Blanche Colton Williams; and *Representative Twentieth Century Americans*, by M. A. DeWolfe Howe. Each course is written by an authority and consists of a short essay followed by a recommended list of five or six books. Of the 55 courses published since 1925, nearly 700,000 copies had been sold by the end of 1930.

The association also issues four periodicals: *The Bulletin of the American Library Association*, a monthly publication which includes the conference proceedings and the handbook; *The Booklist*, issued monthly as a guide to the selection and purchase of current books; the *Subscription Books Bulletin*, a quarterly presenting critical estimates of subscription books and sets sold currently by canvassing agents; and the *Adult Education Quarterly*, issued by the A.L.A. board on the library and adult education.

The fifty-second annual conference ranking third in point of attendance in the history of the association, was held during the week of June 23, 1930, in Los Angeles, Calif., and was attended by more than 2000 librarians. On this occasion the John Newbery Medal, given annually for the most distinguished children's book of the year by the section for library work with children, was awarded to Rachel Field for her book, *Hitty*,

Her First Hundred Years. The usual meetings of college, school, county, reference, children's, agricultural, and hospital librarians were held. In addition to more than 30 regular round tables of the association two new groups, the junior college library and the young people's reading round tables, met for discussion. Meeting with the association were the American Association of Law Libraries, the League of Library Commissions, and the National Association of State Libraries. Mrs. Elizabeth Sprague Coolidge was elected an honorary member of the American Library Association in recognition of her devotion to the cause of music as founder of the Berkshire Festival of Chamber Music, later transferred to Washington, and several Quartets and Trios. Preceding the Los Angeles conference, the first Arizona meeting of the association was held at the Grand Canyon on June 21.

The officers elected for 1930-31 were: Adam Strohm, librarian, Public Library, Detroit, Mich., president; Louis R. Wilson, librarian, University of North Carolina Library, Chapel Hill, first vice-president; Charlotte Templeton, librarian, Public Library, Greenville, S. C., second vice-president; Matthew S. Dudgeon, librarian, Public Library, Milwaukee, Wis., treasurer; Andrew Keogh, librarian, Yale University, New Haven, Conn., and Margaret Mann, Department of Library Science, University of Michigan, Ann Arbor, members of the executive board; and Harry A. Wheeler, vice-chairman, First National Bank, Chicago, Ill., trustee of endowment funds. The headquarters of the association are at 520 North Michigan Avenue, Chicago, Ill.

LIBRARY ASSOCIATION, THE. An organization of libraries in Great Britain founded in 1877 and incorporated by Royal charter 1898. Its membership includes librarians throughout the United Kingdom. It publishes the *Library Association Record* (monthly), *The Subject Index to Periodicals* (annual), *The Year's Work in Librarianship* (annual), and other works appropriate to the conduct of libraries of various types. It maintains a professional register consisting of Fellows (F. L. A.) and Associates (A. L. A.). The officers at the end of 1930 were as follows: President, J. Stanley Jast, F. L. A., Chief Librarian, Manchester; Chairman of Council, Lt. Colonel J. M. Mitchell, O. B. E., M. C., M. A., Secretary of Carnegie United Kingdom Trust, Dunfermline; Honorary Secretary, E. A. Savage, F. L. A., Chief Librarian, Edinburgh; Honorary Treasurer, H. Tapley-Soper, F. S. A., F. R. Hist. S., F. L. A., City Librarian, Exeter, and Secretary, Guy W. Keeling. The Association maintains headquarters at 26-27 Bedford Square, W. C. 1, London.

LIBRARY PROGRESS. Southern library development was an important factor in library progress in the United States during the year. Of the fifteen new county libraries established between October, 1929, and October, 1930, nine were in Southern States and four received grants from the Julius Rosenwald Fund. Library activity in the South was further stimulated by the appointment of a Southern regional field agent, Miss Tommie Dora Barker, by the American Library Association, and by the initiation or strengthening of State library field work in Alabama, Tennessee, South Carolina, and Arkansas through Rosenwald grants. In North Carolina, a supervisor of school libraries was appointed. Two Southern conferences of importance were a State

conference on libraries at Lexington, Ky., in October, called at the suggestion of the president of the University of Kentucky to assist in the preparation of a library development programme for the State; and a summer institute for Negro librarians, financed by the Julius Rosenwald Fund and held at Spelman College, Atlanta, Ga., with Charlotte Templeton, president of the Southeastern Library Association, as director. The close of the Louisiana demonstration brought to a successful conclusion a five-year experiment in arousing widespread interest among the people of a State in the development of free book service. The State legislature appropriated funds to carry on the work of the State Library Commission for another year.

LEGISLATION. Legislation for State aid for county libraries was introduced in the legislatures of Louisiana, New York, and Virginia. Although it failed in each State, keen interest in the measure indicated that New Jersey's example in providing State aid would probably be followed in the succeeding year. In Mississippi, the county library law was revised to make more generous provisions for this service. In New Brunswick, a Provincial Library Commission was established and funds were secured for organization purposes.

CIRCULATION. Circulation figures of public libraries in 38 leading cities of the United States showed a circulation of more than 121,000,000 books during the year, an increase of more than 4,000,000 over the preceding year. The Chicago Public Library circulated the largest number of books, 14,534,393; New York, exclusive of Brooklyn and Queens, was second with 11,103,019; and Los Angeles third with 9,682,305. Those with the largest per capita circulation were: Portland (Ore.), 9.7; Cleveland, 9.57; and Los Angeles, 7.86.

ADULT EDUCATION. New experiments in the adult education field were those in radio and alumni education. Four experiments with reading lists in connection with nation-wide broadcasting were carried on: (1) by the World Peace Foundation and the Foreign Policy Association; (2) the Walter Damrosch music appreciation broadcasts; (3) the American Library Association in connection with the League of Women Voters' programmes; and (4) the American School of the Air. The response of the radio public was such that all four services were to be continued during 1931. Projects were being carried on in five colleges through grants from the Carnegie Corporation as experiments in alumni education. Lawrence College at Appleton, Wis., was promoting reading among the alumni by monthly lists and the loan of books; Lafayette College at Easton, Pa., prints the *Lafayette Book Shelf* and sponsored two "alumni colleges"; the University of Michigan at Ann Arbor was promoting discussion groups among the Detroit alumni and carried through a summer alumni university; Vassar College at Poughkeepsie, N. Y., arranged for week-end conferences for alumni and their families; and Ohio State University at Columbus organized discussion groups of alumni with special emphasis on parent education. Discussion groups were proving popular, also, in public libraries of large cities, and the *Reading with a Purpose Courses*, published by the American Library Association, were being used extensively by libraries throughout the United States. See article on **LIBRARY ASSOCIATION, AMERICAN.**

LIBRARY SCHOOLS. Library school development was marked by rapid increase in the number of courses offered both in the academic year and summer sessions and by the larger enrollment. Eighteen library schools were accredited and five other schools provisionally accredited by the Board of Education for Librarianship of the American Library Association. Early in 1930, a survey of library training agencies in thirteen Southern States was conducted by Sarah C. N. Bogle, secretary of the A.L.A. Board of Education for Librarianship, and Tommie Dora Barker, regional field agent for the South for the American Library Association, under a special grant from the Carnegie Corporation. Miss Bogle was also in charge of a survey of agencies for training school librarians in California, made at the request of the California superintendent of instruction.

Certification standards for school librarians were revised at the annual meeting of the Association of Colleges and Secondary Schools of the Southern States, in Kentucky, and the time limit for their final enforcement extended to the autumn of 1933. In New York, the Board of Regents approved a certification plan effective January, 1931, by which every librarian of professional grade in the State is required to hold a certificate based on the Standards of Service.

A Rural Library Extension Institute, the first ever held for experienced workers, was conducted during the summer of 1930 at the University of Wisconsin in connection with the Ninth Rural Leadership Summer School. Rural sociology and adult education, as well as extension problems, were discussed.

BIBLIOGRAPHY. In the field of bibliography, the Vollbehr collection of incunabula was purchased by the Library of Congress for \$1,500,000. This collection consists of 3000 books and includes a copy of the Gutenberg Bible, only two other perfect copies of which are known to exist. A new bibliographical society, the Inter-American Bibliographical Association, was established by the Pan American Union for the purpose of organizing and coördinating inter-American activities in the field of bibliography.

INTERNATIONAL CONFERENCES. Among meetings of importance were the International Library Committee conference in Stockholm in August; the Second Pan-Pacific Women's Conference in Honolulu, and the Conference of the World Association for Adult Education at Sorvik, during the same month; and the Library Association conference at Cambridge, England, in September. These were attended by American library representatives. The International Library Committee accepted an invitation from the American Library Association to hold a meeting in Chicago in 1933, during the Century of Progress exposition.

FUNDS AND ENDOWMENTS. Funds appropriated for library work, in addition to those from the Carnegie Corporation and the Julius Rosenwald Fund mentioned elsewhere in this article, included: a \$10,000,000 trust fund for the maintenance of the Folger Shakespeare Memorial in Washington, D. C., the bequest of Henry Clay Folger; \$2,000,000 for a new library building at the University of Cincinnati left by the late Charles P. Taft; \$1,000,000 for the maintenance and operation of Dartmouth College Library, from George F. Baker, donor of the building; a gift of \$1,000,000 from the Charles Deering estate

for a new library building at Northwestern University; a grant of \$140,000 to the Library of Congress from the Daniel Guggenheim Fund for the Promotion of Aeronautics; the bulk of the \$600,000 estate of the late Horace S. Oakley to the Newberry Library, Chicago, for the establishment and maintenance of a musical library; and a grant of \$100,000 from the Carnegie Corporation to provide library service for the people in a large, sparsely-settled section of British Columbia. In addition to the fellowship grants offered by the Carnegie Corporation, and the Caroline M. Hewins Scholarship, a new award, the E. P. Dutton Fellowship for study in the field of library work with children, was given by John Macrae, Jr.

NEW BUILDINGS. The completion of the Sterling Memorial Library at Yale University, New Haven, Conn., at a cost of \$8,000,000 was one of the important events of the year. Other library buildings which were completed or were under construction include: the Richmond, Va., Public Library at a cost of \$500,000; the University of West Virginia Library, Morgantown, the first unit of which was to cost \$300,000; the Lake Forest, Ill., Public Library to be erected through a \$250,000 gift from Mrs. Kersey Coates Reed and Mrs. Charles Schweppe; six new branch buildings at Queens, N. Y., constructed at a cost of \$1,430,000; the University of Cincinnati Library, Ohio, completed at a cost of \$900,000; the University of Tulsa Library, Okla., built with the \$525,000 gift of Mr. and Mrs. R. M. McFarlin; the University of Tennessee Library at Knoxville, a \$300,000 structure; a \$250,000 library building at the Texas Agricultural and Mechanical College; the Edward Kierstein Memorial Branch in Boston, completed at a cost of \$150,000; two new branch library buildings at St. Paul, Minn., erected at a cost of \$94,000; and a \$60,000 public library and art gallery on the Palos Verdes Estates, Calif. Among library buildings dedicated were: the University of Oklahoma, Norman; the new half of the Toronto Public Library, Ontario; the \$325,000 library of Loyola University, Chicago, the gift of Edward A. Cudahy; the Thomas Scott Buckham Memorial Library at Faribault, Minn., erected at a cost of \$250,000; the Youngstown Public Library, O., a new \$164,000 building; and the Randolph-Macon Woman's College Library at Lynchburg, Va., a \$150,000 building.

LIBYA. See **LIBIA**.

LIECHTENSTEIN. One of the smallest independent European states, lying between the Austrian province of Vorarlberg and the Swiss cantons of St. Gallen and Graubünden. Area, 65 square miles; population (1912), 10,716, largely rural. Capital, Vaduz (population, 1405). Reigning Prince, Francis I. Revenue for 1930 was estimated at 1,179,350 francs; expenditure, 1,049,597 francs (1 franc equaled about \$0.192). The Diet of 15 members is elected by universal suffrage. Since January, 1924, Liechtenstein has been included in the Swiss Customs Union and the posts are administered by Switzerland.

LIÈGE. See **EXPOSITIONS**.

LIFE AND WORK MOVEMENT. See **INTERNATIONALISM**.

LIFE INSURANCE. See **INSURANCE**.

LIGHT. See **PHYSICS**.

LIGHTHOUSES. At the close of the fiscal year ending June 30, 1930, the Commissioner of Lighthouses, George R. Putnam, reported that the U. S. Lighthouse Service had 19,556 marine aids to navigation in service, an increase of 555

over the preceding year. The radio-beacon system was also increased materially, 14 new stations having been established, and 17 being under construction. Airways facilities were extended and lighting installations were completed on about 3300 additional miles of airways. An important new light station was under construction at Detroit, Mich., at the mouth of the St. Marys River leading from Lake Huron to Lake Superior. This new station, located in 24 feet of water a mile off shore, will replace an older station on the shore. The effectiveness of a lighthouse at this point will be greatly increased by having the station close to the channel to which all vessels must adhere. At the close of the fiscal year much of the preliminary work had been completed and it was expected that the station would be placed in commission during 1931. Numerous important improvements were made at the Lighthouse Depots located in different parts of the country. The larger construction projects were those at Edgemoor, Del., Staten Island, N. Y., Portsmouth, Va., Goat Island, Calif., and Honolulu, Hawaii. New depot projects are under consideration at Portland, Maine, and in Narragansett Bay. The purchase of additional land to extend the depot at Chelsea, Mass., has been authorized.

At the close of the fiscal year the U. S. Lighthouse Service had approximately 13,500 miles of lighted airways in operation, with 319 intermediate landing fields, 1477 airways beacons, 303 airways weather reporting stations, 35 airways radio stations, 9 radio range beacons, 3 point-to-point airways radio stations, and 5650 miles of telephone-typewriter circuits, including 120 telephone-typewriter stations.

A further test was conducted during the year of a system previously developed for the remote control of fog signals by radio. The device has been permanently installed at Poe Reef Light Station, Straits of Mackinac, where it controls the fog signal at Fourteen Foot Shoal, a nearby station, and has been in constant use now for some months. This apparatus makes it practicable to place an efficient minor fog signal out at the point of danger and control it from shore.

During the year there were completed six lightships equipped with the most up-to-date machinery. In no other year had such a large number of lightships been completed, the new ships being radical departures from the types employed in the past.

Another interesting development was that radio-beacon and sound-in-air signals were synchronized at five additional stations, an arrangement which made it possible for navigators to determine their distance from the sending stations at any time when the signal could be heard. Much favorable comment followed the installation of such signals on the Great Lakes, the great density of traffic there making them exceptionally valuable.

Various improvements were made in the marine aids to navigation, the changes affecting nearly all sections of the 40,000 miles of coastline under the jurisdiction of the Lighthouse Service. Twelve fixed lights were changed to flashing or occulting, the illuminant of six lights was changed to incandescent oil vapor, the illuminant of 36 lights was changed to acetylene, and the illuminant of 23 lights was changed to electric incandescent. A number of diaphones, nautophones, oscillators, to serve as fog signals, were established at various stations. In Alaska 41 new aids to navigation were

established, bringing the total number of aids in these waters up to 854.

For Columbus Memorial Lighthouse, see PAN AMERICANISM.

617,000 tons valued at \$4,468,000 in 1930. This represents a decrease of 21 per cent in quantity and 24 per cent in value from 1929. Pennsylvania also ranked second among the States in produc-

SUMMARY OF UNITED STATES AIDS TO NAVIGATION AND CHANGES DURING FISCAL YEAR

| Class | 1930 | | Total, June 30— | |
|---|------------------|-------------------|--------------------|--------|
| | Estab- lished | Discon- tinued | 1929 | 1930 |
| Lighted aids: | | | | |
| Lights (other than minor) | 102 | 55 | 2,308 | 2,355 |
| Lightship stations | 1 | 1 | 45 | 44 |
| Gas buoys | 105 | 60 | 576 | 621 |
| Gas buoys, with whistles or bells | 37 | 7 | 366 | 396 |
| Minor lights | 322 | 219 | 3,462 | 3,565 |
| Float lights | 35 | 35 | 179 | 179 |
| Total lighted aids | 607 | 377 | 6,936 | 7,160 |
| Fog signals: | | | | |
| Radio beacons | 15 | 1 | 64 | 78 |
| Sound fog signals (air) | 8 | 8 | 559 | 559 |
| Submarine fog signals | 5 | 5 | 37 | 32 |
| Gas buoys, with whistles or bells | 37 | 7 | 366 | 396 |
| Whistling buoys, unlighted | 2 | 3 | 77 | 76 |
| Bell buoys, unlighted | 21 | 8 | 250 | 263 |
| Total fog signals | 83 | 32 | 1,353 | 1,404 |
| Unlighted aids: | | | | |
| Buoys | 983 | 734 | 7,818 | 8,067 |
| Daymarks | 131 | 76 | 3,266 | 3,321 |
| Total | 1,114 | 810 | 11,084 | 11,388 |
| Grand total ^a | 1,761 | 1,212 | 19,007 | 19,556 |
| Aids to air navigation ..... | .... | .... | 1,440 ^b | 1,850 |

^a Gas buoys with whistles and bells are counted only once in the grand total.

^b The number of aids shown includes beacon lights, radio-beacon stations, and radio communication stations only. There were also 7690 boundary lights and 1467 obstruction lights in operation June 30, 1930.

LIGHTSHIPS. See LIGHTHOUSES.

LIGNITE. See COAL.

LIME. The sales of lime by producers in the United States in 1930 amounted to 3,384,000 short tons valued at \$24,950,000 according to estimates furnished by the U. S. Bureau of Mines. This was a decrease of 21 per cent in quantity and 25 per cent in value as compared with sales of 4,269,768 tons valued at \$33,478,848 in 1929. The estimated sales of hydrated lime, which are included in these figures, amounted to 1,306,000 tons in 1930 valued at \$10,102,000, a decrease of 16 per cent in quantity and 21 per cent in value from the production of 1,550,771 tons valued at \$12,771,525 in 1929. The average unit value of all lime showed a decrease from \$7.84 a ton in 1929 to \$7.37 in 1930. Sales of lime in 1930 for construction were estimated at 1,200,000 tons compared with 1,640,827 tons in 1929, a decrease of 27 per cent. Sales of lime for chemical uses were estimated at 1,900,000 tons compared with 2,200,612 tons in 1929, a decrease of 17 per cent. Included in the estimated sales of chemical lime in 1930 were sales of refractory lime (sintered dolomite) amounting to 356,000 tons, a decrease of 27 per cent from the output reported for 1929. The sales of lime for agricultural use were estimated at 284,000 tons, a decrease of 17 per cent from the 338,329 tons reported in 1929.

The principal States producing lime in 1930 showed decreases from the 1929 production ranging from 4 per cent to 46 per cent in quantity and 9 to 44 per cent in value. As in 1929 the leading State in production of lime was Ohio with an estimated output in 1930 of 742,000 short tons valued at \$5,614,000, a decrease of 23 per cent in quantity and 29 per cent in value from 1929. Pennsylvania ranked next to Ohio in the annual production of lime with an estimated output of

tion of building lime but its output was less than one-third that of Ohio. The Keystone State produces more agricultural lime than any other State, but the greater part of its output—nearly 60 per cent—is chemical lime. It ranked second in production of hydrated lime, sold chiefly for agriculture. The sales of hydrated lime in Pennsylvania in 1930 were estimated at 225,000 short tons and represented a decrease of 13 per cent in comparison with the preceding year. The most notable decrease (46 per cent) in the volume of production occurred in Wisconsin. The lime from this State was shipped largely to Illinois and sold for construction purposes. Other States producing chiefly building lime and showing considerable decreases in output in comparison with 1929 were Connecticut, Maine, Massachusetts, and Texas.

LINDBERGH, COL. CHARLES A. See AERONAUTICS.

LINGUISTICS. See PHILOLOGY, MODERN; ANTHROPOLOGY.

LINSEED. See FLAX.

LIONS CLUBS, INTERNATIONAL ASSOCIATION OF. An organization of business and professional men's clubs united in one association for the purpose of promoting good government and good citizenship, encouraging efficiency, and promoting high ethical standards in business and in the professions. In 1917 the Business Circle of Chicago issued a call to approximately 150 business organizations, inviting them to send representatives to a meeting in Chicago on June 7. More than 20 delegates, representing 50 clubs, attended this meeting and voted to form an association; the name "Lions" was adopted. Additional Lions Clubs have been organized in accordance with the method of choosing one man from each business or profession in the community.

On Dec. 1, 1930, the number of clubs in the

United States and Canada was 2350, with a membership of approximately 80,000. At the 1930 convention, held July 15-18 in Denver, Colo., Earle W. Hodges of New York City was elected international president. The vice presidents chosen were: Julien C. Hyer of Fort Worth, Texas; Robert L. McKeever of Washington, D. C.; and Charles H. Hatton of Wichita, Kans. Melvin Jones of Chicago has been secretary-treasurer since the association was organized. The official organ is *The Lion*, Charles Lee Bryson, managing editor. Headquarters are in the McCormick Building, 332 South Michigan Avenue, Chicago.

LIQUOR LAWS. See PROHIBITION.

LITERATURE, ENGLISH AND AMERICAN. To publishers 1930 will be memorable for the slackening of business. Yet there seemed no slackening of enterprise, for the lists of new books were not appreciably shorter. Inventories were often reduced, however, by the sale of remainders, so that book-buyers could obtain many bargains during the year. And a few publishers startled the business in the late spring by announcing that they would publish new books for the popular taste, including fiction, at one dollar. In England one publisher set his price for the same class of book at three shillings. But at the end of the year all these American publishers but one announced that the plan was a failure. The audience for a new book seemed as willing to pay two dollars or more as one dollar; sales were not much increased by the reduction. The dollar-book audience apparently preferred its books with established reputation of some sort; it is not so much interested in newness. This audience has for years been catered to quite successfully by the publishers who made their own reprints after buying the plates of established successes from the original publishers. Attempts by the latter to compete in the reprint field seemed to be unsuccessful, at the end of the year.

FICTION. 1930 was an unusual year, in that it brought forth no novel which could really be called a smashing success, both critically and financially. Perhaps as pleasant a work as the year showed was A. P. Herbert's *The Water Gipsies*, kindly humor about servants. Also charming was Rose Macaulay's *Staying with Relations*, about the surprises of a novelist in an exotic background. J. B. Priestley's *Angel Pavement* dealt with London life; and Louis Bromfield's *Twenty-four Hours* with New York life, the former more persuasively. Thornton Wilder's eagerly awaited *The Woman of Andros* was more philosophy than story, almost a collection of proverbs. *Cakes and Ale*, by W. Somerset Maugham, was a piece of literary malice, not, however, easy to pin to actual persons. Evelyn Waugh's *Vile Bodies* was funny, fantastic, and satirical. Rudyard Kipling published *Thy Servant a Dog*; and H. G. Wells's *The Autocracy of Mr. Parham* was fun about politics. Arnold Bennett wrote *Imperial Palace*, details about a luxury hotel. Stella Benson, in *The Faraway Bride*, and Grace Zaring Stone, in *The Bitter Tea of General Yen*, put their characters in the Orient. H. M. Tomlinson's *All Our Yesterdays* was a philosophic war book. Other noteworthy war narratives were Liam O'Flaherty's *Return of the Brute*; the anonymous *War Nurse*; and *Step-daughters of War*, about Waacs, by Helen Zenna Smith.

Dorothy Canfield, in *The Deepening Stream*, described a woman's progress from youth to age. Margaret Kennedy gave more about the Sangers

in *The Fool of the Family*. In *A Note in Music*, Rosamund Lehman laid bare some starved lives. Anne Douglas Sedgwick's *Philippa* dealt with a girl and her parents. Anne Green's *The Selbys* was a delightful comedy. D. H. Lawrence's *The Virgin and the Gipsy* was his last novel and on his usual themes. Joseph Hergesheimer's *The Party Dress* was heavily sophisticated. Manuel Komroff's *Coronet* was a novelized history of aristocracy. Martha Ostenso, in *The Waters under the Earth*, dealt with a tyrannical parent.

There were several good historical novels: Hugh Walpole's *Rogue Herries*, the 18th century; Elizabeth Madox Roberts's *The Great Meadow*, Kentucky history; Daphne Muir's *Pied Piper*, about the Children's Crusade; M. L. Mahic's *The Saint, the Devil, and the King*, about Louis XI; and *None So Pretty*, by Margaret Irwin, the 17th century. V. Sackville-West's *The Edwardians* was historical-satirical. First novels highly praised were: Claire Spencer's *Gallows' Orchard*; Alexander Laing's *End of Roaming*; J. Keith Winter's *Other Man's Saucer*; Jonathan Daniels' *Clash of Angels*, a fantasy. Other fantasies were: T. F. Powys' *Kindness in a Corner*; Edith Olivier's *The Triumphant Footman*; William Gerhardt's *Pending Heaven*.

Detective stories sell when nothing else will. To mention only two: S. S. Van Dine's *The Scarab Murder Case*, and *The Door*, by Mary Roberts Rinehart. To select more from the many is impossible.

Other noteworthy novels were: Edna Ferber's *Cimarron*; Rex Stout's *Seed on the Wind*; Charles G. Norris's *Seed*; Mary Heaton Vorse's *Strike*; Booth Tarkington's *Mirthful Haven*; Sheila Kaye-Smith's *Shepherds in Sackcloth*; Warwick Deeping's *Exile*; H. W. Freeman's *Down in the Valley*; William Faulkner's *As I Lay Dying*; W. R. Burnett's *Iron Man*; Caradoc Evans' *Nothing to Pay*; Ludwig Lewisohn's *Stephen Escott*; Stephen Hudson's *A True Story*; Upton Sinclair's *Mountain City*; Helen Hull's *The Asking Price*.

Dorothy Parker's *Laments for the Living* was a collection of short, bitter stories. In *On Forsyte 'Change*, John Galsworthy made random notes about his perennial family. Roark Bradford's *Ol' King David and the Philistine Boys* was Negro dialect stories. Other volumes of short stories were: Walter de la Mare's *On the Edge*; Osbert Sitwell's *Dumb Animals*; John Erskine's *Cinderella's Daughter*; Richard Aldington's *Roads to Glory*, war material; Leonard Merrick's *The Little Dog Laughed*; Laura Benét's *Goods and Chattels*; Stark Young's *The Street of the Islands*; Julian Green's *Christine and Other Stories*, translated by Courtney Bruerton.

A few of the important translated novels were: Sigrid Undset's *The Son Avenger*, completing her *The Master of Hestviken*; Knut Hamsun's *Vagabonds*, by Eugene Gay-Tiffet; Maxim Gorki's *By-stander*; Marcel Proust's *The Sweet Cheat Gone*; Thomas Mann's *Mario and the Magician*, by H. T. Lowe-Porter; Michael Ossorgin's *Quiet Street*; Jaroslav Hasek's humorous war book, *Schweik*; Jean-Richard Block's —and Company, by C. K. Scott-Moncrief; Leonhard Frank's *Carl and Anna*; Irene Nemirovsky's *David Golder*; and Ivan Goncharov's *Oblomov*, by Natalie A. Dudington.

POETRY. John Masefield's first book since his laureateship was perhaps the most eagerly awaited poetry of the year. It was *The Wanderer*

of *Liverpool*, about a beautiful and unlucky sailing vessel. *The Collected Poems of Robert Frost* reminded of his preëminence among American poets. T. S. Eliot published a thin religious volume, *Ash Wednesday*. W. B. Yeats continued his musings from his tower in *The Winding Stair*. Richard Eberhart's *A Bravery of Earth*, about the poet's growth through adolescence to maturity, and Alan Porter's *A Signature of Pain and Other Poems*, were highly praised first volumes. Humbert Wolfe wrote satirical verse in *The Uncelestial City*. Hart Crane's *The Bridge* was representative of the cult of difficulty, almost unintelligibility, among some American poets. Edwin Arlington Robinson's *The Glory of the Nightingales* added little to his reputation. John Freeman's *Last Poems* were highly spoken of in England. *The Last Voyage*, by Alfred Noyes, was the third part of his epic, *The Torchbearers*.

Other important poetry included: Conrad Aiken's *John Deth and Other Poems*; *The Collected Poems of Edith Sitwell*; *The Gates of the Compass*, by Robert Hillier; *New Legends*, by Hervey Allen; *Poems (1914-1930)*, by Edmund Blunden; *Adamastor*, by Roy Campbell; *White April*, by Lizette Woodworth Reese; *Poems 1929*, by Robert Graves; *Fifty Poems*, by Lord Dunsany; *Macrocosmos*, by James Laver; *Hemlock Wall*, by Frances M. Frost; *The Wind in the Cedars*, by Glenn Ward Dresbach; *Year in, You're Out*, by Samuel Hoffenstein; *Lost Buffalo*, by Leonard Bacon; *Wild Apples*, by Oliver Gogarty; *Love and the Luxembourg*, by Richard Aldington. Chaucer's *Canterbury Tales* were translated into modern English verse by Frank Ernest Hill. Among the anthologies were: *Twentieth Century Poetry*, by John Drinkwater, Henry Seidel Canby, and William Rose Benét; *Twentieth Century Poetry*, by Harold Monro; *Lyric America*, by Alfred Kreymborg; and the amusing *The Stuffed Owl*, of bad verse, by D. B. Wyndham Lewis and Charles Lee, who selected only from the traditionally great.

DRAMA. No year which includes the publication of a play by Bernard Shaw is undistinguished. During 1930 his *The Apple Cart*, about international politics in the future, appeared, and Marc Connelly published *The Green Pastures*, his great play about the Negro's God. But the rest of the list of important plays is short, if not without interest. George Moore wrote a striking play about Jesus and Paul, *The Passing of the Essenes*. Two plays concerned literary figures: Susan Glaspell's *Alison's House*, based on the life of Emily Dickinson, and Rudolf Besier's *The Barretts of Wimpole Street*, about the family of Mrs. Browning. John Cournos published a translation of a hitherto unknown play of Chekhov's, *That Worthless Fellow Platonov*, which was left unfinished. Other plays were: Sir Arthur Pinero's *Two Plays*, including *Dr. Harmer's Holidays* and *Child Man*; S. N. Behrman's *Meteor*; R. C. Sheriff's *Badger's Green*; A. A. Milne's *Michael and Mary*; Noel Coward's *Private Lives*; Maxwell Anderson's *Elizabeth the Queen*; Philip Barry's *Hotel Universe*; George Shiels's *Two Irish Plays*; and V. Kirchon and A. Ouspensky's *Red Rust*, adapted by Virginia and Frank Vernon. A very fine collection was the third series of Thomas H. Dickinson's *Chief Contemporary Dramatists*. See also **THEATRE**.

ESSAYS. Under this classification the late Earl of Birkenhead (q.v.) distinguished himself with three books during the year: *The World in 2030*,

A. D., Turning Points in History, and *Last Essays*. Walter de la Mare published *Desert Islands*, all his own, and edited *The Eighteen-Eighties*. Would-be humor included *The Treasurer's Report and Other Aspects of Community Singing*, by Robert Benchley; *Through the Alimentary Canal with Gun and Camera*, by George S. Chappell; and *Whither, Whither, or After Sea, What?* edited by Slater Brown. Three more volumes, vii, viii, and ix, of *The Boswell Papers from Malahide Castle*, edited by Frederick A. Pottle, appeared. Miscellaneous books of essays were: Sir James G. Frazer's *Myths of the Origin of Fire*; Arnold Bennett's *Journal of Things New and Old*; William Bolitho's *Camera Obscura*; D. H. Lawrence's *Assorted Articles*; Arthur Ponsonby's *Casual Observations*; Sisley Huddleston's *Europe in Zig Zags*; Henry Williamson's *The Village Book*; Stephen Graham's *The Death of Yesterday*; G. K. Chesterton's *The Resurrection of Rome*; G. Lowes Dickinson's *After Two Thousand Years*; *I'll Take My Stand*, by Twelve Southerners, in favor of the Old South; and *An Anthology of American Negro Literature*, edited by V. F. Calverton.

CRITICISM AND LITERARY HISTORY. The year was notable for a literary controversy, centering around a movement calling itself "Humanism," whose pronouncement was issued in *Humanism and America*, edited by Norman Foerster, who also published *Towards Standards*, as a sort of footnote. The counterblast came in *A Critique of Humanism*, edited by C. Hartley Grattan. Critics and authors in profusion contributed to both volumes. In general, the humanists seemed to oppose naturalism and romanticism in literature, especially as exemplified in the critical and creative work done in America in the last decade. Their leaders were Paul Elmer More and Irving Babbitt, and the ably edited monthly, *The Bookman*, was enlisted in their cause. The anti-humanists were probably less well organized, but appeared quite able to take care of their end of the controversy.

Other important works of general criticism were: *A Plea for Liberty of Interpreting*, by Lancelles Abercrombie; *The Proving of Psychoe*, by Hugh L'Anson Fausset; *Indecency and the Seven Arts*, by H. M. Kallen; *Tradition and Experiment in Present Day Literature*, by various authors; *Literature and Occult Tradition*, by Denis Saurat.

Concerned with Shakespeare were: G. Wilson Knight's *The Wheel of Fire*, about his tragedies; Sir E. K. Chambers's *William Shakespeare*; Cumberland Clark's *Shakespeare and Science*; and Percy Allen's *The Case for Edward de Vere, 17th Earl of Oxford*, as "*Shakespeare*." This advanced the latest candidate of the anti-Shakespeareans.

About poets and poetry were: Herbert Reed's *Wordsworth*; Humbert Wolfe's *Tennyson*; C. H. O. Scaife's *The Poetry of Alfred Tennyson*; J. Middleton Murry's *Studies in Keats*; Carl Grabo's *A Newton among Poets*, about Shelley; George Williamson's *The Donne Tradition*; Charles Williams's *Poetry at Present*; G. F. Broadby's *About English Poetry*. About fiction and novelists: volumes iii and iv of *A History of the English Novel*, by Ernest A. Baker; *The Art and Practice of Historical Fiction*, by Alfred Tressider Shepard; *Five Masters*, by Joseph Wood Krutch; *Malory*, by Eugene Vinaver; *Some of Us*, by James Branch Cabell. Having to do with the drama: Max Beerholm's *Around Theatres*; Barrett H. Clark's *An Hour of American Drama*; Al-

lardyce Nicoll's *A History of Early 19th Century Drama*; John Mason Brown's *Upstage*; Walter Prichard Eaton's *The Drama in English*; Hamilton Fyfe's *Sir Arthur Pinero's Plays and Players*. J. B. Priestley wrote *English Humor*, and Louis Cazamian *The Development of English Humor*. Others were: Donald A. Stauffer's *English Biography before 1700*; Frank Luther Mott's *A History of American Magazines, 1741-1850*; and *Voices of October: Art and Literature in Soviet Russia*, by Joseph Freeman, Joshua Kunitz, and Louis Lozowick.

BIOGRAPHY AND AUTOBIOGRAPHY. A number of persons received the attentions of more than one biographer during 1930, which attests the popularity of the field. For instance, among American political figures, Jefferson Davis won three books: Allan Tate's *Jefferson Davis: His Rise and Fall*; Elizabeth Brown Cutting's *Jefferson Davis*; Robert W. Winston's *High Stakes and Hair Trigger: the Life of Jefferson Davis*. Three books concerned Taft and Roosevelt: *Taft and Roosevelt: the Intimate Letters of Archie Butt*; *William Howard Taft*, by Herbert S. Duffus; *Roosevelt: the Story of a Friendship*, by Owen Wister. Other American political personages dealt with were: *The Unknown Washington*, by John Corbin; *Rutherford B. Hayes*, by H. J. Eckenrode; *An Epoch and a Man: Martin Van Buren and His Times*, by Denis Tilden Lynch; *Lincoln*, by Emil Ludwig, translated by Eden and Cedar Paul; *The Adams Family*, by James Truslow Adams; *Daniel Webster*, by Claude Moore Fuess; *Thomas B. Reed*, by William A. Robinson; *Nelson W. Aldrich*, by Nathaniel Wright Stephenson; *Henry White*, by Allan Nevins; *Johnson of the Mohawks*, by Arthur Pound; and *Undiplomatic Memories: the Far East 1896-1904*, by William Franklin Sands.

Emily Dickinson, among American literary figures, was celebrated in two books: Genevieve Tuggard's *The Life and Mind of Emily Dickinson*, and Josephine Pollitt's *Emily Dickinson: the Human Background of Her Poetry*. About other literary Americans: *The Letters of Henry Adams*, edited by Worthington C. Ford; *Emerson, the Enraptured Yankee*, by Regis Michaud; *My Thirty Years' War*, by Margaret Anderson; *The Changing Years*, by Norman Hapgood.

Among other Americans, Mary Baker Eddy was the subject of two books: *According to the Flesh*, by Fleta Campbell Springer, and *Mary Baker Eddy*, by Lyman P. Powell, and Anne Hutchinson of three: *An American Jezebel*, by Helen Augur; *Unafraid*, by Winnifred King Rugg; and *Anne Hutchinson*, by Edith Curtis. These were also important American biographies: *Whistler*, by James Laver; *Whistler the Friend*, by Elizabeth Robins Pennell; *Charles W. Eliot*, by Henry James; *Dwight L. Moody*, by W. R. Moody; *Jeb Stuart*, by John W. Thomason, Jr.; *Morgan the Magnificent*, by John K. Winkler; *Audacious Audubon*, by Edward A. Muschamp; *Lone Cowboy*, by Will James; *American*, about a great Indian, by Frank B. Linderman.

Many important books were about English literary persons: Carl van Doren's *Swift*; Edith Sitwell's *Alexander Pope*; Edmund Blunden's *Leigh Hunt and His Circle*; John Drinkwater's *Pepys*; André Maurois's *Byron*, translated by Hamish Miles; Shelley's *Lost Letters to Harriet*, edited by Leslie Hotson; James R. Ullman's *Mad Shelley*; Dorothy Stuart's *Christina Rossetti*; J. Howard Whitehouse's *The Solitary Warrior*,

about Ruskin; Osbert Burdett's *The Two Carlyles*; Waldo H. Dunn's *Froude and Carlyle*; David Cecil's *The Stricken Deer*, about Cowper; Willard Connely's *Bracony Wycherley*; J. Lewis May's *Cardinal Newman* and *George Eliot*; Jean M. Carre's *The Frail Warrior*, about Robert Louis Stevenson; E. M. W. Tillyard's *Milton*; Stephen Gwynn's *The Life of Sir Walter Scott*; F. Dorothy Senior's *The Life and Times of Colley Cibber*; G. F. Lahey's *Gerard Manley Hopkins*; E. H. W. Meyerstein's *A Life of Thomas Chatterton*; Geoffrey West's *H. G. Wells*; Doris Arthur Jones's *Taking the Curtain Call*, about Henry Arthur Jones; and autobiographies by Liam O'Flaherty, *Two Years*, and by Robert Graves, *But It Still Goes On*.

Outstanding among works concerned with British political figures was Winston S. Churchill's *A Roving Commission*, autobiography. Others were: the unfinished autobiography of Lord Balfour, *Retrospect*; third series volume i of *Letters of Queen Victoria*, edited by George Earle Buckle; *Wolsky*, by Hilaire Belloc; *The Portrait of a Diplomatist, Sir Arthur Nicolson, Bart.*, by Harold Nicolson; *Laud*, by Robert P. Tristram Coffin; *Lord Melbourne*, by Bertram Newman; *A Life of John Wilkes*, by O. A. Sherrard; *The Making of William Penn*, by Mabel R. Brailsford; and *Mary Gladstone, Her Diaries and Letters*, edited by Lucy Masterman. A fascinating autobiography was *The Lives of a Bengal Lancer*, by Francis Yeats-Brown. Hamilton Fyfe's *Northcliffe*, and Gordon Craig's *Henry Irving* should also be mentioned.

Interesting narratives of war experience were: Siegfried Sassoon's *Memoirs of an Infantry Officer*; Gen. F. P. Crozier's *A Brass Hat in No Man's Land*; Gen. J. E. B. Seely's *Adventure*. E. F. Benson's *As We Were: A Victorian Peep-show*, was entertaining, as was Gamaliel Bradford's *Daughters of Eve*. Volumes iv and v of *The Dictionary of American Biography*, edited by Allen Johnson and Dumas Malone, were published during the year.

About people who did not speak English: Georges Clémenceau's autobiography, *Grandeur and Misery of Victory*; *Clémenceau*, by Jean Martet, translated by M. Waldman; *The Tiger*, by George Adam; *Pauline Bonaparte*, by W. N. C. Carlton; *My Life*, by Leon Trotsky; *Joseph Fouché*, by Stefan Zweig; *Simon Bolívar*, by Hildegard Angell; *Memoirs of General Wrangel*, translated by Sophie Goulston; *Makers of Modern Europe*, by Carlo Sforza; *Private Letters, Pagan and Christian*, edited by Dorothy Brooke; *Baudelaire*, by Lewis Piaget Shanks; *Balzac, the Man and the Lover*, by Francis Gribble; *Eroica*, about Beethoven, by Samuel Chotzinoff; *R. v. R.*, about Rembrandt, by Hendrick Willem van Loon; *Molière*, by John Palmer; *Larson, Duke of Mongolia*, by F. A. Larson; *José Antonio Páez*, by R. B. Cunninghame-Graham; *Mahatma Gandhi: His Own Story*, edited by C. F. Andrews; *The Life of Miranda*, by William Spence Robertson.

THE FINE ARTS. Books about painting again provided the bulk of the important work in this field, as: Royal Cortissoz's *The Painter's Craft*; Samuel Kootz's *Modern American Painters*; S. C. Kaines Smith's *An Outline History of Painting in Europe*; Edward Allen Jewell's *Americans*; Murdock Pemberton's *Picture Book*; Chandler Rathfon Post's *Early Spanish Painting*; Arthur Symons's *From Toulouse-Lautrec to Rodin*; Frank Rutter's *El Greco*; Henry McBride's *Matisse*;

Roger Fry's *Henri Matisse*; Sir Joseph Duveen's *Thirty Years of British Art*; Curt H. Weigelt's *Sieneese Painting of the Trecento*. Sculpture was considered in Stanley Casson's *Twentieth Century Sculptors*; Gisela M. A. Richter's *The Sculpture and Sculptors of the Greeks*; *Modelling and Sculpture*, by F. J. Glass; and *Modern Architectural Sculpture*, edited by W. Aumonier.

With *The Fair-Haired Victory*, Sacheverell Sitwell completed his trilogy of the Gothic Revival; and Elie Faure's *The Spirit of the Forms*, translated by Walter Pach, brought his history of art to date. Three interesting books on æsthetics were: D. W. Prall's *Æsthetic Judgment*; Helen Huss Parkhurst's *Beauty*; and Philip McMahon's *The Meaning of Art*. Osvald Siren published *A History of Early Chinese Art*, and William Cohn, *Chinese Art*. There were in addition: Sheldon Cheney's *The New World Architecture*; and Edward Gordon Craig's *Woodcuts and Some Words*.

In this place may be mentioned the vogue for stories told in pictures, usually woodcuts. Such books were: *Madman's Drum*, by Lynd Ward; *He Done Her Wrong*, by Milt Gross; *Allay-Oop*, by William Gropper; and *The Life of Christ in Woodcuts*, by James Reid.

RELIGION. John Crowe Ransom, usually a poet, ventured into theology with *God without Thunder*, a plea for the God of the Old Testament. William Adams Brown tried to answer philosophic doubters with *Pathways to Certainty*. In *Treatise on the Gods*, by H. L. Mencken, and *The Pathetic Fallacy*, by Llewellyn Powys, Christianity was vigorously attacked. Selden Peabody Delaney wrote of his conversion in *Why Rome?* and William Barry advocated the Roman position in *The Coming Age and the Catholic Faith*. *Pioneers of Christian Thought*, by Frederick D. Kerschner, was a collection of biographical essays. Dean W. R. Inge published *Christian Ethics and Modern Problems*, and contributed to *What is the Real Hell?* by various authors.

Other religious books were: Woodbridge Riley's *The Meaning of Mysticism*; Charles Gore's *The Philosophy of the Good Life*; C. E. M. Joad's *The Present and Future of Religion*; Frank Morison's *Who Moved the Stone?*; Nathaniel Schmidt's *The Coming Religion*; Benjamin Wisner Bacon's *Jesus, the Son of God*; Edgar S. Brightman's *The Problem of God*; James Moffatt's *Love in the New Testament*; J. W. C. Wand's *A History of the Modern Church*; Herbert M. Foston's *Man and the Image of God*; Leonard Hodgson's *Essays in Christian Philosophy*; Thomas Cuming Hall's *The Religious Background of American Culture*; C. Luther Fry's *The United States Looks at Its Churches*.

SOCIOLOGY. Protest against present social tendencies, especially in America, was exhibited in *The American Public Mind*, by Peter Odegard; *This Land of Liberty*, by Ernest Sutherland Bates; *Portrait of the Artist as American*, by Matthew Josephson; *King Mob*, by "Frank K. Notch"; *Goodbye to Western Culture*, by Norman Douglas; and censorship as a means of social control was particularly attacked in *Mrs. Grundy*, by Leo Markun, and *Censored: The Private Life of the Movies*, by Morris Ernst and Paré Lorentz. But *Toward Civilization*, edited by Charles A. Beard, and *What's Right with America*, by Sisley Huddleston, were quite optimistic. The impact of machinery was discussed in Silas Bent's *Machine-Made Man*, and in H. Dubreuil's *Robots or Men?*, translated by Frances and Mason Merrill.

Two significant general works were *The Meaning of Culture*, by John Cowper Powys, and *Culture and Progress*, by Wilson D. Wallis. Love, marriage, and women received attention in Floyd Dell's *Love in the Machine Age*; John Macy's *About Women*; Phyllis Blanchard and Carlyn Manasses's *New Girls for Old*; *Marriage*, by 24 authors; and F. Muller-Lyer's *The Evolution of Modern Marriage*, translated by Isabella C. Wigglesworth. Some local sociological studies were Charles W. Wood's *The Passing of Normalcy*, about Marion, Ohio; Robert Redfield's *Tepoztlán, a Mexican Village*; and Margaret Mead's *Growing Up in New Guinea*. Charles S. Johnson published *The Negro in American Civilization*, and James Weldon Johnson, *Black Manhattan*. Other important works were: Jerome Frank's *Law and the Modern Mind*; Bertrand Russell's *The Conquest of Happiness*; and Graham Taylor's *Pioneering on Social Frontiers*.

EDUCATION. A highly-charged controversial work in this field was *Universities: European and American*, by Abraham Flexner, which made contrasts distinctly unfavorable to even the best established American institutions. C. C. Little advocated reforms in *The Awakening College*. Other works on the subject were: *The Marks of an Educated Man*, by Albert Edward Wiggam; *Life in College*, by Christian Gauss; *The American Road to Culture*, by George S. Counts; *The New Generation*, by V. F. Calverton and Samuel D. Schmalhausen; *The Modern Parent*, by Garry Cleveland Myers; *The New Education in Europe*, by Frederick William Roman; *The Great Investment: Secondary Education in a Democracy*, by Thomas H. Briggs; and *The Development of Harvard University*, by Samuel Eliot Morison.

POLITICS AND INTERNATIONAL RELATIONS. The year was remarkable for the number of books about India. A few were: *India and the Simon Report*, by Charles F. Andrews; *Voiceless India*, by Gertrude Emerson; *Reconstructing India*, by Edward Thompson; *The Case for India*, by Will Durant. There were several important general books, such as: Harold J. Laski's *Liberty in the Modern State*; Everett Dean Martin's *Liberty*; Herbert Adams Gibbons's *Nationalism and Internationalism*; Harry Elmer Barnes's *World Politics in Modern Civilization*; Oscar Newfang's *The United States of the World*. American relations with Great Britain were realistically treated in *America and England*, by Nicholas Roosevelt, and *America Conquers Britain*, by Ludwell Denny.

Important books about American politics were: *The American Leviathan*, by Charles A. and William Beard; *The Giant of the Western World*, by Francis P. Muller and Helen Hill; and *Chicago Surrenders*, by Edward Dean Sullivan.

Dealing with war: Ramsay Muir's *The Political Consequences of the Great War*; Maurice R. Davie's *The Evolution of War*; George Sylvester Viereck's *Spreading Germs of Hate*, about propaganda. Others were: *China*, by Nathaniel Peffer; *Tortured China*, by Hallett Abend; *The Soviets in World Affairs*, by Louis Fischer; *Soviet Russia*, by William Henry Chamberlin; *The Little Entente*, by Robert Machray; *Spain*, by Salvador de Madariaga; *Uniting Europe*, by William E. Rappard; *England*, by Wilhelm Dibelius, translated by Mary Agnes Hamilton; *Turkey Faces West*, by Halid Edib; *Look to the East*, by Frederick Palmer; and *France, A Nation of Patriots*, by Prof. Carleton J. H. Hayes of Columbia.

ECONOMICS. One of the most important books of the year was Paul M. Warburg's *The Federal Reserve System*, a large and careful work. The depression probably accounted for such studies as Irving Fisher's *The Stock Market Crash and After*; *The Menace of Overproduction*, edited by Scoville Hamlin; *The World's Economic Dilemma*, by Ernest Minor Patterson; *Some Folks Won't Work*, by Clinch Calkins; *King Cotton is Sick*, by Claudius T. Murchison, J. M. Keynes's *A Treatise on Money* added to his already great reputation. Other noteworthy works were: Norman Angell's *The Story of Money*; Hartley Withers's *Money*; Francis Whitmore's *The Money Machine*; G. D. H. Cole's *Gold, Credit, and Employment*; Evans Clark's *Financing the Consumer*; Harry F. Ward's *Our Economic Morality*; A. W. Lake's *Trends in the Foreign Trade of the United States*; A. L. Bowley's *Some Economic Consequences of the Great War*; Grover G. Huebner's *Foreign Trade*; *A Philosophy of Production*, edited by J. G. Frederick; and *Europe the World's Banker, 1870-1914*, by Herbert Feis.

HISTORY. Publications in American history were particularly distinguished during 1930, including such works as Samuel Eliot Morison and Henry Steele Commager's *Growth of the American Republic*; Vernon L. Parrington's *The Beginnings of Critical Realism in American*; the completion of the illustrated history *The Pageant of America*, edited by Ralph H. Gabriel, with his own *The Lure of the Frontier*; O. S. Coad and Edwin Mims's *The American Stage*, and John A. Krout's *Annals of American Sport*; Mark Sullivan's *Pre-War America*, volume iii of *Our Times*; Preston W. Slosson's *The Great Crusade and After*, about the post-war period; Robert E. Riegel's *America Moves West*; George Fort Milton's *The Age of Hate*; Andrew Johnson and the Radicals; and Howard K. Beale's *The Critical Year*, which was 1866.

The outstanding work in English history was perhaps George Macaulay Trevelyan's first volume of *The Age of Queen Anne, Blenheim*. There were also published in this field: *The Seventeenth Century*, by G. N. Clark; *England in the Age of the American Revolution*, by L. B. Namier; *The American Revolution and the British Empire*, by R. Coupland; *Those Earnest Victorians*, by Esmé Wingfield-Stratford; *The Age of the Chartists, 1832-1854*, by J. L. and Barbara Hammond; and *The Voyages of the Cabots*, by James A. Williamson. Volume vi of *The Cambridge History of the British Empire, Canada and Newfoundland*, edited by J. H. Rose, A. P. Newton, and E. A. Benians; *A Short History of Scotland*, by George Malcolm Thomson; and *Australia*, by W. K. Hancock, were also important.

Two histories of "culture" were: volume i of Preserved Smith's *A History of Modern Culture*; and Egon Friedell's *A Cultural History of the Modern Age*. Concerning ancient history: volume viii of *The Cambridge Ancient History, Rome and the Mediterranean, 218-133 B. C.*, edited by S. F. Cook, F. E. Adcock, and M. P. Charlesworth; John Garstang's *The Hittite Empire*; V. G. Childs's *The Bronze Age*; G. Elliott Smith's *Human History*. Of medieval history: volume vi of *The Cambridge Medieval History, The Victory of the Papacy*, edited by J. R. Tanner, C. W. Previté-Orton, and Z. N. Brooke; Harold Lamb's *The Crusades: Iron Men and Saints*; Alexander Clarence Flick's *The Decline*

of the Medieval Church. About the World War: volume vi of *British Documents on the Origin of the War*, edited by G. P. Gooch and Harold Temperley; and *The Coming of the War*, by Bernadotte E. Schmitt. Other noteworthy histories were: Charles Guignebert's *A Short History of the French People*; J. Swire's *Albania*; and René Fülöp-Miller's *The Power and Secret of the Jesuits*, translated by F. S. Flint and D. F. Tait.

SCIENCE. There was much interesting activity manifested in popular science. Sir James Jeans again captured sales and acclaim with his astronomical work, *The Mysterious Universe*. Geoffrey Dennis published an impressive summary of the prophecies of science and religion, *The End of the World*. Harlow Shapley's *Flights from Chaos*, and Harlan True Stetson's *Man and the Stars* were also astronomical. The palm for quantity of important books probably goes to the biologists, however, with such works as: H. S. Jennings's *The Biological Basis of Human Nature*, about genetics; J. H. Woodger's *Biological Principles*; R. A. Fisher's *The Genetical Theory of Natural Selection*; Joseph Needham's *The Sceptical Biologist*; Frederick Tilney's *The Master of Destiny*, about the brain; Sir Richard Paget's *Human Speech*; Frank M. Chapman's *My Tropical Air Castle*; John Langdon-Davies's *Man and His Universe*; John Hodgdon Bradley, Jr.'s *Parade of the Living*; T. R. Parsons's *The Materials of Life*; Robert Briffault's *Rational Evolution*; Herbert F. Standing's *Spirit in Evolution: From Amœba to Saint*; Austin H. Clark's *The New Evolution*; Julian M. Drachman's *Studies in the Literature of Natural Science*; and Maurice Maeterlinck's *The Life of the Ant*.

Jonathan Norton Leonard, in *Crusaders of Chemistry*, and Bernard Jaffe, in *Crucibles*, wrote biographies of chemists. In *Stalkers of Pestilence*, Wade W. Oliver did likewise for physicians. E. N. da C. Andrade's *The Mechanism of Nature* and G. P. Thomson's *The Atom* were concerned with physics. *Sons of the Earth*, by Kirtley F. Mather, was about geology; *Number: the Language of Science*, by Tobias Dantzig, was about mathematics. A well done history of science was Benjamin Ginzburg's *The Adventure of Science*.

TRAVEL AND THE OUT-OF-DOORS. Polar exploration was a quite popular subject during 1930. Admiral Richard E. Byrd's *Little America* sold extremely well; *Andrée's Story*, told in the diaries of his expedition and translated by Edward Adams-Ray, was impressive; and Griffith Taylor wrote *Antarctic Adventures and Research*. Rockwell Kent's *N. by E.* was about a voyage to Greenland and adventures there. A. J. Villiers wrote of a voyage in a sailing vessel *By Way of Cape Horn*; Evelyn Waugh made much of a tour to the Mediterranean in *Labels*; William Morris Barnes showed himself the old sea-dog in *When Ships Were Ships and Not Tin Pots*. Walter B. Hayward's *The Last Continent of Adventure* was again about the Antarctic; Gifford Pinchot took his way *To the South Seas*; William J. W. Roome went *Tramping through Africa*. Hickman Powell thought the island of Bali *The Last Paradise*; W. Somerset Maugham wrote of Burma in *The Gentleman in the Parlour*. Henri de Monfried's *Pearls, Arms, and Hashish*, as told to Ida Treat, is exciting stuff about an extraordinary smuggler. *Bring 'Em Back Alive*, by Frank Buck and Edward An-

thony, concerns wild game hunting for circuses and zoölogical collections. Frank H. Shaw's *Full Fathom Five* is about shipwrecks.

Louis Untermeyer published *Blue Rhine-Black Forest*; Constance Bridges, *Thin Air: a Himalayan Interlude*; Fred Puleston, *African Drums*; Gretchen Cron, *The Roaring Veldt*; K. G. Grubb, *Amazon and Andes*; Sidney de la Rue, *The Land of the Pepper Bird*; H. V. Morton, *In Search of Scotland*; Murio Praz, *Unromantic Spain*.

Aviation was written about in John Goldstrom's *A Narrative History of Aviation*, and Sir Alan Cobham's *Twenty Thousand Miles in a Flying Boat*. W. S. Cobham wrote of trees he had met in *Giants of the Forest*. Capt. Jack Randell told of his rise and fall of fortunes in *I'm Alone*, the name of his rum-running ship. G. M. Dyott's *Man Hunting in the Jungle* told of a search for a lost explorer up the remoter reaches of the Amazon.

Sport was the subject of: *The America's Cup*, by Nigel Lindsay; *The America's Cup Races*, by Herbert L. Stone; and *Lawn Tennis: Its Principles and Practice*, by A. Wallis Myers. See PHILOLOGY, MODERN.

LITHUANIA, lith'ü-ä'ní-ä. A Baltic republic established Feb. 16, 1918, from territories of the former Russian Empire; bounded by Latvia on the north, Poland on the east, and Poland and East Prussia on the south and southwest. Capital, Kovno, although Vilna, which was transferred to Poland by the Council of Ambassadors in 1923, was still claimed by the Lithuanians in 1930 as their capital.

AREA AND POPULATION. Poland retains possession of approximately 10,000 square miles of territory claimed by Lithuania. The actual area under Lithuanian sovereignty in 1930 was 21,490 square miles, and the population on Jan. 1, 1930, was 2,340,038, as compared with 2,316,615 on Jan. 1, 1929. The birth rate per 1000 of population in 1929 was 27.2 and the death rate, 17. The chief cities are Kovno (Kaunas), 96,535; Memel (Klaipeda), 36,633; and Shavli (Siauliai), 22,560.

EDUCATION. At the census of 1923, 35.9 per cent of all males and 38.8 per cent of all females over five years were illiterate. In 1929, there were 2657 primary schools, with 160,678 pupils; 123 secondary schools, with 22,752 pupils; 13 teachers' training colleges, with 1700 students; and 15 vocational institutions, with 1811 students. The University of Kovno had 4032 students.

PRODUCTION. Lithuania is predominantly rural in its economy, with agriculture and lumbering as the chief support of the population. Of the total area in 1928, 47.4 per cent was under cultivation, 25.3 per cent was permanent grass land, 15.9 per cent wood and forest, and 11.4 per cent other land. Production of the cereal crops in 1929, with figures for 1928 in parentheses, was (in quintals of 220.46 pounds): Wheat, 2,400,000 (1,722,000); rye, 5,575,000 (4,754,500); barley, 2,602,000 (1,504,500); oats, 4,366,000 (2,667,400). Other farm products in 1929, in metric tons, were potatoes, 1,220,000; peas, 101,585; flax fibre, 34,600 (33,980 in 1928). Cattle and dairy farming are extensively practiced. Livestock in 1929 consisted of 1,160,100 cattle, 1,125,300 sheep, 973,300 swine, and 588,300 horses, all except cattle being fewer in number than in the previous year. Mineral resources are insignificant.

About 67,000 tons of peat were produced in 1928.

COMMERCE. Lithuanian foreign trade in 1929 continued its rapid expansion and due largely to the German market for foodstuffs opened by the Lithuanian-German trade agreement ended the year with a favorable balance of 23,400,000 lits (1 lit or litas equals \$0.10 at par). Exports amounted to 329,800,000 lits (256,900,000 in 1928) and imports to 306,400,000 lits (291,100,000). The chief exports in 1929 were: Wood products, 47,000,000 lits; wood pulp, 38,400,000 lits; butter, 31,400,000 lits; swine, 28,600,000 lits; meat, 17,100,000 lits; cattle, 14,500,000 lits. Leading imports: Cotton tissues, 23,500,000 lits; fertilizers, 15,500,000 lits; sugar, 14,300,000 lits; woolen tissues, 14,200,000 lits; and coal, 12,600,000 lits.

Germany took 59 per cent of Lithuanian exports in 1929, the United Kingdom, 17 per cent; Latvia, 9 per cent, and the Netherlands, 3 per cent. Of the imports, 49 per cent came from Germany, 9 per cent from the United Kingdom, 6 per cent from Czechoslovakia, and 5 per cent from the United States.

FINANCE. Budget estimates for 1930 anticipated that total revenues and expenditures would balance at 320,000,000 lits. Ordinary revenue was estimated at 275,000,000 lits, of which 35,000,000 lits was anticipated from direct and 71,000,000 lits from indirect taxation. Actual returns for 1929 showed revenues of 320,000,000 lits and expenditures of 280,000,000, leaving a surplus of about 40,000,000 lits. The accumulated surplus was reported as 68,889,710 lits. The total public debt on June 1, 1929, stood at 86,261,575 lits, including \$6,271,674 owing to the United States government, \$1,848,150 to Lithuanians in the United States, and £90,000 to the British government.

COMMUNICATIONS. At the beginning of 1929, there were 1043 miles of state-owned railway lines, including 737 miles of broad gauge. Highways totaled 25,461 miles and navigable waterways, 1606 miles, including 301 miles navigable for steamboats.

GOVERNMENT. According to the constitution as amended May 26, 1928, executive power is vested in the President of the Republic, elected for seven years, who acts through a responsible ministry; and legislative power is in a diet elected for five years by universal, equal, direct, and secret suffrage. President in 1930, Antanas Smetona; Prime Minister and Minister of Finance, Juozas Tubelis.

HISTORY. A continuance of friction with Poland over the disputed Vilna territory, and the settlement of the Memel question by agreement with Germany, were outstanding features of Lithuanian history during 1930. The internal disturbances characteristic of the country during preceding years continued also, the government of Premier Tubelis exhibiting the same repressive tendencies as had the deposed dictator, Augustinas Valdemaras.

The dispute with Germany involved German protests at the administration of Memel and claims for approximately 64,000,000 German marks as compensation for losses sustained in connection with the transfer of the Memel territory to Lithuania in 1923. It was announced January 9 that Lithuania had rejected the demands for compensation on the ground that the serious economic losses suffered by the country during the World War absolved it of any obliga-

tion with regard to German losses. An agreement reached between the Foreign Ministers of Lithuania and Germany at Geneva in September provided for the termination of the censorship within the Memel territory, the replacement by Memel citizens of two Lithuanian members of the Memel directorate, and the holding of elections by the electoral committee. Criticism of the agreement in the Lithuanian Parliament led Foreign Minister Zaunius to present his resignation on October 8. The German government immediately filed a protest at Geneva against Lithuania's failure to carry out the compact. Later it was reported that President Smetona had refused to accept the Foreign Minister's resignation and that the agreement would be carried out.

In a statement on March 17, Foreign Minister Zaunius reiterated Lithuania's determination not to compromise with Poland with regard to Vilna. Expressing dissatisfaction with the Vasconcelos report upon the organization of transit traffic on the Vilna, Memel, Königsberg, and Libau railway lines, he revealed that Lithuania's failure to send representatives to the meeting of the League of Nations' Commission on Communications, before which the report was presented, was due to opposition to Poland. The Lithuanian government on May 22 demanded an inquiry by the Council of the League into the dispersal of a meeting of Lithuanians in the disputed territory by Polish troops, in which one Lithuanian was mortally wounded. The Polish government contended that the Council had no jurisdiction as the question was "not an international affair."

Professor Valdemaras, the former dictator and Premier, was indicted on a charge of high treason May 24 after he had charged the government with violations of the Constitution. The Nationalist Union, in which he was a leading figure along with President Smetona and Premier Tubelis, at the same time read him out of the party. On July 25, Valdemaras was banished to the governmental farm at Kroettingen, where he was reported to have attempted unsuccessfully to escape a few days later. The government also took steps to break up a militarist organization of his adherents, known as the "Iron Wolves," which was considered a menace to public order. Election promises of Premier Tubelis to restore constitutional government remained unfulfilled late in 1930. The Liberal European press reported that prisons and concentration camps were still filled with Socialists, Communists, and other opponents of the government. The imposition of the death sentence upon two Communists by the Kovno Military Court resulted in disorders on January 14, and numerous arrests.

LITTLE AMERICA. See POLAR RESEARCH.

LITTLE ENTENTE. An ostensibly defensive alliance, entered into first in 1920 by Czechoslovakia, Yugoslavia, and Rumania, aimed at the maintenance of the *status quo* in central Europe as established by the Treaties of Versailles, St. Germain, and Trianon. Originally all three countries were aligned with France. Occasionally their policies were supported by Poland. Following the development of Franco-Italian tension in 1930, however, there were indications that Rumania was being drawn toward Italy. At the eleventh annual conference of Little Entente Foreign Ministers, held at Strbske Pleso, Czechoslovakia, June 25-27, 1930, Foreign Minister Mironescu of Rumania stressed his country's

friendship for Italy. Besides the Franco-Italian rivalry, questions discussed included plans to prevent the threatened return to the Hungarian throne of Archduke Otto, the application of The Hague and Paris reparation agreements, the development of closer economic coöperation, and land reform. A commercial treaty, providing for a special customs arrangement, was signed between Czechoslovakia and Rumania June 27. The Little Entente accepted in principle the Briand memorandum for a European union, but agreed that each member state should answer it separately. The Little Entente treaties were renewed in 1929. See separate articles on Little Entente states and AUSTRIA, under *History*.

LITTLE THEATRE TOURNAMENT. See THEATRE.

LIVER TREATMENT. See MEDICINE, PROGRESS IN, under *Pernicious Anæmia*.

LIVESTOCK. Several situations in 1930 resulted adversely for the livestock industry. The chief difficulty was a weakened demand for livestock products with an accompanying reduction in prices, to which the general industrial depression contributed. The situation was complicated by the most serious and widespread drought that had occurred since 1901. Not only was the corn crop materially reduced and pastures seriously depleted, but fall seeding was handicapped. The shortage of water was acute in many areas.

The prices of meat animals declined so that in August they were estimated as but 119 per cent of the prewar level. If business activity had remained at the 1929 level the Secretary of Agriculture estimated that livestock producers should have received more than \$500,000,000 more for their products than were actually received during 1930. This estimate was based on the numbers of the different classes of livestock marketed.

The numbers of cattle, calves, hogs, and mutton slaughtered under Federal Inspection in the United States during the first nine months of 1929 and 1930 indicates the changes in the relative slaughtering of meat animals. It is apparent that mutton slaughtered was considerably increased in 1930 and the slaughter of hogs decreased while cattle and calves did not change greatly from 1929.

Data on the amount of feed available for livestock during the winter of 1930-31 indicated that the supplies of feed grains per animal unit were 83 per cent of the five-year average and of hay 89 per cent of the five-year average. The increase of about 3 per cent in the number of cattle on farms at the close of the year was considered to be more than offset by a smaller number of hogs, horses, and mules. Lack of fall pastures necessitated early fall feeding in sections where the shortage of feed was most acute.

Sheep producers were in greater distress than any other branch of the meat industry. In five years the number of sheep had increased 11,000,000 head and there was a lamb crop of 2,000,000 head in 1930. Efforts to stimulate consumption of mutton were somewhat successful in that lamb consumption was increased by more than one pound per capita, but the price was lower than had occurred in many years. Retail prices for leg of lamb averaged about 30 cents. Some adjustment appeared necessary in the sheep industry in order that satisfactory prices might be expected. See WOOL.

Cattle numbers at the beginning of the year were reduced almost to the low point reached in

MEAT SLAUGHTERED AND STORED UNDER FEDERAL INSPECTION IN THE UNITED STATES IN 1930, WITH COMPARISONS

| | <i>Cattle</i> | <i>Calves</i> | <i>Hogs</i> | <i>Sheep and lambs</i> |
|--|--------------------------|---------------|--------------------------|------------------------|
| Number slaughtered: | | | | |
| 1930 | 8,170,373 | 4,595,046 | 44,265,694 | 16,696,570 |
| 1929 | 8,824,067 | 4,488,996 | 48,444,604 | 14,023,362 |
| 3-year average* | 8,770,493 | 4,681,608 | 47,291,157 | 18,464,857 |
| Total dressed weight of slaughtered animals: | | | | |
| 1930—lbs. | 4,245,408,000 | 458,908,000 | 7,717,718,000 | 649,738,000 |
| 1929—lbs. | 4,274,949,000 | 452,633,000 | 8,430,318,000 | 545,491,000 |
| 3-year average—lbs. | 4,441,523,000 | 469,049,000 | 8,246,789,000 | 523,262,000 |
| In storage on December 31: | | | | |
| 1930—lbs. | 76,061,000 ^b | ..... | 574,381,000 ^c | 4,858,000 |
| 1929—lbs. | 103,883,000 ^d | ..... | 703,084,000 ^e | 5,317,000 |
| 3-year average—lbs. | 93,248,000 ^f | ..... | 678,874,000 ^g | 5,116,000 |

* Average for 1927, 1928, and 1929.

^b 55,879,000 lbs. fresh, and 20,182,000 lbs. cured beef.

^c 124,788,000 lbs. fresh, 398,529,000 lbs. cured pork, and 51,064,000 lbs. lard.

^d 77,230,000 lbs. fresh, and 26,653,000 lbs. cured beef.

^e 145,078,000 lbs. fresh, 475,908,000 lbs. cured pork, and 82,098,000 lbs. lard.

^f 69,750,000 lbs. fresh, and 23,498,000 lbs. cured beef.

^g 134,181,000 lbs. fresh, and 470,636,000 lbs. cured pork, and 74,057,000 lbs. lard.

1929 and consequently from the supply standpoint the cattle industry was in a strong position, although prices continued low. It is also of interest that beef production fell off about 12 per cent in 1930 in Argentina. The census for 1930 showed that there were 31,974,000 cattle in Argentina and the average carcass weights were light on account of the scarcity of pasture during the early months of 1930.

The situation of pork producers is dependent to a considerable extent upon foreign markets for the disposal of surplus pork products, especially lard. Hog slaughter was reduced about 10 per cent in 1930 but conditions in foreign markets were relatively unfavorable. Reports from the important foreign pork-producing countries indicated a continued increase in hog numbers, with 22 per cent more hogs due to farrow in the fall of 1930 than in 1929. Hog numbers in Germany, Denmark, Irish Free State, United Kingdom, and the Netherlands were estimated on farms at about 34,000,000 head. The estimated number in the United States was 52,323,000. The storage supplies of pork in the United States in 1930 were much below those of 1929.

It is of interest to compare the principal exports of pork and lard from the United States as influenced by the growing foreign competition. Lard, the export product of most importance, dropped to 642,486,396 pounds during 1930 as compared with 829,328,487 pounds in 1929. There was a reduction of 103,085,838 pounds in the export of lard to Germany, but only a very small reduction in the amount sent to the United Kingdom. There were also decreases in the exports of other pork products in 1930 as compared with 1929, as follows: Cured hams and shoulders, 120,098,575 pounds in 1930 and 125,796,826 pounds in 1929; bacon, 89,173,074 pounds in 1930 and 138,423,370 pounds in 1929; and Cumberland and Wiltshire sides, 7,639,211 pounds in 1930 and 10,879,488 pounds in 1929. Exports of fresh pork increased from 13,539,070 pounds in 1929 to 17,573,008 pounds in 1930.

The marketing of poultry and eggs suffered from the general price decline and to some extent from over production. With the low prices storage of eggs increased so that by August supplies of eggs in storage were the largest on record. A heavy consumption of poultry resulted from the low prices. Toward the close of the year poultry was banned by the Jewish trade as a kosher food in Chicago and in other large cities on account of "racketeering" among the shoctim. The

consequences of this action to the industry were uncertain.

The Tariff Act of 1930 included substantial increases in the duty on cattle, sheep, swine meats, and meat products, and eggs and egg products, which tended to prevent importation of these products unless the domestic market was in a much better financial position than it was at the close of 1930.

The Federal Farm Board assisted in the organization and functioning of the National Livestock Marketing Association which was incorporated on May 10, 1930, by existing coöperative associations. The operations of the National Livestock Marketing Association are national in scope and include not only the marketing of finished cattle but also the marketing and purchase of feeder stock and the purchase of feeds as well as the extension of credit for livestock operations. See AGRICULTURE.

TRENDS IN RESEARCH. Research continued principally along the lines of feeding, management, breeding, and nutrition. Investigations in feeding and nutrition were most numerous on account of the difficulties arising in attempts to study management problems and the tremendous expense and long duration of thoroughgoing breeding investigations. In the nutrition field primary interest continued in the study of the vitamin content of feeds and the study of the value of minerals. Of much practical interest to poultry feeders was the finding at the Cornell Agricultural Experiment Station that the potency of vitamin D, the antirachitic vitamin, decreased with age when cod liver oil, a potent source of this vitamin, was mixed with mash.

The value of different minerals in the animal body was not fully understood. In studies at the Illinois Agricultural Experiment Station, the equivalent of one grain of elemental iodine fed daily to young pigs did not modify the rate of growth or nitrogen or phosphorous utilization. On the other hand, iodine feeding in conjunction with desiccated thyroid at the West Virginia Agricultural Experiment Station tended to increase the metabolic rate and calves fed iodized milk at the Ohio Agricultural Experiment Station grew more rapidly and were in a better physical condition than those receiving milk not so treated. Iron and copper products were tested in attempts to prevent anemia in pigs with somewhat variable results. At the Illinois Agricultural Experiment Station the administration of ferric citrate increased the count of red corpuscles

in the blood of pigs, but iron and copper salts had no effect on the hemoglobin content of the blood of chicks. See **FOOD AND NUTRITION**.

The Texas Agricultural Experiment Station demonstrated the dependence of range cattle on weather and pasture conditions as regards their increase in body weight. Cattle on the range increased rapidly in weight during the spring, but slowed down from late summer to early winter and lost weight from mid-January to early March. Body measurements which were affected by the degree of fatness followed the same general trend but measurements of the long bones and head increased at about the normal rate regardless of weather and pasture conditions. There were indications that growth was retarded in parts of the body during periods of scanty feed but without permanent stunting. A study of growth in beef cattle on restricted rations at the Missouri Agricultural Experiment Station indicated that the length of the growth period of normal beef steers was about six years but that it could be prolonged to about nine years by undernourishment. Severe undernutrition during the first three years reduced the mature size but did not result in abnormalities in form.

Studies of the influence of a low plane of nutrition and early breeding on swine at the Missouri Agricultural Experiment Station indicated that neither of these conditions inhibited skeletal growth but a low plane of nutrition increased the age at which sexual maturity was reached and reduced the birth weight of the pigs. Investigations of the U. S. Department of Agriculture showed that by careful selection and feeding it was possible to produce suitable Wiltshire sides for the English bacon market from American breeds.

In studies of the time of breeding ewe lambs at the North Dakota and British Columbia Agricultural Experiment Stations it was found that ewes bred to lamb at about one year of age raised satisfactory lamb crops. While the early bred lambs were not quite as heavy, nor did not produce quite as much wool as their unbred mates, the production of the lambs more than compensated for the difference and the early bred lambs were not permanently handicapped. The U. S. Department of Agriculture in cooperation with Purdue University showed that pasture was exceptionally valuable as a feed for lambs and that lambs could be well finished on good pasture without the use of expensive grains.

A growing interest was exhibited in the study of the factors concerned with the physiology of reproduction in domestic animals. The indication of the rôle in reproduction of the anterior lobe of the pituitary body, a small ductless gland, stimulated research along this line. Investigations at the California and Missouri Agricultural Experiment Stations indicated a close relationship between the secretions of the pituitary and the cyclic behavior of the ovary in female animals.

The Inter-American Conference on Agriculture, Forestry and Animal Industry held in Washington, D. C., from September 8 to 20 did much to promote good will among investigators in North and South America. Several days of the programme were devoted to the presentation of papers by outstanding investigators and administrators of livestock research and allied subjects in the different countries of the New World.

The Fourth World Poultry Congress held July

22 to 30 at the Crystal Palace, London, England, was attended by representatives from 61 different countries.

The Council for Scientific and Industrial Research of Australia received a gift of £20,000 from T. D. McMaster, an extensive sheep breeder, for the investigation of problems on animal health, giving special attention to problems affecting the sheep industry.

CHANGE IN PERSONNEL. Important changes in personnel included the appointment of Dr. S. A. Asdell as Assistant Professor of Animal Husbandry at Cornell University. Dr. Asdell had conducted extensive studies relating to the physiology of reproduction of animals in England, Australia, and the United States. Dr. C. B. Cain was appointed head of the Animal Husbandry Department at the Mississippi Agricultural Experiment Station to succeed Prof. A. D. Buchanan who accepted a position with the Texas A. and M. College. Dr. Bruce L. Warwick, Assistant Professor of Veterinary Science at the University of Wisconsin, was appointed on March 1 as Animal Husbandman in charge of breeding investigations at the Texas Agricultural Experiment Station to succeed Dr. J. L. Lush who accepted a position as Professor of Animal Husbandry at the Iowa State College of Agriculture. In the reorganization of some of the departments at the Massachusetts Agricultural College, Prof. V. A. Rice was appointed head of the Animal Husbandry Department.

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LIVESTOCK DISEASES. See **VETERINARY MEDICINE**.

LIVONIA. A former Baltic state, now an administrative division of Latvia. See **LATVIA**.

LOAD LINE CONVENTION, INTERNATIONAL. See **SHIPPING**.

LOANS. See **BANKS AND BANKING**.

LOCKE, WILLIAM JOHN. A British novelist and dramatist, died at his home in Paris, May 14, 1930. He was born in Barbados, B. W. I., Mar. 20, 1863, and was educated at the Queen's Royal College in Trinidad and at St. John's College, Cambridge University. An architect by profession, he became secretary of the Royal Institute of British Architects in 1897, remaining there

until 1907. In 1895 he published his first novel, *At the Gate of Samaria*, but not until 1905, with *The Morals of Marcus Ordeyne*, did he win wide recognition from the public and critics. The following year he published *The Beloved Vagabond*, generally considered his best novel and a characteristic one in theme and treatment. Mr. Locke frequently chose to present a Bohemian character, whimsical and irresponsible and lovable. His work is characterized by an irony that evidently owed much to Anatole France but was tempered by a tolerant good humor and a whimsical and romantic viewpoint. In 1906 *The Morals of Marcus Ordeyne* was dramatized and presented both in England and in the United States and, two years later, *The Beloved Vagabond* was also successfully presented. He wrote other plays, including *The Palace of Puck* (1907); *Butterflies* (1908); *The Man from the Sea* (1910); *An Adventure of Aristide Pujol* (1912); and *Jaffery* (1915). In 1928 he went to Hollywood, Calif., where some of his stories were being produced for the moving pictures. A prolific writer, Mr. Locke's novels, in addition to the early one named above, include *Derelicts* (1897); *Idols* (1898); *Where Love Is* (1903); *Septimus* (1909); *Simon the Jester* (1910); *The Glory of Clementina Wing* (1911); *The Joyous Adventures of Aristide Pujol* (1912); *Stella Maris* (1913); *The Fortunate Youth* (1914); *Far Away Stories* (1916); *The Wonderful Year* (1916); *The Rough Road* (1918); *The House of Baltazar* (1920); *The Mountebank* (1921); *The Tale of Triona* (1922); *The Golden Adventure of Mr. Paradyne* (1924); *The Kingdom of Theophilus* (1927); *Joshua's Vision* (1928); *Perella* (1928); *Ancestor Jorico* (1929); *The Town of Tombarel* (1930); *The Shorn Lamb* (published posthumously in 1930).

LOCKOUTS. See **STRIKES** and **LOCKOUTS**.

LOCUSTS. See **ZOOLOGY**.

LOEB CLASSICAL LIBRARY. See **PHILOLOGY**, **CLASSICAL**.

LOGAN, JAMES ADDISON, JR. An American soldier and banker, died Oct. 27, 1930, in Philadelphia, Pa., where he was born Nov. 11, 1879. He attended Haverford College and served in the Spanish-American War and the Philippine Insurrection. He was commissioned a captain in the U. S. Army in 1901, and was graduated from the Army War College (1912). During the early part of the World War he was chief of the American Military Mission with the French Army, and on the entry of the United States was commissioned colonel and made assistant chief of staff at the general headquarters of the American Expeditionary Forces. After the Armistice he was appointed principal assistant to Herbert Hoover in relief operations in Europe, and was also adviser to the American Relief Commission in connection with Russian relief during 1921-23. In addition to serving as American representative in the financial and communications sections of the Supreme Economic Council, he was in charge of coordinating operations of technical advisers to various new states of central and eastern Europe and was assistant American unofficial delegate to the Reparations Commission (1919-23) and American unofficial delegate to the same (1923-25). He also attended the London Conference of Prime Ministers in 1924 and the Finance Ministers' Conference in Paris in 1925 as unofficial American delegate. On his return to the United States in 1925 he became associated with Dillon, Read & Co., New York banking concern.

LONDON NAVAL CONFERENCE. See **GREAT BRITAIN** and **UNITED STATES** under *History*; **NAVAL PROGRESS**.

LORD, HERBERT GARDINER. An American educator, died in New York City, Mar. 12, 1930. He was born in Boston, Mass., Mar. 29, 1849, and was graduated from Amherst College in 1871 and from the Union Theological Seminary in 1877. Ordained in the Presbyterian ministry in 1878, he served as pastor of the Church of the Redeemer in Buffalo, N. Y., from 1877 to 1895. He became professor of philosophy in the school of pedagogy at the University of Buffalo in 1895, and he was principal of the Franklin School in Buffalo from 1899 to 1900. After 1900 he was professor of philosophy at Columbia University, retiring in 1921. Professor Lord was author of *Psychology of Courage* and coauthor of *Essays Philosophical and Psychological in Honor of William James* and *Studies in the History of Ideas*.

LORD, HERBERT MAYHEW. Brigadier general, U. S. army, retired, and former director of the budget for the United States government, died in Washington, D. C., June 2, 1930. He was born in Rockland, Me., Dec. 6, 1859, and was graduated from Colby College in 1884. Until 1898 he was engaged in newspaper work, serving also as clerk of the ways and means committee of the House of Representatives in Washington. He was appointed major of additional paymasters in the Spanish-American War (1898) and paymaster, with the rank of captain, in the U. S. army in 1901. He was promoted through the grades to the rank of brigadier general in 1919. In 1918 he was appointed assistant to Major General Goethals, with the title of director of finance, and in 1920 he became chief of finance, U. S. army. For his services as director of finance he was awarded the Distinguished Service Medal. During the World War, he was a Liberty Loan officer. On retirement from the U. S. army in 1922, General Lord was appointed to succeed Gen. Charles G. Dawes as director of the bureau of the budget of the United States government. He resigned the office in May, 1929.

LORING, WILLIAM CALEB. An American jurist, died in Pride's Crossing, Mass., Sept. 8, 1930. He was born in Beverly, Mass., Aug. 24, 1851, and was graduated from Harvard with the LL.B. degree in 1874. The year after his admission to the bar in 1874 he was appointed assistant attorney general of Massachusetts, but resigned that post in 1878 to become a member of the law firm of Ropes, Gray and Loring. From 1882 to 1886 he was general solicitor and general counsel to the New York & New England Railroad Co. (later part of the New York, New Haven, and Hartford system). He was appointed an associate justice of the Supreme Judicial Court of Massachusetts in 1899 and served on the bench until 1919. In 1922 he became a lecturer on the practice of law at Harvard. He was president of the Boston Bar Association during 1920-21 and chairman of the Judicial Council of Massachusetts during 1924-26. The A.M. degree was conferred on him by Harvard University in 1876 and the LL.D. degree in 1901. He was also president of the trustees of the American School of Classical Studies in Athens, Greece, from 1911 to 1923, and in 1922 was made a knight commander of the Royal Order of George I by the Greek government.

LOS ANGELES WATER SUPPLY. See **AQUEDUCTS**; **CALIFORNIA** under *Political Events*.

LOUISIANA. POPULATION. According to the Fifteenth Census, the population of the State on Apr. 1, 1930, was 2,101,593. The population on Jan. 1, 1920, was 1,798,509. The capital is Baton Rouge.

AGRICULTURE. The following table gives the acreage, production, and value of the principal crops, in 1929 and 1930:

| Crop | Year | Acreage | Prod. Bu. | Value |
|-------------------|------|-----------|-------------|---------------|
| Cotton | 1930 | 2,093,000 | 710,000 * | \$ 67,280,000 |
| | 1929 | 2,050,000 | 809,000 * | 11,345,000 |
| Corn | 1930 | 1,109,000 | 12,199,000 | 19,828,000 |
| | 1929 | 1,180,000 | 21,476,000 | 18,257,000 |
| Rice | 1930 | 491,000 | 17,676,000 | 18,465,000 |
| | 1929 | 472,000 | 18,833,000 | 3,584,000 |
| Potatoes ... | 1930 | 37,000 | 2,655,000 | 2,867,000 |
| | 1929 | 31,000 | 1,977,000 | 5,609,000 |
| Sweet potatoes .. | 1930 | 76,000 | 6,232,000 | 6,324,000 |
| | 1929 | 80,000 | 7,440,000 | 4,784,000 |
| Hay | 1930 | 832,000 | 358,000 * | 4,689,000 |
| | 1929 | 307,000 | 352,000 * | ..... |
| Sugar cane . | 1930 | 171,000 | 2,907,000 * | ..... |
| | 1929 | 155,445 | 2,917,925 * | ..... |

* Bales. * Tons.

Farms in the State, numbering 161,514 in 1930, were 21.9 per cent more numerous than in 1925, when they numbered 132,450; they were 19.2 per cent in excess of the 135,463 farms of 1920. Irrigated lands totaled 452,251 acres in 1929, as against 454,882 in 1919.

MINERAL PRODUCTION. Petroleum, for years the leading mineral product of the State, showed on the whole a tendency to decline of production, while natural gas, owing in part to the development of great pipe lines to convey the product to distant areas, tended to rise in respect of production and to assume the lead. The petroleum wells yielded 20,229,000 barrels in 1929, as against 21,847,000 in 1928; the yield, for 1929, had a value of \$25,200,000 (estimated); for 1928, of \$25,850,000. For natural gas the statistics were available only through 1928. The production of the State rose to 227,281,000 M cubic feet for 1928, from 186,961,000 M for 1927; the value of natural gas produced, to \$20,279,000 for 1928, from \$12,158,000 for 1927. An apparent rise in the production of natural gas in 1929 was suggested by the increasing quantity of gasoline extracted therefrom: 63,400,000 gallons in 1929, as against 55,022,000 in 1928; in value, \$3,902,000 in 1929 and \$3,434,000 in 1928. Salt production declined to 525,840 short tons for 1929, from 630,780 for 1928. In value it was \$2,277,366 for 1929 and \$2,405,351 for 1928. The total value of the State's yearly mineral product was \$56,810,403 for 1928; for 1927, \$51,266,921.

TRANSPORTATION. The total number of miles of railroad line under operation on Jan. 1, 1930, was 4762.71. There were built, in 1930, 18.89 miles of first track.

EDUCATION. The work of teaching the illiterate adults of the State in special classes continued in 1930; at the end of the year State Superintendent of Education Harris, in the *Journal* of the National Education Association, reported that about 100,000 adults had been instructed so that they might read and write. By the terms of one of the amendments of the State Constitution adopted by popular vote at the November election the Legislature was required to appropriate for each year a sum for State aid to education equal at least to \$12 for each census pupil and to set aside one-sixth thereof as an equalization fund for the benefit of schools in the poor sub-

divisions. The school population of the State, for the academic year 1929-1930, was reported as composed of 394,456 whites and 255,740 colored. There were enrolled in the public schools 277,707 white and 156,850 colored pupils. Of these, 226,298 white and 150,416 colored pupils were in the elementary schools; in the high schools were 51,409 white and 6434 colored. The net expenditure of the year for public school education totaled \$23,380,257. Salaries of white teachers averaged \$1102 for the year; of colored teachers, \$451.

LEGISLATION. The Legislature held two sessions, these being the regular biennial session, which convened in May and adjourned on July 10 after fruitless debates due to disagreement on the policies that Governor Long sought to impose; the second, a special session called by Governor Long after his having obtained in the primary election for United States Senator a vote carrying endorsement of his course. This special session, convened on September 16 and adjourned on September 22, ratified virtually in whole the Long programme of expenditure, bond issue and taxation. The main objective of this programme was to provide the State with an extensive system of hard-surface highways and bridges, so as to put it abreast of the foremost of the Southeastern States in these respects. A highway and bridge bond issue of \$75,000,000 was authorized by constitutional amendment. Of its proceeds, \$80,000,000 were to go to highway construction and \$15,000,000 to building bridges. New Orleans, which had opposed heavy highway expenditure, was reconciled by the designation of \$7,000,000 of the bridge money as reserved for the construction of a bridge across the Mississippi River at that city. The bond interest was to be met and the bonds were to be retired from the proceeds of the existing State tax of four cents a gallon on gasoline. A measure was passed providing for the construction of a new State Capitol at Baton Rouge and a bond issue of \$5,000,000 for this purpose was authorized. An additional cent was, by a constitutional amendment subject to popular ratification, affixed to the per-gallon rate of the gasoline tax; its proceeds were to go in part to supply the equalization fund, the source of State aid to the public schools; in part to the development of the port of Lake Charles; and the remainder to the improvement of the port of New Orleans, and to the service of the outstanding bonds of the New Orleans port commission. Provisions were made for an increase of the State property tax with the purpose of raising the pensions of Confederate veterans to \$60 a month, from \$30. The New Orleans Levee Board was authorized to develop an airport on the shores of Lake Pontchartrain and to issue bonds to the total of \$1,000,000 for the work. The rate of State aid to public schools was fixed at \$12 for each educable child, the designation including all between the ages of 6 and 18 years. A sales tax on retail shops was created.

POLITICAL AND OTHER EVENTS. The chief political event of the year was Governor Long's campaign for the nomination of the Democratic party to the office of United States Senator. The campaign, owing to the intensity of the opposition to Long's policies of expanded State outlay and higher taxation, amounted to a popular test of his strength as Governor. In the primary election on September 9 Long received a solid majority over his opponent, Senator Joseph E. Ransdell. The outcome was generally accepted as

carrying an implied mandate for Long to summon the Legislature in special session and for it to adopt the Long programme of highway construction and bond issue.

Suit over the validity of the State act authorizing the government of Louisiana to dispense free textbooks not only among the public schools but among sectarian institutions was carried to the U. S. Supreme Court, which on April 28 upheld the act. On March 2 a warehouse fire at New Orleans destroyed cotton to the estimated value of some \$3,000,000. The settling of the claims of property owners whose lands were needed for the construction of the Bonnet Carré Spillway, a part of the Federal flood-protection project, was delayed and became a subject of public dispute, local interests asserting that the Federal authorities had resorted to a dilatory policy in order to force settlements at low prices. The Southern States Line, a shipping company to operate between New Orleans and the Mediterranean ports, was formed and an allowance of \$7750 a voyage was granted it by the Shipping Board.

ELECTIONS. Governor Huey P. Long, running unopposed as the Democratic candidate for United States Senator, was elected on November 4. A delegation of eight Democratic Representatives was elected, six being the existing incumbents. The eight constitutional amendments submitted by the Legislature were approved at the polls, without organized opposition. They provided for the issue of \$68,000,000 of State bonds for paved roads; for raising the rate of gasoline tax by one cent, to five cents a gallon, the proceeds to go to the public schools and to the dock boards of New Orleans and Lake Charles; for \$5,000,000 of bonds to build a new State Capitol; to authorize subdivisions to exempt new industries from taxes for five years; to allow the New Orleans Levee Board to build an airport on the lake shore; to authorize New Orleans to issue \$4,500,000 of bonds for rebuilding public markets and for refunding outstanding debts; to render it obligatory for future Legislatures to provide yearly school funds at the rate of \$12 to the educable child and, further to create an equalization fund at the rate of \$2 for every such child; to increase the pensions of Confederate veterans and veterans' widows to \$60 a month, from \$30. For bridging the Mississippi at New Orleans \$7,000,000 of State bonds were approved by vote of the State.

OFFICERS. Governor, Huey P. Long; Lieutenant-Governor, Paul N. Cyr; Secretary of State, Alice Lee Grosjean; Treasurer, H. B. Conner; Auditor, L. B. Bayard, Jr.; Attorney-General, Percy Saint; Superintendent of Education, T. H. Harris.

JUDICIARY. Supreme Court: Charles A. O'Neill, Chief Justice; Associate Justices, Ben C. Dawkins, Winston Overton, John St. Paul, Wynne G. Rogers, John R. Land, H. F. Brunot, Fred. M. Odom.

LOWELL, PERCIVAL. American astronomer. See **ASTRONOMY**.

LUÇON, lü'sôn', LOUIS HENRI JOSEPH, CARDINAL. A prelate of the Roman Catholic Church, died in Rheims, France, May 28, 1930. He was born in Maulévrier, Oct. 28, 1842. On ordination to the priesthood in 1865 he became chaplain of St. Louis-des-Français in Rome. He later served as archpriest of Notre Dame in Cholet, France, and in 1888 was consecrated Bishop of Belley. In 1906 he was elevated to the archbishopric of Rheims, and a year later was created a cardinal-

priest. At the time of his death he was dean of the French cardinals. During the World War Cardinal Luçon gained the admiration of the allied nations by the courage he exhibited in the bombardment of the Rheims Cathedral. He remained in the city from August, 1914, to April, 1918, holding daily masses and ministering to the soldiers. Through his letters to the Pope he vindicated the French army of the charge that the cathedral had been used as a military observation post, which had been the reason given by the Germans for their demolition of the famous edifice. He also helped pave the way for the resumption of friendly relations between France and Germany after the War by stimulating a spirit of forgiveness. In 1921 he officiated at a service commemorating American assistance in restoring the devastated regions of France, and in 1927 re-consecrated the partly-restored cathedral. He was decorated with the rosette of an officer of the Legion of Honor in recognition of his bravery and noble attitude during the War. He was the author of *La nécessité sociale de la religion* (1917).

LUMBER PRODUCTION. See **FORESTRY**.

LUNN, LOUISE KIRBY. See **KIRBY-LUNN, LOUISE**.

LUTHERAN CHURCH. A church made up of groups of religious bodies, acknowledging "the Holy Scriptures . . . as the only source and infallible norm of all church doctrine and practice" and declaring the unaltered Augsburg Confession and Luther's Small Catechism to be "a pure exposition of the Word of God." Its membership is chiefly in central and northern Europe and in the United States and Canada. The following organizations in the United States bear the Lutheran name: United Lutheran Church in America; American Lutheran Church; American Lutheran Conference; Evangelical Lutheran Church (Eielsen Synod); Church of the Lutheran Brethren of America; Danish Evangelical Lutheran Church of America; Icelandic Lutheran Synod of North America; Finnish Evangelical Synod in America (Suomi Synod); Finnish Evangelical Lutheran National Church; Finnish Apostolic Lutheran Church; and the Evangelical Lutheran Synodical Conference of North America.

The American Lutheran Church was formed by the merger of three independent general bodies, the Evangelical Lutheran Joint Synod of Ohio and Other States, the Evangelical Lutheran Synod of Iowa and Other States, and the Lutheran Synod of Buffalo, which was consummated Aug. 10-11, 1930, in Toledo, Ohio. There also was organized October 29-31 in Minneapolis, Minn., the American Lutheran Conference, a delegate co-operative federation composed of the following: The American Lutheran Church; Norwegian Lutheran Church of America; United Danish Evangelical Lutheran Church in America; Evangelical Lutheran Augustana Synod of North America; and Lutheran Free Church. The Evangelical Lutheran Synodical Conference of North America is composed of the Evangelical Lutheran Synod of Missouri, Ohio, and Other States; Evangelical Lutheran Synod of Wisconsin and Other States; Slovak Evangelical Lutheran Synod of America; and Norwegian Synod of the American Evangelical Lutheran Church.

The outstanding event of 1930 was the celebration of the 400th anniversary of the Augsburg Confession, the basis of doctrinal unity of Lutheran churches throughout the world. This cele-

bration culminated in Europe on June 25 with a great Pan-Protestant meeting in Augsburg, Germany, attended by about 50,000 persons, and in the United States on October 29-31 at the convention of the American Lutheran Conference in Minneapolis. There also was celebrated the 1100th anniversary of the coming of St. Ansgar to Sweden and the 900th anniversary of the introduction of Christianity into Norway. Having relieved the American National Lutheran Council of the distribution and administration of world relief in January, 1930, the World Convention of Lutheran Churches carried out its programme of relief work among "weak, suffering, and endangered churches in Europe," especially in Russia. In addition to maintaining the Lutheran Theological Seminary in Leningrad, the convention succored the sick and destitute and sponsored two immigration missionary agencies to aid those who managed to escape to Canada.

Statistics showing the general growth of the church in the United States and Canada during 1930 were as follows: Pastors, 11,852; congregations, 16,727; baptized members, 4,278,416; confirmed members, 2,858,071; and communing members, 2,369,242. Church schools numbered 16,222, with 136,466 officers and teachers and 1,448,582 pupils. Church property was valued at \$372,107,077, while congregational expenses amounted to \$40,401,715, congregational benevolences to \$12,854,316, and total expenditures to \$59,256,031. It was estimated that throughout the world there were 75,000 Lutheran congregations, with 50,000 pastors and a baptized membership of 82,180,000.

In 1930 the Lutheran organizations in the United States maintained 34 theological seminaries, 37 colleges, and 97 academies, with a total enrollment of 36,884 students, 2222 instructors, endowment amounting to \$16,140,914, and property valued at \$39,908,104. Lutheran inner-mission institutions, such as deaconesses' homes, hospitals, old-people's homes, orphanages, immigrants' and seamen's homes, numbered 373, with an endowment of \$4,466,180 and a property value of \$42,568,002; during the year they sheltered or ministered to 5337 children and 430,756 men and women. The work of the churches in fields outside of the United States and Canada was carried on principally in India, Africa, Japan, China, New Guinea, Argentina, and British Guiana. Baptized converts in 3867 congregations numbered 314,511; confirmed members, 203,449; and communing members, 189,102. The total value of the property of these congregations was \$5,886,787. A feature of foreign-mission work during the year was the development of an indigenous church in Japan, which was recognized by the United Lutheran Church at its convention in Milwaukee, Wis., Oct. 9-16, 1930.

Important cooperative groups of the Lutheran bodies include the American Federation of Lutheran Brotherhoods, the National Lutheran Educational Conference, the Lutheran Student Association of America, the Lutheran Theological Seminary Conference, the Lutheran Foreign Missions Conference of America, the Lutheran Home Missions Council of America, the National Lutheran Inner-Mission Conference of America, the American Lutheran Statistical Association, the National Lutheran Editors' Association, and the National Lutheran Publishing House Managers' Association. The church maintains 25 publishing houses with a total property value of \$5,663,798.

Official periodicals are the *Lutheran* (United Lutheran Church), *Lutheran Standard* (American Lutheran Church), *Lutheran Companion* (Augustana Synod), *Lutheran Herald* (Norwegian Lutheran Church), *Lutheran Witness* (Missouri Synod), *Northwestern Lutheran* (Wisconsin Synod), *Ansgar Lutheran* (United Danish Church), and *Lutheran Men* (American Federation of Lutheran Brotherhoods). Headquarters of the National Lutheran Council, in which the United Lutheran Church in America and the American Lutheran Conference cooperate, are at 39 East 35th Street, New York City, the executive director being the Rev. Ralph H. Long.

LUXEMBURG, lûks'em-bûrg. A small state of western Europe, bounded by Germany, France, and Belgium and linked economically to Belgium by a customs union effective May 1, 1922. Area, 999 square miles; population at the census of Dec. 1, 1927, 285,524; estimated Jan. 1, 1929, at 289,694. Capital, Luxemburg, with a population in 1927 of 52,440; ruler in 1930, Grand Duchess Charlotte.

Agriculture engages only 32 per cent of the population, the 394,000 acres under cultivation being devoted principally to oats and potatoes. Mining and metallurgical industries predominate. Pig iron production for 1929 was 2,906,093 tons, against 2,770,061 tons in 1928, steel production was 2,702,257 tons, against 2,567,079 in the previous year, and iron-ore production, 7,547,019 tons, against 7,026,832 tons. There were 47 blast furnaces and 7 steel works in operation in 1928. Brick, printing, leather, and glass industries are relatively important. Separate figures on foreign trade are not available. In the ordinary and extraordinary budgets for 1930 revenues were estimated at 411,307,817 francs and expenditures at 396,213,951 francs. The public debt on Jan. 1, 1930, amounted to 442,042,000 francs (415,475,185 francs on Jan. 1, 1929). In 1928 there were 342 miles of railway line and 1297 miles of State roads.

Executive power is vested in the Cabinet appointed by the sovereign and legislative power in the Chamber of Deputies elected by universal suffrage for six years. The Council of State of 15 members acts as a Senate. Premier in 1930, Joseph Bech (Catholic-Conservative), who was assisted by three director-generals. See BELGIUM.

LYNCH, JAMES MATHEW. An American labor leader and public official, died in Syracuse, N. Y., July 16, 1930. He was born in Manlius, N. Y., Jan. 11, 1867. After learning the printing trade in 1881 he soon became active in labor union politics, and for seven terms was president of the Syracuse Trade Assembly. In 1899 he became first vice president and the following year president of the International Typographical Union. He held this office during 1900-14 and again during 1924-26, attaining international prominence. It was at his order that the nation-wide strike of printers for an eight-hour day in the United States was called in 1906 and was ended successfully two years later. During his administration he also succeeded in obtaining a pension of eight dollars weekly for aged and indigent printers and an appropriation to care for chronic cases at the Union Printers' Home and Tuberculosis Sanitarium in Colorado Springs. He was appointed labor commissioner of New York State in 1913 and also served as a member of the Workmen's Compensation Commission. On the merging of these departments the following

year he became a member of the State Industrial Commission, holding this post until 1921. In 1929 he was appointed a member of the New York Old Age Security Commission. He was also president of the American Life Society, a mutual insurance corporation, and a member of the American Association for Labor Legislation.

LYNCHINGS. As a result of the great increase in lynchings in the U. S. during the year 1930, as compared with the year 1929, and because of adverse criticisms directed against the South from many quarters, Southern publicists and other leaders decided that a thorough-going inquiry was necessary. There was organized therefore by the Commission on Interracial Cooperation a committee whose function it was to be to examine into the situation and to propose measures of relief to the State governors, eight of whom had publicly pledged themselves to combat the evil. George F. Milton was named chairman of the committee, and its other members included the following persons: Julian Harris, a southern editor; Prof. Howard W. Odum, of North Carolina University; Alex W. Spence, of Dallas; W. P. King, of the Methodist Episcopal Church, South; and W. J. McGlothlin, President of Furman University. The following prominent Negroes were also appointed members of the committee: Robert R. Moton, President of Tuskegee; John Hope, President of Atlanta University; Charles S. Johnson, of Fisk University; and B. F. Huber, President of Georgia State College.

In December Mr. Milton, in reporting on the activities of his Commission, declared that in the final outcome "a definite relation will probably be found between inadequate education and readiness to give the law into the hands of the mob." The Commission was making a detailed case study of all lynchings in 1930, of which there had been twenty-one. In only one case was the lynching that of a white man. In Mr. Milton's opinion, although the South had been the scene of the greatest number of these acts of mob violence, lynchings were not strictly geographic or racial affairs. Said Mr. Milton: "It is rather the underlying beast in the man which comes out to the fullest in the excitement of the mob." And in another place in his report he declared: "Where many men are living year after year, on the fringe of hunger and outbreak, they accumulate a formidable mass of internal emotional tension demanding satisfaction. Furthermore in the majority of studies thus far completed the communities in which the lynchings occurred had less than a six-months school term."

At the end of the year the National Association for the Advancement of Colored People reported that the year 1930 had witnessed 25 lynchings as against 12 during 1929. Seven lynchings had taken place in Georgia during 1930; there had been four each in Alabama and Texas; three in Mississippi; two each in Indiana and South Carolina; and one each in Florida, North Carolina and Oklahoma. The offenses charged against the victims ranged from the most trivial ones to the customary one of "outrages against Southern womanhood." Among the crimes for which Negroes were lynched were the following: failure to stop an automobile when ordered, being active in politics, testifying against a white man in court, quarreling with a white man, murder, assault, attempted assault, robbery. The statement of

the National Association for the Advancement of Colored People noted that increasingly the white womanhood of the South was repudiating the mob violence of its men folk, at any rate, when employed as a "protection of womanhood." Said Walter White:

During the year representative white women of twelve Southern States, including church, educational, voters, Y. W. O. A., and club groups, have issued two statements declaring they desired no such "protection," characterizing lynching as "the complete breakdown of government and the triumph of anarchy" and stating that "it brutalizes the community where it occurs, including the women and children, who frequently witness its orgies, and particularly the youth who are usually conspicuous participants."

MACAO, makä'ö. An island at the mouth of the Canton River, in China, which with the two adjacent islands of Taipa and Coloane, constitute a province of Portugal. Area, 4 square miles; population, according to the census of 1927, 157,175 (including 3840 Portuguese, and 152,738 Chinese). The trade is chiefly in transit and is mainly in the hands of the Chinese. In 1929-30, revenues were estimated at 4,781,492 patacas and expenditures at 4,658,272 patacas (1 pataca equals approximately \$0.48). In 1928 imports were valued at 24,058,470 patacas and exports at 9,381,533 patacas. The city of Macao is divided into two parts, inhabited respectively by Chinese and non-Chinese, each under its own administration.

MACDONALD, J. RAMSAY. See GREAT BRITAIN under *History*.

MACDONELL, ARTHUR ANTHONY. A British Orientalist and educator, died in Oxford, England, Dec. 28, 1930. Born May 11, 1854, he was educated at Göttingen and at Corpus Christi College, Oxford, where he was Taylorian German scholar (1876), Davis Chinese scholar (1877), Boden Sanskrit scholar (1878), and Taylorian teacher of German (1880-1900). He also acted as deputy professor of Sanskrit from 1888 to 1890, and then accepted the Boden professorship of Sanskrit. In 1914 he was awarded the Campbell Memorial Gold Medal for Oriental Research by the Royal Asiatic Society of Bombay. His works include: *A Sanskrit Grammar* (1886); *A New Sanskrit Grammar* (1901, 3d ed. 1927); *A Sanskrit-English Dictionary* (1892, 2d ed. 1924); *A History of Sanskrit Literature* (1900); *A Vedic Grammar* (1910); *A Vedic Grammar for Students* (1916); *A Vedic Reader* (1917); *Hymns from the Rigveda* (1922); *Lectures on Comparative Religion* (1925); and *India's Past* (1927).

MACEDONIA. A stretch of territory in the Balkan peninsula, included in European Turkey until the outbreak of the Balkan Wars (1912-13) and since the World War divided between Greece and Yugoslavia to the exclusion of Bulgaria. See BULGARIA and JUGOSLAVIA under *History*.

MCGILL UNIVERSITY. A coeducational institution of higher learning in Montreal, Quebec, Canada; founded in 1821. The enrollment for the autumn session of 1930 was distributed as follows: Faculties of arts and science, 1022; medicine, 469; applied science, 303; dentistry, 34; law, 93; music, 180; and graduate studies, 220 and schools or departments of agriculture, 136; architecture, 44; commerce, 247; household science, 70; graduate nursing, 34; public health, 3; physical education, 42; social service, 27; pharmacy, 7; library administration, 13; and

teachers' training school, 131. The registration in the French summer school of 1930 was 172. The number of members on the teaching staff was 538. New appointees during 1929-30 included: A. S. Eve, dean of graduate studies; F. M. G. Johnson, dean of science; C. F. H. Allen, chemistry; N. B. MacLean, mathematics; Kiang Kang-hu, Chinese studies; A. J. D. Porteous, philosophy; C. L. Huskins, genetics; J. H. Menie, chemistry; O. N. Brown, mining engineering; F. F. Osborne, geology; V. C. Wynne Edwards, zoölogy; J. Norman Bird, agronomy; R. Millinchamp, agricultural engineering; K. I. Melville, pharmacology; and E. G. D. Murray, biochemistry. The endowment of the university amounted to \$17,602,876, the income for the year was \$2,141,728. The library contained 350,000 volumes. During 1930 Divinity Hall and an addition to the Royal Victoria College were under construction. Principal, Sir Arthur William Currie, G.C.M.G., K.C.B., LL.D.

MACHEK, DR. VLATKO. Croat autonomist leader. For his trial for sedition see JUGOSLAVIA under *History*.

MACKAY, JOHN YULE. A British anatomist and educator, died in Broughty Ferry, Scotland, Mar. 30, 1930. He was born in Inverkeithing, Fifeshire, Jan. 13, 1860, and was educated at Glasgow University, receiving his M.B. and C.M. degrees in 1882 and M.D. degree in 1885. After serving as senior demonstrator in anatomy and lecturer in embryology at the University of Glasgow, he was appointed in 1894 professor of anatomy in University College, Dundee, a constituent part of the University of St. Andrews. In 1897 he became principal of the college and retained the principalship until his death, although he resigned his chair in 1927. He was for many years representative of the University of St. Andrews on the General Medical Council. His research work was devoted mainly to the vascular system and the morphology of the arterial system among vertebrates. In connection with the latter, he constructed a scheme of the classification of the branches of the aorta, the correctness of which was confirmed by subsequent embryological observation. He was the author of "The Morphology of the Arterial Arches in Birds," published in 1888 in the *Transactions of the Royal Society of London*, and co-author of *Human Anatomy: General and Descriptive and A Directory of Dissections*. He was also one of the founders in 1889 of *Memoirs and Memoranda in Anatomy*.

MACKENZIE. See NORTHWEST TERRITORIES.

MACKENZIE, SIR THOMAS. A New Zealand statesman and explorer, died in Wellington, N. Z., Feb. 14, 1930. He was born in Edinburgh, Scotland, Mar. 10, 1854, and, while a child, was taken to live in Otago, N. Z., where he was educated in the public schools. He entered politics and, from 1887 to 1896, served as a member in the New Zealand Parliament from Clutha; he later represented Waihemo, Waikouaiti, Taieri, and Egmont. In 1909 he was a Cabinet member, with the portfolios of Minister of Industries and Commerce and of Minister in Charge of Tourist and Health Resorts, Scenery Preservation, and State Forestry Departments. For a brief time in 1912, he was Prime Minister of New Zealand and, on being defeated by a vote of lack of confidence, was appointed High Commissioner in London, serving there until 1920. In 1921 he was made a member of the Legislative Council for

Otago. He explored the little-known areas of New Zealand, his trips being of interest and value because of the discoveries made, including three passes, several lakes, and pastoral country. He wrote *Explorations in Fiordland, New Zealand*. In 1916 he was made Knight Commander of St. Michael and St. George.

MCKRAE, MILTON A. An American newspaper publisher, died in La Jolla, Calif., Oct. 11, 1930. He was born in Detroit, Mich., June 13, 1858, and began his newspaper career as a reporter on the *Detroit News*, later becoming advertising manager of the *Cincinnati Post*. In 1890 he became associated with E. W. Scripps, with whom he founded the Scripps-McRae League of newspapers in 25 different cities. Following his retirement, the league was consolidated in 1922 with the Howard Newspaper Syndicate, being known as the Scripps-Howard Newspapers. He was the author of *Forty Years in Newspaperdom*.

MADAGASCAR. An island belonging to France, separated from the southeast coast of Africa by the Mozambique Channel. The area is 241,094 square miles and the population at the census of 1926 was 3,621,342 (including the Mayotte and Comoro Islands), of whom 3,591,943 were Malagasy, 18,040 French, and 11,359 foreigners. In 1925, deaths among the native population exceeded births by 606. Capital, Tananarive, with 88,487 inhabitants in 1928.

Other leading towns, with their populations in 1926, were: Antsirabe, 19,130; Majunga, 16,570; Tamatave, the chief port of the east coast, 15,022. The native Malagasy are divided into numerous tribes, of which the Hova or Merina are most numerous and their language is understood over a large part of the island. Education is compulsory for children from 8 to 14 years, and they are obliged to learn French.

PRODUCTION. Cattle breeding and agriculture are the chief occupations, the principal crops being rice, sugar, coffee, manioc, cotton, cacao, vanilla, tobacco, beans, cloves, rubber, and mulberry trees. The forests contain valuable woods and gums. Graphite production is important, and gold, mica, corundum, phosphates, iron, coal, copper, and precious stones are produced also. The relatively unimportant local industries include rice milling, sugar grinding, meat packing, and the manufacture of straw hats, mats, etc.

COMMERCE. The balance of foreign trade became increasingly unfavorable from 1925 to 1928. In the latter year imports totaled 688,561,341 francs (1 franc equaled \$0.0392 in 1928) and exports 483,596,535 francs. France supplies the bulk of the imports and also purchases most of the exports. The chief imports in 1928 were cotton goods, wines, machinery, metals, cement, fuel oil, and flour, while leading exports were graphite, manioc, tanning bark, rice, hides, rafia fibre, and mica.

FINANCE. The ordinary budget estimates for 1929 balanced at 242,338,000 French francs (about \$9,500,000 converted at par). Railway estimates totaled 38,153,000 francs; native medical assistance estimates, 19,596,000 francs; and public works estimates, 68,650,000 francs. The public debt on Jan. 1, 1929, totaled 131,142,000 francs.

COMMUNICATIONS. The railways, which are government owned, reported 430 miles of line in 1928 and in the same year carried 1,184,286 passengers and 270,000 metric tons of freight,

the gross receipts totaling 34,698,000 francs (\$1,300,000). There were 1800 miles of highways (1928). In 1928, 6119 vessels of 3,190,430 tons entered and 6189 vessels of 3,212,818 tons cleared the ports of the island.

GOVERNMENT. The colony is under a governor-general aided by a consultative council of administration. Governor-General in 1930, Marcel Olivier (appointed in 1924). Dependent upon Madagascar are the small islands of Nossi Bé, Diego Suarez, Ste. Marie, and the Comoro group.

MAHÉ. See FRENCH INDIA.

MAINE. POPULATION. According to the Fifteenth Census, the population of the State on Apr. 1, 1930, was 797,423. The population on Jan. 1, 1920, was 768,014. The capital is Augusta.

AGRICULTURE. The following table gives the acreage, production, and value of the principal crops in 1929 and 1930:

| Crop | Year | Acreage | Prod. Bu. | Value |
|--------------|------|-----------|------------|--------------|
| Potatoes ... | 1930 | 188,000 | 45,120,000 | \$29,328,000 |
| | 1929 | 179,000 | 50,120,000 | 60,144,000 |
| Hay | 1930 | 1,149,000 | 1,272,000* | 13,841,000 |
| | 1929 | 1,234,000 | 1,596,000* | 17,525,000 |
| Oats | 1930 | 122,000 | 5,002,000 | 2,601,000 |
| | 1929 | 122,000 | 4,880,000 | 8,416,000 |

* Tons.

Farms in the State numbered 38,996 in 1930, and showed a decline from the 50,033 of 1925 and the 48,227 of 1920. The farms in 1930 comprised 4,639,719 acres, of which 1,411,080 were crop land, 1,637,553 pasture, 1,350,626 woodland, and 240,460 other land. Farm lands were valued at \$95,828,615; farm buildings, \$98,567,979; implements and machinery, at \$28,395,103. Farm horses in 1930 numbered 60,817, as against 94,350 in 1920; cattle in 1930, 230,369; hogs, 33,733; chickens, 1,457,625.

MINERAL PRODUCTION. Stone, the leading mineral product, contributing nearly one-half of the yearly mineral total, was actively quarried in 1928, 413,960 short tons being produced, as against 355,800 in 1927. This included much stone of the higher grades, as was evidenced by the high ratio of the total value of the product to its quantity. The total value of the stone output was \$2,579,523 for 1928 and \$2,447,644 for 1927. The output of lime, which attained the quantity of 123,023 short tons for 1928, fell, for 1929, to 92,000 (estimated) short tons; the value of lime quarried declined from \$1,056,443 for 1928, to \$806,000 (estimated) for 1929. Classified apart from the stone production, that of slate was substantial, rising to \$653,627 for 1929, as represented by the quarries' sales, from \$551,242 for 1928. Cement and clay products each totaled for 1928 in excess of \$500,000, and there was a material production of feldspar. The total value of the mineral products of the State, for 1928, was \$5,922,729; for 1927, \$5,475,695.

FINANCE. State expenditures in the year ended June 30, 1929, as reported by the U. S. Department of Commerce, were: for maintenance and operation of government departments, \$12,082,509 (of which \$2,223,456 was for local education); for conducting public service enterprises, \$100,288; for interest on debt, \$927,975; for permanent improvements, \$7,392,171; total, \$20,508,943 (of which \$9,618,865 was for highways, \$2,801,453 being for maintenance and \$6,817,412 for construction). Revenues were \$18,014,201. Of these, property and special taxes formed 38.2

per cent; departmental earnings and remuneration to the State for officers' services, 8.3; sales of licenses, 46.9 (including taxes \$3,006,645 on sales of gasoline). The State's funded debt outstanding on June 30, 1929, was \$21,506,070. Net of sinking-fund assets, it was \$21,495,323. On property bearing an assessed valuation of \$743,688,259 were levied in the year State taxes of \$5,746,704.

TRANSPORTATION. The total number of miles of railroad line under operation on Jan. 1, 1930, was 2197.47. No additional construction of line or trackage in 1930 was reported.

EDUCATION. Committees were put to work in the course of the year to revise both the course of study for elementary schools and that for the State normal schools. A school of education was established at the University of Maine, and it was agreed that the university should grant to the State's normal-school graduates two years of credit toward an A.B. degree in education. The number of individuals of school age in the State in the year ended June 30, 1930, was reported as 247,796. There were enrolled in the public schools 162,725 pupils. Of these, 135,083 were in common schools or elementary grades, and 27,642 were in high schools. The year's expenditures for public-school education totaled \$11,700,408. Salaries of teachers averaged, for the year, \$889 among the elementary and \$1542 among the secondary group.

CHARITIES AND CORRECTIONS. The State's activities in the care of persons, concentrated to a great extent in the Department of Public Welfare, centred in this organization to an increasing degree by reason of an act of 1929. This act required the Department to administer an appropriation for patients unable to pay for treatment in general or private hospitals. This duty increased the activity of the Department in 1930. The Department had at its head a body of five commissioners, serving under appointment and holding monthly meetings; and, as its chief executive, an appointive secretary. The Department acted as a State board of children's guardians, having an average of 2252 children in its charge in this capacity in 1930. It also dispensed assistance under a mothers' aid law. The State institutions included three hospitals for the insane, situated at Augusta, Bangor, and Pownall; sanatoria at Greenwood Mountain, Fairfield, and Presque Isle; Reformatory for Men, South Windham; Reformatory for Women, Skowhegan; State School for Boys, South Portland; State School for Girls, Hallowell; Maine School for the Deaf, Portland; Military and Naval Orphan Asylum, Bath; State Prison, Thomaston.

LEGISLATION. A special session of the Legislature convened on August 5 and adjourned on August 6. Its chief enactment was a measure to revise and consolidate the State's public laws. This measure embodied recommendations of a special recess committee that had been appointed by the previous session to study the subject. The session also altered the charter of Dexter P. Cooper, Inc., the company formed to derive electricity from the tides of the Bay of Fundy. The original provision that the company might erect a power plant partly in Canada and might deliver electric current in Canada was altered so as to require both the plant and the sale of power to be entirely in Maine.

ELECTIONS. The biennial State elections were held on September 8. Representative Wallace H.

White, Jr., of Lewiston, Republican, who had won in the Republican primaries over former Governor Ralph O. Brewster, was elected United States Senator by 87,023 votes (unofficial total) to 56,003 votes for Frank H. Haskell, Democrat. Governor W. Tudor Gardiner, Republican, was re-elected, obtaining 82,216 votes (unofficial total) to 65,479 for Edward C. Moran, Jr., the Democratic candidate.

OFFICERS: Governor, William Tudor Gardiner; Secretary of State, Edgar C. Smith; Treasurer, William S. Owen; Auditor, E. D. Hayford; Attorney-General, Clement F. Robinson; Commissioner of Education, Bertram E. Packard.

JUDICIARY. Supreme Judicial Court: Chief Justice, Luere B. Deasy; Associate Justices, Guy H. Sturgis, Charles P. Barnes, Charles J. Dunn, Norman L. Bassett, William R. Pattangall, Frank G. Farrington. Superior Court: Justices, William H. Fisher, George H. Worster, Arthur Chapman, Harry Manser, George L. Emery, James H. Hudson, Sidney St. F. Thaxter.

MAINE, UNIVERSITY OF. A coeducational State institution of higher learning in Orono; founded in 1865. The enrollment for the autumn of 1930 was 1614 and for the summer session of 1930, 351. There were 167 members on the faculty. The productive funds of the university amounted to \$891,635, and the income for the year was \$1,482,468. The library contained 97,000 volumes. A school of journalism, established by the board of trustees in April, 1930, was opened for the fall semester. President, Harold Sherburne Boardman, C.E., D.Eng., LL.D.

MAIZE. See CORN.

MALACCA. One of the Straits Settlements. Consult that article.

MALAYA. See BRITISH MALAYA.

MALAY STATES. See FEDERATED MALAY STATES.

MALDIVES ARCHIPELAGO. See CEYLON.

MALTA. An island in the Mediterranean Sea, which, with the adjacent islands of Gozo and Comino, was annexed by Great Britain in 1814. Situated 58 miles south of Italy and 180 miles from the African coast, it is an important link in British Imperial communications and the base of the British fleet in the Mediterranean. Area of Malta, 95 square miles; total area with Gozo and Comino, 122 square miles. The civil population increased from 224,680 at the census of 1921 to 230,618 on Jan. 1, 1929. There is a garrison of about 10,000 troops. Valletta is the chief town and port (population, 48,240).

In 1928-29 there were 166 public schools, with 25,105 pupils, besides secondary and private schools, and a university with 119 students. Agriculture is the main occupation; the total farm production in 1928-29 was valued at £860,205. Cereals, potatoes, vegetables, grapes, and cotton are the leading crops. The fishing industry occupied about 3500 persons in 1928-29. Lace, cotton, and filigree are manufactured. In 1928, imports, including specie and bullion, totaled £3,999,109 and exports were £556,908. Expenditures of the British fleet and by tourists tend to balance the island's annual account. Revenue for the fiscal year 1928-29 totaled £875,147 and expenditure, £821,252.

Under the Constitution of 1921 local affairs are controlled by a legislature, consisting of the senate of 17 members, 10 of whom are appointed, and a legislative assembly of 32 elected members. There is a responsible ministry for local affairs.

A governor, appointed by the King, controls the naval, military, and air forces, Imperial interests, external relations and trade, coinage, immigration, and may veto local legislation. He is assisted by an appointed Executive Council and a Nominated Council, consisting of the Lieutenant-Governor, a legal adviser, and three officers of the military forces. Governor and Commander-in-Chief in 1930, General Sir John Du Cane (appointed 1927); Premier and Minister for Police and Justice, Lord Strickland of Sizergh. English and Italian are the official languages.

HISTORY. A dispute of thirty years' standing between Church and State in Malta reached a climax in 1930, resulting in the indefinite suspension of the Constitution on June 24, and the virtual severance of diplomatic relations between the Vatican and the British Government. Although primarily religious, the dispute was complicated by the Italian affiliations of the Roman Catholic hierarchy in Malta and the tendency of the Fascist press in Italy to treat Malta as an irredentist sphere. The pro-British faction in Malta charged that the Vatican, whether consciously or unconsciously, was encouraging a movement among the Italian element for union with Italy. The Vatican emphatically denied that such was its intent. The strength of the separatist movement was discounted by Lord Passfield, the British Colonial Secretary, in the House of Lords June 25. He said the Nationalist or pro-Italian party in Malta represented primarily a cultural movement in defense of the Italian language and traditions. It was pointed out, however, that one of the Nationalist leaders openly advocated union with Italy.

ORIGIN OF THE DISPUTE. The difficulties leading to the suspension of the Constitution had their immediate origin in March, 1929, when Father Carta, Italian head of the Minorite Order of Malta, sought to discipline Father Micallef, a Franciscan monk and British subject, by sending him to Sicily. Father Micallef appealed to Lord Strickland, the Prime Minister of Malta, who declared that the monk was being punished on a political charge primarily because of his pro-British sentiments and ordered that no passport be issued. Lord Strickland, himself a Catholic, was leader of the pro-British Constitutional party, which was victorious in the election of 1927.

When the Vatican upheld Father Carta and excommunicated Father Micallef, an acrimonious correspondence ensued between Lord Strickland and Cardinal Gasparri, the Papal Secretary of State. In May, 1929, at the suggestion of the British Government, the Vatican sent a British prelate, Mgr. Paschal Robinson, to Malta to investigate the situation and to open negotiations for a concordat. Among the terms proposed by Lord Strickland for incorporation in the concordat were: That the clergy should eschew political questions; that violations of the law by the clergy should be dealt with by civil authorities; that no foreign ecclesiastics should head religious orders in Malta; that responsible posts in the hierarchy be reserved for British subjects (including Maltese); and that the Church should recognize use of the Maltese language and encourage the preaching of sermons in English instead of in Italian. The unfavorable nature of Monsignor Robinson's report was forecast when, shortly after the apostolic delegate's return to Rome, Lord Strickland was declared *persona non grata* at the

Vatican, which declined to continue negotiations for a concordat while the Malta Premier was in power. The report was presented to the Holy See on June 16, 1929, and made public in a Vatican White Book issued June 21, 1930. In it Monsignor Robinson attributed the difficulties in Malta to Lord Strickland's "quarrelsome" nature and "overmastering love of power." He expressed the hope that the British Minister of Colonies would compel Lord Strickland to modify his policy or "eliminate him pacifically from the political field in Malta." He summed up the situation as follows:

It is not an exaggeration to say that Malta at present is subjected to a reign of terror and inquisitorial despotism in which the Opposition (Nationalist party) is disarmed, its newspapers muzzled, the law courts threatened, justice suspended, the Constitution in danger, the country in foment and the Church and religion openly flouted.

On June 4, 1930, the British Government issued a Blue Book on Malta, containing notes exchanged with the Vatican. It revealed that the Government considered the Vatican's refusal to negotiate with Lord Strickland "incompatible with friendly relations" and "nothing less than a claim to interfere in the domestic politics of a British colony." The British notes also expressed resentment at the issuance to the Maltese clergy of instructions which were considered a direct incitement to discredit and resist the Government.

On May 2, 1930, on the eve of the triennial elections, according to a summary by the Foreign Policy Association (May 30), the Bishops of Malta and Gozo issued a pastoral letter stating that no Catholic could vote for Lord Strickland, a candidate to succeed himself, or candidates supporting him in his fight against the rights and discipline of the Church without committing grave sin. Priests were forbidden to administer the sacraments to those who disobeyed. As the Maltese are devoutly Catholic and unaccustomed to question the edicts of the clergy, the election of a Nationalist ministry of Italian sympathies seemed assured. Upon the advice of the Privy Council of Malta, Sir John Du Cane, the Governor, ordered the elections postponed "until the danger of disorder is past." The hierarchy then placed a ban on the two leading organs of the Constitutional party, later removing it when the publishers agreed to discontinue criticisms of the Church's position in the dispute. To a protest of Nationalist leaders on May 7 against postponement of the elections, the Ministry replied May 13 that if the claim implied in the acts of the Church were accepted, "the people's right would *ipso facto* be transferred to the Bishops, who would alone have the power to select the members of the Maltese Parliament and Ministers."

The British Foreign Secretary informed the Vatican that the pastoral letter seemed "in the highest degree reprehensible to His Majesty's Government," but the Vatican, on May 12, upheld the Maltese Bishops in a communiqué published in *Osservatore Romano*. The Vatican's hostility was confined to Lord Strickland personally and to his persistent policy of "northernizing" some of the ancient religious customs of Malta. The effect of his policy, the communiqué stated, was to undermine the authority of the clergy and the faith of the people.

Factional bitterness aroused in Malta by these events increased when on May 23 Lord Strickland narrowly escaped assassination by John Miller, a member of the Nationalist party. Police

immediately raided the Nationalist club where Miller lodged. On June 8 an anti-clerical crowd threatened to storm St. John's Cathedral in Valletta, while Archbishop Caruana was celebrating Whitsunday high mass. The demonstrators were dispersed by police. A ban on public meetings was imposed by the Government on June 15 and on June 24 Premier MacDonald announced in the House of Commons that under the circumstances prevailing in Malta his Government "had no alternative but to sanction a temporary suspension of the Constitution." The decision was widely approved in Great Britain.

On the following day the Malta Court of Appeals ruled that Governor Du Cane had acted *ultra vires* in declaring the political crisis a "reserved" matter under the letters patent establishing the Constitution. The British Government met this challenge by promulgating on June 26 an Order in Council authorizing a temporary Government during the "state of emergency" and granting the Governor full power to make laws by ordinances. The existing Ministry was retained in office. The suspension of the Constitution, while approved by the Constitutionals, was denounced by the Nationalists. They ascribed it to "Protestant intolerance, bigoted prejudice against the Vatican, and Bolshevik influence in the Labor Government."

The deadlock between the Vatican and Great Britain continued to the end of the year. Great Britain made any resumption of negotiations conditional upon the issuance of orders by the Holy See to the Bishops of Malta and Gozo which would insure the electorate "complete freedom to exercise their political judgment." The Vatican refused to move until Great Britain repudiated Lord Strickland's policies or the latter publicly repented. The British Minister to the Vatican was transferred to Chile at the end of May, 1930, and the post was still vacant at the end of the year. Foreign Secretary Henderson informed the House of Commons June 23 that the Government "did not propose to be in any hurry" to appoint a new minister to the Vatican. See GREAT BRITAIN and VATICAN CITY under *History*. Consult "Malta: Church and State," *Foreign Affairs*, October, 1930.

MALTEN, mäl'ten, (MÜLLER), THERESE. A German dramatic soprano, died in Dresden Jan. 2, 1930. She was born in Insterburg, East Prussia, June 21, 1885, and studied with Gustav Engel in Berlin, making her début in Dresden in 1873 as Pamina in *The Magic Flute*. From that time on until her retirement in 1903 she remained a member of the Royal Saxon Opera House Company, with frequent leaves of absence for appearances in the principal European cities. In 1880 she was appointed chamber singer to the King of Saxony, and in 1882 Wagner conferred upon her the honor of selecting her as the original Kundry in *Parsifal*. Her repertory included all the great operas, but she was preëminent as an interpreter of Wagner's heroines.

MAMMALIA. See ZOÖLOGY.

MAN, EARLY HISTORY OF. See ANTHROPOLOGY.

MANAGER PLAN. See MUNICIPAL GOVERNMENT.

MANCHURIA, man-chōō'rě-ā. A vast region comprising one of the Chinese Outer Territories, extending from the Amur River south to China proper and from the Hingan Mountains on the west to Korea and the Ussuri River. Area, about 363,610 square miles; population, estimated

July 31, 1927, at 24,520,661. Approximately 1,500,000 new settlers entered Manchuria from China in 1929 and in 1930 the migration was believed even greater due to famine in western and northern China. The territory is divided into three provinces—Sheng-King or Fengtien, Kirin, and Heilungchiang. Capital, Mukden, with about 250,000 inhabitants.

With its vast areas of rich soil attracting millions of settlers from China, Manchuria in 1930 was the most rapidly developing frontier region of the world. The economic conflicts arising from the convergence there of population pressures from Soviet Russia, Japan, and China were recognized as one of the principal dangers to world peace. Primarily an agricultural land, its chief crops are soya beans, millet, wheat, and rice. The area under cultivation in 1928 was 81,718,945 acres, of which 19,193,765 acres were devoted to soy beans and 7,241,087 acres to wheat. Sugar beet and silk cultivation, and livestock raising were of increasing importance. Forests cover about 28,756,000 acres. Industries are confined to the larger cities and consist mainly of flour mills, bean-oil mills, soap works, sugar refineries, saw mills, distilleries, glass factories, and tanneries. There are rich mineral deposits of coal, iron, gold, silver, lead and cement. The Fushun deposits, 22 miles east of Mukden, contain in an area of 15 square miles about 1,200,000,000 tons of bituminous coal covered by approximately 5,000,000,000 tons of oil shale. In connection with open-pit mining of the coal there, the South Manchurian Railway Company placed in operation early in 1930 a plant for the treatment of the oil shale.

Index figures for the foreign trade of Manchuria show an increase from 100 to 728 during the period from 1907 to 1928, while the corresponding increase in the trade of China proper was from 100 to 279. For the fiscal year 1927-28 the total foreign trade amounted to 662,000,000 haikwan taels, an increase of 15,000,000 taels over the previous year (1 haikwan tael equaled \$0.71 in 1928). In 1930 there were 3865 miles of railway line in operation in Manchuria, including 111 miles of narrow gauge line. Some additional 833 miles were under construction. Of the lines in operation, the most important were the Chinese Eastern, 1364 miles, under joint Sino-Soviet control; the South Manchurian Railway, 695 miles; and the Peiping-Liaoning (Peking-Mukden), 392 miles within Manchuria. For the fiscal year ended Mar. 15, 1930, the South Manchurian Railway Company reported total railway receipts of 122,000,000 yen and total profits on railway operations of 39,800,000 yen. (1 yen equals \$0.498 at par.)

Business and commerce continued disturbed during 1930, as a result of the civil war in China proper. Manchuria remained under the domination of Gen. Chang Hseuh-liang, son of the former war lord, Gen. Chang Tso-lin. See CHINA, RUSSIA, and JAPAN under *History*.

MANDATES. See LEAGUE OF NATIONS; IRAQ; PALESTINE; SYRIA.

MANGANESE. There was an increase of about 11 per cent in shipments of manganese ore containing 35 per cent or more of metallic manganese from mines in the United States in 1930. The total was approximately 67,000 gross tons, valued at \$1,454,000, as compared with 60,379 gross tons, valued at \$1,612,357 in 1929, according to the U. S. Bureau of Mines. The shipments of metallurgical ore in 1930 amounted to about 55,800

gross tons, valued at \$1,040,000, as compared with 47,597 gross tons, valued at \$1,036,199 in 1929. Chemical ore shipments decreased from 12,782 gross tons, valued at \$576,158, in 1929, to about 11,200 gross tons, valued at \$414,000 in 1930. The increase in 1930 was mainly due to the increased shipments of concentrates from the plants of the Georgia Manganese & Iron Co., at White, Ga., and the Hy-Grade Manganese Production & Sales Corp., at Star Tannery, Va., and to the shipments to consumers of crude rhodochrosite from the Emma mine, at Butte, Mont. The plant of the Domestic Manganese & Development Co., at Butte, Mont., which sintered rhodochrosite from the Emma mine of the Anaconda Copper Mining Co., was closed June 30, 1930, and consequently the production and shipments of sinter were substantially smaller than in 1929. Shipments of high-grade metallurgical ore from Arkansas were 3300 tons in 1930; from Georgia 19,800 tons; from Montana 24,100 tons; and from Virginia 3500 tons. These four States therefore contributed 50,700 tons of metallurgical ore, or 91 per cent of the total.

In 1930 the United States imported 582,365 gross tons of ore containing 281,459 gross tons of metallic manganese, as compared with 664,269 gross tons of ore containing 323,415 tons of metallic manganese during 1929. The imports from Soviet Russia amounted to 231,564 gross tons of ore and (for 11 months) 102,440 tons of metallic manganese, compared with 329,336 gross tons containing 169,121 tons of metallic manganese in 1929. A sharp increase in importations from British West Africa (Gold Coast) occurred. There were also from Russia, Brazil, and India noteworthy imports.

The U. S. Tariff Act of 1930 continued the duty of 22.4 cents per unit on manganese ore and extended it to cover ores containing down to 10 per cent of metallic manganese. The imports of the Russian ore affected most seriously American manganese plants and prices fell during the year, with the Soviet Ore Trust increasing its production and sales and offering its output on the world market at a reduced price, amounting in some cases to little more than 50 cents a unit, delivered free of duty, freight and other charges at ferromanganese furnaces in the United States. It was alleged at the end of the year that Russian manganese was being dumped at a price that rendered it impossible for American producers to compete, and there was invoked an embargo on the Russian supply, as it was charged it was mined by forced or convict labor.

The production of steel in 1930, estimated at 41,320,000 tons in comparison with 58,433,473 tons in 1929, accounted for the decreased demand for ferromanganese and in turn for manganese ore. The production of ferromanganese in 1930 was estimated at approximately 280,000 tons, compared with 339,205 tons in 1929. The rate of consumption of manganese ore in the manufacture of ferromanganese, as reported for 1929 by ferromanganese producers, was 1.894 tons of ore per ton of product. At this rate the production of ferromanganese in 1930 would have required about 530,000 tons of ore. About 50,000 tons of manganese alloys, equivalent to 90,000 tons of ore (figured on the same percentage of recovery as in domestic manufacture), was imported for consumption in 1930. This figure added to the requirements of domestic ferromanganese producers (530,000 tons) would indicate that the total metallurgical requirements of the United

States in 1930 were probably in the neighborhood of 620,000 tons of manganese ore.

Shipments of domestic ore containing from 10 to 35 per cent of manganese (ferruginous manganese ore) in 1930 were 84,000 gross tons, valued at approximately \$592,000, as compared with 78,191 tons, valued at \$451,843 in 1929. The domestic shipments of ore containing from 5 to 10 per cent of manganese (manganiferous iron ore) in 1930 were 592,000 tons, valued at \$807,000, as compared with 1,110,067 tons, valued at \$2,822,623 in 1929.

MANITOBA, mǎn't-tǎ'ba. The easternmost of the Prairie Provinces of Canada, situated west of Ontario and Hudson Bay and east of Saskatchewan. Capital, Winnipeg.

The area is 251,832 square miles and the estimated population June 1, 1930, was 671,500 (639,056 at census of 1926). The leading cities, with the populations in 1926, are: Winnipeg, 191,998 (Greater Winnipeg, 280,000); Brandon, 16,443; St. Boniface, 14,187. In 1928, births totaled 14,504; deaths, 5396; marriages, 5170. The provincial schools in 1928-29 enrolled 150,883 pupils. The University of Manitoba at Winnipeg had 2747 full-course students in 1927-28.

Agriculture, mining, and manufacturing are the chief industries. The area devoted to field crops in 1929 was 6,687,163 acres and the yield was valued at \$88,335,000 (\$113,492,000 from 6,744,407 acres in 1928). The total agricultural production in 1928 was about \$148,867,000. Production of the chief crops (1929) was: Spring wheat, 31,565,000 bushels; oats, 30,740,000 bushels; barley, 36,518,000 bushels; rye, 1,309,000 bushels; potatoes, 1,161,000 cwt.; hay and clover, 570,000 tons. Mineral production in 1929 rose to \$4,925,403 from \$4,186,853 in 1928, gypsum, gold, and copper being the chief minerals extracted. The 1928 fish catch was valued at \$2,240,314. In the same year there were 871 factories, employing 25,166 workers and paying \$32,569,223 in salaries and wages. The gross value of manufactured products was \$159,435,094. Hydraulic horse power developed in 1929 was 311,925, while the total available horse power at ordinary minimum flow was estimated at 3,309,000.

Preliminary figures for 1929 showed ordinary receipts of \$12,150,490 and ordinary expenditures of \$12,344,493. The funded debt on Apr. 30, 1929, was \$81,964,344, while estimated assets were \$129,663,640. Railway mileage on Jan. 1, 1929, totaled 4293. Government is administered by a lieutenant-governor and a legislative assembly elected for five years. The Province is represented in the Dominion Parliament by six members in the Senate and 17 in the House of Commons. Lieutenant-Governor in 1930, J. D. McGregor; Premier, President of the Council, and Provincial Treasurer, John Bracken. In the Dominion general election of July 28, 1930, Manitoba returned 11 Conservatives, 3 Liberal-Progressives, 2 Laborites, and 1 Liberal to the House of Commons at Ottawa. See CANADA.

MANUFACTURING. See BUSINESS REVIEW; CENSUS; UNITED STATES; ETC.

MANURES. See FERTILIZERS.

MAPLE SUGAR. See SUGAR.

MAPPING. See EXPLORATION under North America.

MARIETTA COLLEGE. A nonsectarian, co-educational institution in Marietta, Ohio; founded in 1835. The total registration for the autumn term of 1930 was 346, of whom 216 were men

and 129 women. The faculty numbered 35. The productive funds amounted to \$1,348,912, and the income for the year to \$152,378. The alumni contributed \$8588 to the current expenses of the college through the Marietta Fund. The buildings erected during the year included the Administration Building; the Field House, for men; and Dorothy Webster Hall, a dormitory for women. The library contained 97,313 volumes. President, Edward Smith Parsons, L.H.D., LL.D.

MARINE CORPS, U. S. N. See NAVAL PROGRESS.

MARINE DISASTERS. See SAFETY AT SEA.

MARINE ENGINES. See INTERNAL COMBUSTION ENGINES; SHIPBUILDING.

MARITIME PROVINCES. The three most easterly provinces of Canada—Prince Edward Island, Nova Scotia, and New Brunswick. See CANADA and separate articles on each Province.

MARKETS, MARKETING. See AGRICULTURE; AGRICULTURE, UNITED STATES DEPARTMENT OF; COÖPERATION; HORTICULTURE.

MARQUETTE UNIVERSITY. An institution of higher learning for men and women, under Roman Catholic direction, in Milwaukee, Wis.; organized as a college in 1881 and chartered as a university in 1907. It comprises the following colleges and schools, for which registrations of regular students in the autumn of 1930 were as follows: Graduate school, 250; liberal arts, 824; business administration, 288; dentistry, 182; engineering, 513; journalism, 133; law, 226; medicine, 320; speech, 17 (with 900 students enrolled in speech courses from other schools and colleges of the university). In addition, there were 219 students in evening courses in business administration, 23 in dental hygiene, 499 in teachers' courses, and 494 in high school, making a grand total of 3994 enrolled in the university. The registration for the 1930 summer session was 853. The faculty in the autumn numbered 367 members, excluding 26 high school instructors. Endowment funds amounted to \$2,822,099, excluding Jesuit service endowment estimated at \$1,350,000. The income for the year was \$1,193,393 and was received from the following sources: Endowment income, \$251,031, which includes \$81,187, representing the value of the services rendered gratis by 28 Jesuit priests in 1929-30; tuition, \$659,124; private benefactions for permanent improvements, lands, buildings, and so forth, \$9928; private benefactions for increase of endowment, \$73,233; miscellaneous receipts, \$200,075. The library contained 53,800 volumes. President, the Rev. William M. Magee, S.J., A.M., LL.D.

MARRIAGE. See ANTHROPOLOGY.

MARRIAGE AND DIVORCE. The Department of Commerce in October reported that, on the basis of an estimated population for Continental United States of 121,455,000, the number of marriages per thousand population was 10.1 in 1929 as against 9.9 in 1928. There was, too, an increase in the divorce rate, the rate per thousand population in 1929 being 1.66 as against 1.64 in 1928. According to the Census Bureau, New York had the lowest divorce rate in 1929 of any State in the country. Here the ratio of divorces to marriages was 1 divorce to every 23.6 marriages. In the District of Columbia the ratio was 1 divorce to every 41 marriages. New York marriages in 1929 totaled 121,535, the greatest number in the history of the State, and an increase of 7187 or 6.3 per cent over the year 1928. For

TABLE I—MARRIAGES IN THE UNITED STATES, 1928 AND 1929

| Division and State | 1929 | 1928 | Marriages | | Number per 1,000 | | Number to one divorce |
|----------------------------|-----------|-----------|------------------------|------|------------------|------|-----------------------|
| | | | Per cent of increase * | | 1929 | 1928 | |
| United States | 1,232,559 | 1,182,497 | 4.2 | | 10.1 | 9.9 | 6.1 |
| New England: | | | | | | | |
| Maine | 6,195 | 6,178 | 0.3 | 7.76 | 7.77 | 4.9 | |
| New Hampshire | 5,171 | 4,796 | 7.8 | 11.1 | 10.4 | 7.5 | |
| Vermont | 2,712 | 2,997 | — 9.5 | 7.6 | 8.4 | 6.7 | |
| Massachusetts | 30,568 | 29,082 | 5.1 | 7.2 | 6.9 | 8.6 | |
| Rhode Island | 5,380 | 5,111 | 4.3 | 7.8 | 7.6 | 7.1 | |
| Connecticut | 12,303 | 11,650 | 5.6 | 7.7 | 7.4 | 10.1 | |
| Middle Atlantic: | | | | | | | |
| New York | 121,585 | 114,848 | 6.3 | 9.8 | 9.3 | 23.6 | |
| New Jersey | 30,257 | 29,120 | 3.9 | 7.6 | 7.5 | 10.1 | |
| Pennsylvania | 70,507 | 67,640 | 4.2 | 7.4 | 7.1 | 9.0 | |
| East North Central: | | | | | | | |
| Ohio | 65,679 | 59,339 | 10.7 | 10.0 | 9.1 | 4.3 | |
| Indiana | 43,800 | 40,960 | 6.9 | 13.7 | 12.9 | 5.4 | |
| Illinois | 84,092 | 79,725 | 5.5 | 11.2 | 10.8 | 5.3 | |
| Michigan | 36,816 | 37,300 | — 1.3 | 7.7 | 8.0 | 3.1 | |
| Wisconsin | 17,983 | 15,937 | 12.8 | 6.2 | 5.5 | 6.7 | |
| West North Central: | | | | | | | |
| Minnesota | 24,109 | 23,249 | 3.7 | 9.4 | 9.2 | 8.4 | |
| Iowa | 21,935 | 20,529 | 6.8 | 8.9 | 8.4 | 5.0 | |
| Missouri | 38,263 | 37,056 | 3.3 | 10.6 | 10.3 | 3.9 | |
| North Dakota | 4,155 | 4,269 | — 2.7 | 6.1 | 6.3 | 7.4 | |
| South Dakota | 6,701 | 6,738 | — 0.5 | 9.8 | 9.9 | 8.6 | |
| Nebraska | 10,202 | 9,982 | 2.7 | 7.4 | 7.8 | 5.9 | |
| Kansas | 21,041 | 19,679 | 6.9 | 11.2 | 10.6 | 5.1 | |
| South Atlantic: | | | | | | | |
| Delaware | 1,230 | 1,153 | 6.7 | 5.2 | 4.9 | 7.1 | |
| Maryland | 25,124 | 24,226 | 3.7 | 15.5 | 15.2 | 11.9 | |
| District of Columbia | 5,634 | 5,298 | 6.3 | 11.7 | 11.1 | 49.0 | |
| Virginia | 23,570 | 21,406 | 10.1 | 9.8 | 8.9 | 7.7 | |
| West Virginia | 19,219 | 18,361 | 4.7 | 11.2 | 10.9 | 9.6 | |
| North Carolina | 18,746 | 21,373 | — 12.3 | 6.0 | 7.0 | 11.0 | |
| South Carolina | 27,298 | 25,026 | 9.1 | 15.8 | 14.5 | ... | |
| Georgia | 32,534 | 30,400 | 7.0 | 11.2 | 10.5 | 13.3 | |
| Florida | 18,198 | 18,032 | 0.9 | 12.7 | 13.0 | 4.8 | |
| East South Central: | | | | | | | |
| Kentucky | 30,474 | 29,065 | 4.8 | 11.7 | 11.2 | 6.6 | |
| Tennessee | 28,412 | 33,672 | — 15.6 | 11.0 | 13.1 | 5.5 | |
| Alabama | 29,480 | 28,853 | 2.0 | 11.2 | 11.1 | 8.2 | |
| Mississippi | 31,495 | 30,263 | 4.1 | 15.8 | 15.4 | 10.0 | |
| West South Central: | | | | | | | |
| Arkansas | 30,323 | 27,485 | 10.3 | 16.4 | 15.0 | 6.2 | |
| Louisiana | 20,729 | 18,427 | 12.5 | 10.0 | 9.0 | 9.6 | |
| Oklahoma | 35,789 | 28,472 | 25.7 | 15.1 | 12.2 | 4.3 | |
| Texas | 63,173 | 76,340 | — 17.2 | 11.0 | 13.6 | 3.4 | |
| Mountain: | | | | | | | |
| Montana | 6,115 | 5,794 | 5.5 | 11.4 | 10.8 | 4.1 | |
| Idaho | 4,779 | 4,636 | 3.1 | 10.7 | 10.5 | 4.6 | |
| Wyoming | 1,941 | 1,808 | 7.4 | 8.7 | 8.3 | 2.8 | |
| Colorado | 13,047 | 12,065 | 8.1 | 12.7 | 11.8 | 5.5 | |
| New Mexico | 6,727 | 4,892 | 37.5 | 15.9 | 11.8 | 8.4 | |
| Arizona | 7,405 | 6,400 | 15.7 | 17.3 | 15.3 | 6.8 | |
| Utah | 6,286 | 5,844 | 7.6 | 12.6 | 11.8 | 6.2 | |
| Nevada | 5,733 | 4,168 | 37.5 | 63.7 | 46.8 | 2.3 | |
| Pacific: | | | | | | | |
| Washington | 19,685 | 18,833 | 4.5 | 12.7 | 12.3 | 4.4 | |
| Oregon | 8,243 | 7,625 | 8.1 | 8.8 | 8.3 | 2.6 | |
| California | 51,866 | 46,945 | 10.5 | 9.4 | 8.9 | 8.4 | |

* A minus sign denotes decrease.

every 1000 persons in New York State in 1929 there were 9.8 marriages. The number of divorces was 5143 in 1929 as compared with 5293 in 1928 or a decrease of 2.8 per cent. In New Jersey there were 3001 divorces in 1929 as against 3170 in 1928, showing a decrease of 5.3 per cent. Marriages increased from 29,120 in 1928 to 30,257 in 1929, or an increase of 3.9 per cent. In Connecticut there were 1220 divorces in 1929 and 1276 divorces in 1928, or a decrease of 4.4 per cent. In the same State 12,303 marriages took place in 1929 as against 11,650 in 1928, or an increase of 5.6 per cent. In the whole country there took place 1,232,559 marriages in 1929 as compared with 1,182,497 in 1928, or an increase of 4.2 per cent. In 1929 in the country a total of 201,475 divorces took place as compared with 195,939 divorces in 1928. This was an increase of 2.8 per cent. There was one divorce for every 6.1 marriages in the country. In Nevada there was one divorce for every 2.3 marriages; in Oregon there was one divorce for every 2.6 marriages; in

Michigan the ratio was one divorce to every 3.1 marriages; in Wyoming the ratio was 2.8; in California and Texas, 3.4; in Montana, 4.1; in Ohio and Oklahoma, 4.3; in Florida, 4.8; in Maine, 4.9; in Iowa, 5.0; in Kansas, 5.1; in Illinois, 5.3; in Indiana, 5.4; in Colorado, 5.5; in Nebraska, 5.9; in New Jersey and Connecticut, 10.1; in Georgia, 13.9. There were no divorces in South Carolina because of the absence of a divorce law in this State. There were 4400 marriages annulled in 1929 as compared with 4563 in 1928. California reported 1476 annulments, more than one-half of the total for the entire country, New York's total was 1029. Tabular summaries are shown above and on page 458.

MARTINIQUE, mār'tēnek'. One of the Lesser Antilles group of the West Indies, forming a colony of France. Area, 385 square miles; population, in 1927, 234,695, of whom 10,000 were whites, and the remainder Negroes, mulattoes, East Indians, and Chinese. Capital and chief port, Fort-de-France, with a population of 43,338.

TABLE II—DIVORCES IN THE UNITED STATES, 1928 AND 1929

| Division and State | 1929 | 1928 | Divorces | | Number per 1,000 of population | | Annulments | |
|----------------------------|---------|---------|------------------------|--|--------------------------------|-------|------------|-------|
| | | | Per cent of increase * | | 1929 | 1928 | 1929 | 1928 |
| United States | 201,475 | 195,989 | 2.8 | | 1.66 | 1.64 | 4,400 | 4,287 |
| New England: | | | | | | | | |
| Maine | 1,261 | 1,815 | — 4.1 | | 1.58 | 1.65 | 18 | 8 |
| New Hampshire | 691 | 706 | — 2.1 | | 1.49 | 1.53 | 10 | 9 |
| Vermont | 406 | 896 | 2.5 | | 1.13 | 1.11 | 8 | ... |
| Massachusetts | 3,551 | 3,646 | — 2.6 | | 0.84 | 0.87 | 62 | 63 |
| Rhode Island | 751 | 707 | 6.2 | | 1.10 | 1.05 | ... | ... |
| Connecticut | 1,220 | 1,276 | — 4.4 | | 0.77 | 0.81 | 18 | 21 |
| Middle Atlantic: | | | | | | | | |
| New York | 5,148 | 5,293 | — 2.8 | | 0.41 | 0.49 | 1,029 | 990 |
| New Jersey | 3,001 | 3,170 | — 5.3 | | 0.76 | 0.82 | 61 | 82 |
| Pennsylvania | 7,867 | 7,957 | — 1.1 | | 0.82 | 0.84 | 52 | 57 |
| East North Central: | | | | | | | | |
| Ohio | 15,313 | 14,643 | 4.6 | | 2.33 | 2.26 | 62 | 64 |
| Indiana | 8,158 | 7,885 | 3.4 | | 2.54 | 2.48 | 83 | 93 |
| Illinois | 15,760 | 15,703 | 0.4 | | 2.09 | 2.12 | 248 | 172 |
| Michigan | 11,981 | 10,581 | 13.8 | | 2.52 | 2.27 | 109 | 82 |
| Wisconsin | 2,671 | 2,673 | — 0.1 | | 0.92 | 0.93 | 60 | 67 |
| West North Central: | | | | | | | | |
| Minnesota | 2,859 | 2,844 | 0.5 | | 1.120 | 1.122 | 21 | 29 |
| Iowa | 4,402 | 4,076 | 8.0 | | 1.79 | 1.66 | 25 | 26 |
| Missouri | 9,813 | 10,089 | — 2.7 | | 2.72 | 2.82 | 42 | 40 |
| North Dakota | 561 | 461 | 21.7 | | 0.63 | 0.68 | 9 | 7 |
| South Dakota | 778 | 750 | 3.7 | | 1.13 | 1.10 | 4 | 5 |
| Nebraska | 1,728 | 1,538 | 12.4 | | 1.26 | 1.13 | 71 | 54 |
| Kansas | 4,127 | 4,081 | 1.1 | | 2.20 | 2.19 | 18 | 28 |
| South Atlantic: | | | | | | | | |
| Delaware | 174 | 185 | — 5.9 | | 0.73 | 0.78 | 7 | 4 |
| Maryland | 2,111 | 1,976 | 6.8 | | 1.31 | 1.24 | 6 | 26 |
| District of Columbia | 115 | 101 | 13.9 | | 0.24 | 0.21 | 27 | 21 |
| Virginia | 3,054 | 2,952 | 3.5 | | 1.27 | 1.23 | 21 | 22 |
| West Virginia | 1,997 | 2,071 | — 3.6 | | 1.17 | 1.23 | 41 | 41 |
| North Carolina | 1,707 | 1,609 | 6.1 | | 0.55 | 0.52 | 28 | 29 |
| South Carolina | ... | ... | ... | | ... | ... | 8 | 8 |
| Georgia | 2,441 | 2,174 | 12.3 | | 0.84 | 0.75 | 39 | 31 |
| Florida | 3,774 | 3,516 | 7.3 | | 2.64 | 2.54 | 19 | 19 |
| East South Central: | | | | | | | | |
| Kentucky | 4,592 | 4,610 | — 0.4 | | 1.76 | 1.78 | 8 | 13 |
| Tennessee | 5,180 | 4,985 | 3.9 | | 2.00 | 1.94 | 29 | 10 |
| Alabama | 3,589 | 3,817 | — 6.0 | | 1.37 | 1.47 | 10 | 11 |
| Mississippi | 3,159 | 3,007 | 5.1 | | 1.59 | 1.53 | 7 | 3 |
| West South Central: | | | | | | | | |
| Arkansas | 4,928 | 4,498 | 9.6 | | 2.67 | 2.45 | 7 | 8 |
| Louisiana | 2,166 | 1,913 | 13.2 | | 1.04 | 0.94 | 17 | 13 |
| Oklahoma | 8,252 | 7,762 | 6.3 | | 3.49 | 3.33 | 164 | 172 |
| Texas | 18,386 | 18,073 | 1.7 | | 3.20 | 3.21 | 164 | 155 |
| Mountain: | | | | | | | | |
| Montana | 1,492 | 1,376 | 8.4 | | 2.78 | 2.56 | 40 | 27 |
| Idaho | 1,036 | 1,032 | 0.4 | | 2.328 | 2.329 | 25 | 25 |
| Wyoming | 704 | 748 | — 5.9 | | 3.17 | 3.42 | 14 | 8 |
| Colorado | 2,892 | 2,362 | 1.3 | | 2.33 | 2.32 | 70 | 61 |
| New Mexico | 798 | 715 | 11.6 | | 1.89 | 1.72 | 10 | 12 |
| Arizona | 1,084 | 1,062 | 2.1 | | 2.53 | 2.54 | 24 | 19 |
| Utah | 1,012 | 1,022 | — 1.0 | | 2.03 | 2.07 | 22 | 31 |
| Nevada | 2,533 | 2,595 | — 2.4 | | 28.14 | 29.16 | 36 | 43 |
| Pacific: | | | | | | | | |
| Washington | 4,484 | 4,554 | — 1.5 | | 2.90 | 2.98 | 65 | 58 |
| Oregon | 3,179 | 3,053 | 4.1 | | 3.38 | 3.30 | 16 | 29 |
| California | 15,099 | 14,431 | 4.6 | | 2.74 | 2.73 | 1,476 | 1,441 |

* A minus sign denotes decrease.

Sugar, rum, cacao, coffee, tobacco, pineapples, and bananas are the chief products. Imports in 1927 were valued at 212,594,604 francs and exports at 229,373,089 francs. Sugar and rum constituted nearly 90 per cent of the value of all exports. The budget for 1927 balanced at 66,103,756 francs. The colony is administered by a governor, a general council, and an elected municipal council; it sends one Senator and two Deputies to the French Parliament. Governor in 1930, L. Gerbinis.

MARYLAND. POPULATION. According to the Fifteenth Census, the population of the State on Apr. 1, 1930, was 1,631,526. The population on Jan. 1, 1920, was 1,449,661. The capital is Annapolis.

AGRICULTURE. The accompanying table gives the acreage, production, and value of the principal crops in 1929 and 1930.

Farms in the State numbered 43,313 in 1930, as against 49,001 in 1925 and 47,908 in 1920.

MINERAL PRODUCTION. Coal, for years the State's leading mineral product, was less actively

| Crop | Year | Acreage | Prod. Bu. | Value |
|----------------|------|---------|-------------------------|--------------|
| Corn | 1930 | 530,000 | 7,791,000 | \$ 7,246,000 |
| | 1929 | 520,000 | 18,890,000 | 16,702,000 |
| Wheat | 1930 | 509,000 | 11,707,000 | 9,014,000 |
| | 1929 | 536,000 | 9,380,000 | 11,068,000 |
| Hay | 1930 | 396,000 | 378,000 ^a | 8,587,000 |
| | 1929 | 423,000 | 652,000 ^b | 8,919,000 |
| Tobacco | 1930 | 84,000 | 18,190,000 ^b | 4,184,000 |
| | 1929 | 33,000 | 24,750,000 ^b | 6,732,000 |
| Potatoes | 1930 | 32,000 | 2,430,000 | 2,308,000 |
| | 1929 | 32,000 | 3,395,000 | 4,074,000 |
| Sweet potatoes | 1930 | 10,000 | 660,000 | 594,000 |
| | 1929 | 10,000 | 1,250,000 | 1,125,000 |

^a Tons. ^b Pounds.

mined in 1928 and showed a slight further diminution for 1929. The State's production was, for 1929, 2,649,114 net tons and for 1928, 2,686,979; in value, \$4,640,000 for 1929 and \$4,954,000 for 1928. Clay products totaled \$4,586,625 for 1928 and \$2,503,935 for 1927; the rise in the total was wholly ascribable to the fact that the earlier total did not include pottery, which was included for 1928 and by itself totaled \$2,424,905. Much of

the coal of the State's output was coked, the yearly quantities being 1,393,052 short tons for 1929 and 1,186,398 for 1928, of which official reports did not state the value. Pig iron, for which likewise no separate figures of value were available, was produced to the quantities of 1,111,219 long tons for 1929 and 971,832 long tons for 1928. The total value of the yearly mineral product of the State, coke and pig iron not included, was \$18,417,781 for 1928; for 1927, \$20,469,294.

FINANCE. State expenditures in the year ended Sept. 30, 1928, as reported by the U. S. Department of Commerce, were: for maintenance and operation of governmental departments, \$18,404,870 (of which \$3,234,423 was for local education); for interest on debt, \$1,387,810; for permanent improvements, \$9,518,671; total, \$29,567,076 (of which \$10,555,721 was for highways, \$3,998,952 being for maintenance and \$6,556,769 for construction). Revenues were \$27,552,766. Of these, property and special taxes formed 28.6 per cent; departmental earnings and remuneration to the State for officers' services, 14.7; sales of licenses, 44.0 (including taxes of \$4,558,444 on sales of gasoline).

TRANSPORTATION. The total number of miles of railroad line under operation on Jan. 1, 1930, was 1438.82. No additional construction of line or trackage in 1930 was reported.

EDUCATION. Movement in the development of public-school education followed the lines, during the year, of higher requirements for high-school teachers' certificates, of a stronger supervisory programme, and of the commencement of work in vocational rehabilitation. A survey with a view to starting special classes for handicapped children in the counties was conducted, as reported in the *Journal* of the National Education Association. The number of persons of school age (5 to 18 years) in the State was stated in 1930 as 369,027. There were enrolled in the public schools 277,459 pupils. Of these, 235,163 were in common schools or elementary grades, and 42,296 were in high schools. Expenditures of the year for public-school education were: current, \$18,544,774; capital outlay, \$3,958,510. Yearly salaries of teachers averaged, in elementary grades, \$1474 for whites and \$1113 for colored teachers; in high schools, \$1817 for whites and \$1741 for the colored.

LEGISLATION. A brief special session of the Legislature was held on July 29 for the sole purpose of changing the dates of registration for voters, which had been found to coincide, for 1930, with Jewish holy days, namely, September 23 and 24 and October 7 and 8. The registration days were accordingly altered to enable Jewish citizens to vote without violating their customs. See CHILD LABOR.

POLITICAL AND OTHER EVENTS. The dispute over the boundary between Maryland and Virginia along the bed of the lower Potomac and adjacent waters was settled by an agreement reached in accordance with the findings of two investigators, who had been appointed in 1928, one by the Governor of each State. The line, subject to ratification of the agreement by Congress, was set in accordance with an award of 1877, following the principle that it should run from headland to headland, in each case touching the low-water mark on the Virginia shore. The dispute had remained unsettled since 1661, despite recurrent efforts to conclude it. The submerged lands involved had acquired in the years preceding 1930 a considerable value as oyster beds.

ELECTIONS. Governor Albert C. Ritchie, Democrat, was elected on November 4 for a fourth term, receiving a total (official) of 283,639 votes, to 216,864 for Broening (Republican). The Republicans lost their two places in the State's delegation of six United States Representatives. Democratic majorities were again elected to the State Legislature. A measure instructing the General Assembly to call a constitutional convention was affirmed by the popular ballot, chiefly by the Baltimore vote.

OFFICERS. Governor, Albert C. Ritchie; Secretary of State, David C. Winebrenner, 3d; Treasurer, J. M. Dennis; Auditor, Edmund R. Stewart; Comptroller, William S. Gordy, Jr.; Attorney-General, William Preston Lane, Jr.; Superintendent of Schools, Albert S. Cook.

JUDICIARY. Court of Appeals: Chief Judge, Carroll T. Bond; Associate Judges, John R. Pattison, T. Scott Offutt, William H. Askins, Francis N. Parke, Hammond Urner, W. M. Digges, D. Lindley Sloan.

MARYLAND, UNIVERSITY OF. A coeducational, State institution of higher learning at College Park and Baltimore, Md.; founded in 1807. The enrollment for the autumn term of 1930 was 2916, distributed as follows: Agriculture, 163; arts and sciences, 620; education, 148; engineering, 316; home economics, 82; graduate school, 152; dentistry, 410; law, 150; medicine, 413; nursing, 112; and pharmacy, 351. The enrollment for the 1930 summer session at College Park was 745. The faculty in the autumn numbered 468. The total income from appropriations and other receipts amounted to \$3,101,519. The library contained 66,002 volumes. During 1930 a new library building costing approximately \$225,000 was under construction. President, Raymond A. Pearson, D.Agr., LL.D.

MARYLAND TERCENTENARY. See under CELEBRATIONS.

MASHONALAND. See RHODESIA.

MASSACHUSETTS. POPULATION. According to the Fifteenth Census, the population of the State on Apr. 1, 1930, was 4,249,614. The population by the State census of 1925 was 4,144,205. The population on Jan. 1, 1920, was 3,852,356. The capital is Boston.

AGRICULTURE. The following table gives the acreage, production, and value of the principal crops in 1929 and 1930:

| Crop | Year | Acreage | Prod. Bu. | Value |
|----------------|------|---------|--------------|--------------|
| Hay | 1930 | 403,000 | 561,000 * | \$10,508,000 |
| | 1929 | 478,000 | 705,000 * | 13,442,000 |
| Cranberries .. | 1930 | 14,000 | 380,000 † | 8,800,000 |
| | 1929 | 14,000 | 400,000 † | 5,300,000 |
| Tobacco | 1930 | 8,100 | 11,397,000 * | 3,499,000 |
| | 1929 | 8,000 | 11,600,000 * | 4,942,000 |
| Corn | 1930 | 89,000 | 1,794,000 | 1,794,000 |
| | 1929 | 40,000 | 1,560,000 | 2,106,000 |
| Potatoes | 1930 | 12,000 | 2,400,000 | 2,640,000 |
| | 1929 | 12,000 | 1,596,000 | 2,873,000 |

* Tons. † Barrels. ° Pounds.

Farms in the State numbered 25,600 in 1930, their number having fallen greatly below that for 1925, which was 33,454. For 1920, it was 32,001.

MINERAL PRODUCTION. Stone of divers grades continued to supply somewhat less than half of the entire value of the yearly mineral production. In 1928 stone production was active, there being quarried 2,879,990 short tons, as against 2,629,890 in 1927; in value, \$7,723,247 for 1928 and

\$7,291,969 for 1927. The clay products attained, for 1928, the value of \$2,829,610; for 1927, of \$2,398,474. Lime was produced on a somewhat diminishing scale: 171,944 short tons in 1928 and 132,000 short tons (estimated) in 1929; in value, \$2,026,019 for 1928 and, for 1929, \$1,486,000 (estimated). There was a considerable industry in coking and in production of pig iron in some of the industrial centres. The total value of the mineral products of the State, excluding coke and pig iron, both produced from imported materials, was \$16,234,037 for 1928; for 1927, \$16,295,373.

TRANSPORTATION. The total number of miles of railroad line under operation on Jan. 1, 1930, was 2015.94. No additional construction of line or trackage in 1930 was reported.

EDUCATION. In conformity with the regulation issued by the State Board of Education in 1929, requiring a course of three years in a State Normal school as qualification for the elementary teacher's diploma, the minimum course in all the normal schools of the State was lengthened in 1930 to three years, from two. The statutory requirement that every town or city having so many as five crippled children there residing should furnish them with special instruction came into operation. The school population as stated for the year ending June 30, 1930, comprised 845,900 persons between the ages of 5 and 16 years; there were also by estimate 5096 illiterate minors above 16 years of age. In the public schools were enrolled 747,056 pupils. Of these, 518,933 were in elementary grades; 95,146 were in junior high schools; and 132,977 were in high schools. The expenditures of the year for public-school education totaled \$70,792,177. The year's salaries of all public-school teachers, principals and supervisors averaged \$1889.

CHARITIES AND CORRECTIONS. Central authority over State institutions and activities for the care or custody of individuals was divided among four State bodies. The Department of Public Welfare, headed by a commissioner, Richard K. Conant, and an advisory board, administered State aid to mothers, children and persons without legal settlement; supervised housing, private charitable bodies, maternity hospitals, homes for the aged, and homes for infants; had custody of minor wards of the State (to the number of 6432 on Dec. 1, 1930); and had authority over five State institutions. These were: State Infirmary, Tewkesbury, population on Dec. 1, 1930, 3031; Massachusetts Hospital School, Canton, 314; Lyman School for Boys, Westborough, 488; Industrial School for Girls, Lancaster, 305; Industrial School for Boys, Shirley, 315. Under the Department of Mental Diseases were insane hospitals at Worcester, Taunton, Northampton, Danvers, Westborough, Medfield, Palmer, and Boston; also, State schools at Waltham, Wrentham, Grafton, and Belchertown. The Department of Public Health had authority over sanatoria at Rutland, North Reading, Lakesville, and Westfield, and the Norfolk State Hospital. The Commissioner of Correction had charge of the State Prison, Charlestown; Reformatory, Concord Junction; Reformatory for Women, Framingham; State Farm, Bridgewater.

Fall River encountered difficulty in its municipal finances in 1930. These were attributed to depression in the local cotton textile industry, on account of which the municipality could not collect anticipated tax receipts from some mills. It

was reported to have resorted to seizure of certain mill properties to satisfy tax bills. Nevertheless at the end of November it was in default on a temporary revenue loan of \$1,600,000.

LEGISLATION. The General Court convened in regular annual session on January 1 and was prorogued on May 29. There was also held a special session of one day on October 20 to observe the 300th anniversary of the establishment of the Legislature. The most significant act of the regular session was a so-called Old Age Pension statute. It actually provided only an approach to a pension for the aged, as it created no fixed schedule of payments. In other respects it bore a resemblance to the New York Old Age Pension act of 1930. The State Department of Public Welfare was charged with the duty of rendering "adequate" assistance to deserving citizens of 70 years or over who had resided in the State for 25 years. Local welfare boards were to determine what assistance might be required, in each case considering the resources of the applicants and the ability of children or others to support them. Beneficiaries were to be kept so far as possible in their own places of residence. See OLD AGE PENSIONS.

The erection of a war memorial for western Massachusetts on Mount Greylock was authorized, the monument to take the form of a giant beacon. The Legislature failed to pass a measure for a proposed war memorial in the eastern part of the State and left the proposal of a memorial on an island in the Charles River to consideration by a commission to report to a future session. A measure was enacted to regulate and expedite the abolition of grade crossings of railroads and highways. The much criticized law against obscene books, which had been invoked against some standard literary works, was modified. It had prohibited the sale of books containing obscene words or phrases; it was made to prohibit the sale of books "which are obscene," thus removing the necessity to rule against a book on account of an isolated passage or passages. Provisions were made for a subway extension in Boston, under Governor Square. The Civil Service Commission was deprived of authority to pass on appointees to be heads of departments of the city government of Boston. A board of tax appeals was created, but much tax legislation failed of passage; among other measures, a proposed constitutional amendment to give the State the power to classify tangible personal property for taxation at a flat rate throughout its territory, which fell by reviewing a vote numerically favorable but less than the required majority of all the two houses' elected members. A proposed amendment to permit a graduated income tax was placed on file for revival in the session of 1931.

POLITICAL AND OTHER EVENTS. In the suit of Connecticut against Massachusetts before the U. S. Supreme Court, to prevent the latter State from drawing water from the Ware and Swift rivers for municipal uses, the Court's master, Charles W. Bunn, reported in June, finding for Massachusetts in all the disputed matters of fact save one, relating to contingent damages to a water-power producer in Connecticut. In Boston and other centres of early settlement were held in August and later in the year celebrations to mark the tercentenary of colonization. Work was started in Boston on July 21 on a \$3,000,000 subway extension under Governor Square, designed

to continue through Commonwealth Avenue and Beacon Street. Owing to disclosures incident to an investigation of the pensioning of a former head of the liquor squad of the Boston police department, Governor Allen demanded and received on May 5 the resignation of Police Commissioner Herbert A. Wilson. At Harvard University were opened in the autumn session Lowell and Dunster houses, the first two of seven units to be erected under the Harkness donation of \$15,000,000.

ELECTIONS. Marcus A. Coolidge of Fitchburg, Democrat, was elected on November 4 to the U. S. Senate, the State thus sending to the Senate of the Seventy-second Congress two Democratic Senators, an occurrence without precedent in its history. Coolidge's vote, as unofficially totaled, was 651,088, to 538,651 for former Senator William M. Butler, Republican. For Governor, Joseph B. Ely of Westfield, Democrat, defeated Governor Frank G. Allen, Republican, running for reelection, by 606,175 votes (unofficial) to 589,779. The composition of the State's delegation in the House of Representatives remained unaltered, 12 Republicans and 4 Democrats. The Republicans elected William S. Youngman Lieutenant-Governor and likewise filled the offices of Secretary of State and Attorney-General; Democrats were elected State Treasurer and Auditor. Republican majorities in the Legislature were somewhat cut down. A measure submitted to popular vote by the initiative and carried by some 270,000 majority repealed the State act for the enforcement of Prohibition, the repeal to become effective in 30 days.

OFFICERS. Governor, Frank G. Allen; Lieutenant-Governor, William S. Youngman; Secretary of the Commonwealth, Frederic W. Cook; Treasurer, John W. Haigis; Auditor, A. B. Cook; Attorney-General, Joseph E. Warner; Commissioner of Education, Payson Smith; Commissioner of Public Welfare, Richard K. Conant.

JUDICIARY. Supreme Judicial Court: Chief Justice, Arthur Prentice Rugg; Associate Justices, John Crawford Crosby, Edward Peter Pierce, James Bernard Carroll, William C. Wait, George A. Sanderson, Fred Tarbell Field.

MASSACHUSETTS AGRICULTURAL COLLEGE. A State institution for agricultural and scientific training in Amherst, Mass.; founded in 1867. The enrollment in 1930 was 1182, distributed as follows: Graduate school, 62; four-year B.S. course, 645; two-year course in practical agriculture (Stockbridge School), 242; short courses, 79; and summer school, 154. There were 195 members on the faculty, including 111 engaged in resident teaching, 60 in research at the experiment station, and 24 in extension service in agriculture and home economics. The income, amounting to \$1,339,565 in 1930, was received from the following sources: State appropriation, \$1,027,000; Federal appropriation, \$173,305; and endowment and trust funds, \$139,260. The library contained approximately 90,000 volumes. A building for the physical education department was under construction in 1930, funds being raised by contributions from alumni and by State appropriation. President, Roscoe W. Thatcher, D.Agr., LL.D.

MASSACHUSETTS BAY TERCENTENARY. See CELEBRATIONS.

MASSACHUSETTS INSTITUTE OF TECHNOLOGY. A nonsectarian institution for scientific and technical education in Cambridge, Mass.; founded in 1861. The enrollment for the

autumn of 1930 was 3209, including 539 graduate students. For the summer session, the registration was 1656. There were 240 members on the faculty and 323 others on the active staff of the institute. The productive funds amounted to \$33,150,000; and the income for the year was \$3,515,200 received from various sources, as follows: Funds, \$1,702,800; student fees, \$1,267,800; miscellaneous, \$544,600. The book value of land and buildings in Boston and Cambridge was \$14,083,000. The library contained 262,566 volumes. Three new dormitory units housing 210 students were completed in 1930. President, Karl Taylor Compton, D.Sc., D.Eng., Ph.D., LL.D.

MATABELELAND. See RHODESIA.

MATERNAL HEALTH. See CHILD WELFARE.

MATERNITY PROTECTION. In 1919 the International Labor Conference, held at Washington, adopted a draft convention calling upon the member nations to write on their statute books laws creating maternity benefits for the protection of women before and after childbirth. Under the convention a woman employed in industry was not to be permitted to work during six weeks after her confinement, and there was also to be allowed an absence of six weeks before confinement on production of a medical certificate indicating that such rest was necessary. In the national laws adopted as a result of this draft convention, the rest periods allowed ranged from four to twelve weeks in all. The draft convention required that the position of the expectant mother be retained open for her during the periods of rest. The convention allowed, too, the extension of the rest period during which the employer was denied the right of dismissing the expectant mother.

In the 10 years that had elapsed since the adoption of the convention, ratification had been made in a large number of countries, the more prominent of which were Argentina, Australia, Austria, British Columbia (Canada), China, Czechoslovakia, Denmark, Estonia, Finland, France, Germany, Great Britain, Hungary, Japan, Italy, New Zealand, Norway, South Africa, Spain, Sweden, Switzerland. In France the law applies to industry and commerce, allows a rest period of 12 weeks before confinement, permits an extension, precludes dismissal and furnishes compulsory crèches. In Germany the law applies only to industry, allows a rest period of six weeks before and after confinement, permits an extension, precludes dismissal. In Great Britain the law is applicable to industry only, allows no rest period antecedent to confinement, but provides for four weeks following confinement. A number of countries make provision for cash and medical benefits and this is largely due to the fact that benefits arise out of the compulsory sickness insurance laws on statute books. In most of these countries the benefits are derived from the public or social insurance funds. Thus, in Australia there are cash benefits to all expectant mothers; in France there are cash and medical benefits paid out by the insurance fund; in Germany the same situation holds; the same is true of Great Britain, the Irish Free State, Italy, Japan, Luxemburg, Poland, Spain, Sweden, Yugoslavia.

AUSTRALIA. It is interesting to examine the cost of maternity protection in the large industrial nations. In Australia, in the fiscal year ending June 30, 1930, a total of 132,304 claims for maternity allowances were paid and the money

payment totaled \$3,219,287. The maternity allowance system has been in vogue in this commonwealth since 1912. In the 17 years covered by the period 1912-29, there had been presented 2,230,000 claims for maternity allowances, of which 2,220,728 have been paid. The total allowances thus granted reached the figure, in this interval, of \$54,035,854.

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Sugar is the main crop, one-quarter of the island being devoted to its cultivation. Production in 1929-30 was estimated at 240,000 metric tons. Low prices in 1930 aroused a demand for Government aid to the industry. (See *GREAT BRITAIN* under *History*.) Coconuts, cacao, tobacco, coffee, aloe fibre, tea, and vanilla also are grown. In 1928, exports totaled £3,158,094 and imports, £3,295,853. For 1927-28, revenue was estimated at 15,308,918 rupees and expenditure at 16,725,513 rupees (1 rupee equaled about \$0.36). There were 144 miles of railway. Vessels

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tuberculosis. Since his time the disease has been carefully studied and a great deal of exact information concerning its nature obtained. Animal experimentation showed that removal of the suprarenals (in most species) invariably caused death. Later it was found that the glands were composed of two parts, a central portion or medulla, and a peripheral portion or cortex, and further that it was the removal of the cortex and not of the medulla which was responsible for the death of the animal. In 1895 Schafer and Oliver were able to extract from the medulla of the gland a substance (later identified by Abel as adrenalin) which stimulated smooth muscle including that of the walls of arteries, thus producing a rise of blood pressure. It was also a specific stimulant of the sympathetic nervous system.

It was hoped that this extract of the medulla might be of value in the treatment of Addison's Disease and it was used extensively for many years, but without very significant results. It has become gradually clearer and clearer that the characteristic features of the disease are due to destruction of the cortex of the gland, and indeed it has been shown pathologically that the disease is always associated with marked changes in the cortex, whereas in some instances the medulla is not involved. Many workers had tried to prepare a potent extract of the cortex but none had been consistently successful until this year.

Swingle and Pfiffner (*Science*, vol. 71, 321, and 489) in April reported that they had prepared an aqueous extract of the lipoidal residue of the suprarenal gland capable of maintaining life indefinitely in suprarenalectomized cats. Removal of the suprarenal glands in cats ordinarily causes death in 8-10 days. The animals never live longer than 14 days. After removal of the glands they exhibit a train of symptoms quite similar to those seen in Addison's disease in man. There is loss of appetite, marked loss of weight, extreme muscular weakness, convulsions, coma, and death. By the daily injection of doses of their extract subcutaneously, Swingle and Pfiffner were not only able to prevent the extreme symptoms mentioned above, but were able to keep their animals sleek, fat, and apparently perfectly normal. Withdrawal of the extract was followed in about five days by typical symptoms of cortical insufficiency, and in ten days the animals would die. If the animal while in a comatose state and obviously moribund were given large doses of the extract intravenously, it could be revived and in a few days brought back to a normal condition. Four or five days would be required for the severe symptoms to disappear. If later the extract were again withdrawn, symptoms would reappear and the animal would die.

These results were so clear cut and striking that the use of the extract was taken over into clinical medicine. In November, 1930, Rowntree and Greene of the Mayo Clinic reported the successful use of the extract in one case of Addison's Disease. Their patient, a middle-aged man, was rescued from one of the acute crises of the disease, when his life had been despaired of, and restored to apparently good health. The first extract, which they obtained by airplane from Princeton, contained some adrenalin and could not be given intravenously. Since then Swingle and Pfiffner had been able to prepare an almost adrenalin-free solution which can be given in larger doses and intravenously. (Consult article in *Science*, Nov. 7, 1930).

Rowntree and Greene reported their further experience with the extract. (*Jr. Amer. Med. Ass.* Jan. 24, 1931.) They had treated five cases, and felt that the results were exceedingly promising. Treatment so far had necessarily been somewhat sporadic because the extract had not been regularly available, nor obtainable in large quantities. Steps towards its standardization and manufacture in commercial quantities for distribution to the medical profession were being taken.

Hartman, Brownell, and Hartman of the University of Buffalo Medical School during the year produced a similar potent extract of the suprarenal glands with which they were able to maintain life in animals whose suprarenals had been removed. They proposed the name "Cortin" for the hormone responsible for the specific action of the cortex of the suprarenal gland. They described a clinical case in which they were able to save a patient with Addison's Disease who was prostrate and comatose with an extremely low blood pressure (50 systolic).

It seemed quite likely that patients with Addison's Disease would require repeated injections of the extract in order to maintain good health ("substitution therapy"), and that it would be used much as insulin is in diabetes mellitus and liver in pernicious anemia.

COMMON COLD. During the year rather convincing evidence was presented by two groups of investigators that a filterable virus (a living organism so small that it cannot be seen by the microscope and passes through the finest filter) is the cause of the common cold. This ubiquitous and ordinarily minor malady is important because of the total of human discomfort it causes, because it is probably responsible for more loss of time from work than any other disease, and finally because it is a common precursor of such serious conditions as pneumonia, rheumatic fever, and acute nephritis. Any exact information concerning its aetiology is therefore earnestly welcomed.

The impression that the common cold is not caused by any of the numerous organisms so readily cultured from the nasopharynx steadily gained support since the first work of Kruse who in 1914 was able in a few cases to transfer colds from one person to another by inoculation with filtered naso pharyngeal washings. Dochez, Shibley, and Mills of the Presbyterian Hospital in New York reported in April, 1929, that they were able to transfer the common cold from man to one of the higher apes by the instillation in the pharynx of the animal of a filterable agent obtained from the naso pharyngeal washing of a man in the first 24 hours of a cold. The ape was chosen for this study because it is the only animal that has spontaneous colds; also bacteriological studies have shown that the organisms which may be cultured from its naso pharynx are quite similar to those found in man. The only loop-hole in this work was that while practically all of the bacteria had been removed by filtration through a Berkfeld filter (a very fine filter which catches all the ordinary bacteria), a small bacillus could be grown from the filtrate. It was similar to one previously described by Olitsky and Gates, two other investigators who had studied the common cold; and of course the possibility remained that this bacteria might be the aetiological agent. At this same time Dochez reported that colds had been transmitted from patients to human volun-

teers by a similar procedure. (*Proc. Soc. Exp. Biology and Medicine*, April, 1929.) But Dochez was unable to transfer any disease with the nasal washings of men in summer although the filtrates still contained the Gram negative coccus. This led him to believe that it was therefore not the responsible agent.

Long and Doull of the Johns Hopkins University studied the transmission of the common cold in a selected group of young women in the months of June and July when endemic colds are at their minimum in Baltimore. By employing a finer filter than had been previously used they were able to obtain a filtrate from the nasopharyngeal washings of patients with colds which was entirely bacteria free, and from which the bacteria of Olitsky and Gates was positively excluded. This filtrate when placed in the nose and throat of a healthy girl volunteer produced typical symptoms of the common cold. The incubation period was usually two to three days. (*Proc. Soc. Exp. Biology and Medicine*, October, 1930.)

Dochez in a later paper (*J. Exp. Medicine*, November, 1930) reported that he had transferred the common cold from man to apes, and from human subject to human subject by the use of filtered nasal washings in 44 per cent of the cases. He had been able to make from two to four serial transfers.

PERNICIOUS ANÆMIA. Of particular interest was the announcement of the *Popular Science Monthly's* Prize award for 1930 to Dr. George H. Whipple of the University of Rochester School of Medicine and Dentistry and Dr. George R. Minot of the Harvard Medical School for their work which led to the present effective treatment for pernicious anemia. The award of \$10,000 was to be divided between these two investigators. Dr. Whipple had studied since 1925 the problem of a simple hemorrhage in dogs and had clearly shown that the regeneration of blood could be greatly aided by diet. He found that liver was the most effective agent in severe simple anæmia in contrast to the old idea that iron was all important. On the basis of his work Dr. Minot, with the aid of Dr. W. P. Murphy, tried the effect of feeding liver to patients with pernicious anemia and made the extremely important observation that liver produced an increase in the number of red blood cells, and a corresponding improvement in the general condition of the patient. As a result of his work this disease, formerly almost uniformly fatal, was placed among those for which there is an adequate and specific treatment.

Following the introduction of liver therapy in pernicious anemia in August, 1926, it was discovered that extracts of liver, and indeed of other organs such as the hog's stomach, were effective in combating the disease. It was not, however, until August, 1930, that West and Howe of the Medical Clinic of the Presbyterian Hospital, Columbia University, New York City, were successful in isolating the active principle from the liver which is responsible for its effect on the blood-forming organs. (*Jr. Biological Chemistry*, vol. 88, 427.) They were able to extract an acidic crystalline substance which was clinically potent and produced improvement in patients with pernicious anemia quite comparable to that obtained by the feeding of liver. Working with Dr. Dakin they were able to identify this active crystalline principle as a combination of two common amino-acids, hydroxyglutamic acid and hydroxyproline. (*Proc. of Society for Exp. Biology and*

Medicine, October, 1930.) This work was unusually significant because it identifies chemically an extremely valuable therapeutic agent. It represented one of the real triumphs of modern biological chemistry, and emphasized again medicine's ever-increasing debt to the chemical and biological sciences.

MULTIPLE SCLEROSIS. Miss Kathleen Chevasut of the Westminster Hospital, London, reported the discovery of a filterable virus which may be the cause of this serious neurological condition first described by the great French physician, Charcot, in 1866. The disease is characterized by paralytic and other nervous symptoms, is associated with mental degeneration and usually ends fatally. The specific toxic agent, which was named *Spherula insularis*, was cultured from the cerebrospinal fluid of 176 out of 189 patients with the disease, and was not found in any of 269 cases of other diseases of the nervous system which she studied. It was injected into seven monkeys, two of which developed neurological symptoms. Microscopic study of their spinal cords showed degenerative changes quite similar to those found in patients with multiple sclerosis.

Sir James Purves-Stewart used an autogenous vaccine prepared from this organism in 128 cases of multiple sclerosis. Of these 70 were observed long enough to yield suggestive results. Of 10 early cases 9 were improved and 1 showed no change. Of 27 moderately advanced cases 22 showed improvement and 9 no change. Of 33 advanced cases only 9 showed any improvement while 24 were not benefited. An interesting observation was that in a few cases the patient's blood serum after vaccine treatment inhibited the growth of the virus *in vitro*. Purves-Stewart, while optimistic about the results of this new treatment, counseled conservatism in the interpretation of the results so far obtained, because the disease is known frequently to undergo spontaneous remissions. And he pointed out that we may not hope to restore the nervous tissue which already had been destroyed, but only that the malady may be stopped in the stage that it had reached when treatment was begun. (*Lancet*, Mar. 15, 1930.)

CHRONIC INFECTIOUS ARTHRITIS (RHEUMATOID ARTHRITIS). Cecil, Nicholls, and Stainsby of the Cornell Medical School reported the results of their extensive researches on the etiology of rheumatoid, or so-called chronic infectious arthritis. (*Am. Jr. Med. Sci.*, January, 1931.) Their conviction was that:

Rheumatoid arthritis is a streptococcal infection, in which streptococci are discharged from some primary focus and, circulating from time to time in the blood stream, localize in certain joints and establish a secondary infection in them. In the investigations herein reported these streptococci have actually been demonstrated in the joints of a high percentage of cases, and a disease almost identical with the human form has been produced in rabbits. If these results are corroborated by others there would seem to be little doubt left as to the streptococcal nature of the infection.

In their work they found:

1. Almost constant presence of streptococci in foci of infection.
2. Streptococci recoverable from the blood in 62.3 per cent of rheumatic patients; none from healthy controls.
3. Streptococci recoverable from affected joints of 67.8 per cent of rheumatic patients.
4. High agglutination of "typical strain" streptococci with serum of 94 per cent of rheumatic patients.
5. Disappearance of agglutination with recovery.
6. Biologic identity of organisms recovered from blood and joints, in most cases in which comparisons were made.

7. Reproduction of the disease by inoculation of rabbits with the "typical strains" of streptococci.
8. Recovery of organism from blood and joint of rabbits.
9. Striking similarity in histological changes found in joints of rabbits and man.

They believe that such factors as heredity, exposure to cold wet weather, nervous disturbances, disturbed carbohydrate metabolism, and inadequate circulation, all previously mentioned as possible causes of the disease, are merely predisposing factors. They finally point out that there is "now available an agglutination reaction for rheumatoid arthritis which is quite as specific and reliable for differentiating this condition as is the Widal test for typhoid fever."

Dawson and Boots of the Presbyterian Hospital, New York, added the interesting information that the subcutaneous nodules found in chronic infectious arthritis, which are "uniform and highly characteristic," show a striking histological resemblance to those found in acute rheumatic fever, another disease for which evidence incriminating one of the streptococci was gradually increasing.

RHEUMATIC FEVER. Dr. Alvin F. Coburn of the Presbyterian Hospital in New York described his extensive studies of rheumatic fever. (*The Factor of Infection in the Rheumatic State*, Baltimore, 1930.) He followed a large group of patients on the wards of the hospital, while convalescing in the country, and while at work under different environmental conditions. He was impressed by the protean character of the disease, and felt its clinical manifestations to be the response of the body to chemical substances arising from infections of the upper respiratory tract. He made cultural studies of the naso pharyngeal flora of rheumatic patients under varying environmental conditions and in varying conditions of health. He found that the onset of the disease often followed an upper respiratory infection with the hemolytic streptococcus, and that recurrences of activity were most frequently associated with recurrence of the upper respiratory infection. At this time, the hemolytic streptococcus would again be found in the throat.

A group of rheumatic patients were transported to Porto Rico where respiratory infections are quite rare. They all showed a subsidence of the active rheumatic process while there, only to have it flare up again on their return to New York. He noticed that exacerbations of the disease often followed in the wake of epidemic colds and sore throats. He concluded that, since the disease could not be reproduced in animals by inoculation with streptococci and since no positive immunological relationship could be established between the hemolytic streptococcus and the rheumatic state, this organism could not be definitely said to be the cause of the disease. Nevertheless, he believed, that the hemolytic streptococcus was "an important factor of infection in the rheumatic state."

Swift and his co-workers at the Rockefeller Institute began a study of the effects of intravenous vaccination of patients who had rheumatic fever with hemolytic streptococci. Their studies, while incomplete up to the end of 1930, suggested that this might become an effective method of therapy in certain cases. States resembling true rheumatic relapses were obtained. Diminution of the rheumatic symptoms with an increasing tolerance for the streptococcus at least suggested that hypersensitivity to the organism bears a

causal relationship to the symptoms of the disease. (*Am. Jr. Med. Sci.*, January, 1931.)

PNEUMONIA. Of unusual interest was the announcement by Avery and Dubos of the Hospital of the Rockefeller Institute of their discovery of an enzyme capable of hydrolyzing the capsule of the type-3 pneumococcus, and apparently effective in the treatment of this type of pneumonia in mice (*Science*, Aug. 8, 1930). They discovered that a bacillus isolated from the organic matter of soil taken from the cranberry bogs of New Jersey was capable of splitting or hydrolyzing the specific capsular sugar of the type-3 pneumococcus. Later they were able to extract from their cultures a soluble, non-living principle (of the nature of an enzyme) which was capable of the same specific action. This enzyme, when added to cultures of pneumococcus, did not inhibit growth or cause lysis, but did seem to destroy the capsule of the organism. Later it was found that when the enzyme was injected into mice it was able to exert a distinct and specific action in type-3 pneumonia, and that it had both a prophylactic and curative effect. It was not effective in pneumonia caused by other types of pneumococcus, and there had been no report of its clinical use up to the end of the year.

PARESIS. The treatment of paresis, a disease of the central nervous system caused by syphilis, was revolutionized by Wagner von Jauregg of Vienna in 1918. He inoculated patients suffering from the disease with malarial organisms and reported remarkably favorable results from this treatment. He was later awarded the Nobel Prize in Medicine for this work. Although his treatment has been widely used with good results, the mechanism of its beneficial action was not entirely clear. Recent work seemed to indicate that the febrile reaction associated with malaria is the responsible factor. Other workers have used different means of producing fever and have reported comparable results. The organisms of Rat Bite Fever and Relapsing Fever, two rather readily controlled diseases, have been used, and more recently attempts have been made to treat the disease by hot baths, since the treatment by malaria or other protozoan parasites is not entirely devoid of danger (the patient sometimes succumbs to the new infectious process). Neymann and Osborne of the Northwestern University Medical School reported (*Jr. Am. Med. Assn.*, June 27, 1930) that they had treated a series of patients with paresis by the use of diathermy—an electrical method of elevating the body temperature. They were able to obtain remissions of the disease in 66 per cent of their patients and to improve markedly 8 per cent more. Their work is of importance because it shows the significance of the elevation of body temperature in the treatment of paresis, and because it offers a relatively safe and practical way of combating the disease without recourse to the use of an infective agent.

AGRANULOCYTIC ANGINA. Dr. Paul Reznikoff of the Cornell Medical School reported favorable results from a new method of treatment for agranulocytic angina. This disease, first described by Schwartz in 1904 and again called to the attention of the medical profession by Schultz in 1922, seemed recently to have become much more common and was widely reported. It is characterized by fever, intense prostration, sore throat, areas of subcutaneous hemorrhage over the body, and by a marked leukopenia (decrease in the number of white blood corpuscles). It runs an

acute course and the mortality has been very high. The etiology is unknown and there is some question as to its specificity, because agranulocytosis (lack of production of white blood corpuscles) occurs in certain other infections and in certain poisoning. It had been previously treated with uncertain success by blood transfusion and X-ray.

Reznikoff observed experimentally in rabbits that the intravenous injection of adenine sulphate and guanadine hydrochloride, two so-called nucleic acids common in all animal cells, produced a marked increase in the number of white blood corpuscles (particularly of the polymorphonuclear type). This seemed to offer a logical basis for the use of adenine and guanadine in this disease of man in which the white blood cells are so tremendously reduced. He used these nucleic acids in a small series of cases and was able to report three recoveries. The work in 1930 was still too new to be evaluated properly, but it seemed that he had introduced a rational procedure which gave hope of lowering the mortality in this serious disease.

DENTAL CARIES. In the *American Journal of the Diseases of Childhood* (September, 1930), Bunting, Hadley, Jay, and Hard described their interesting studies of the relation of diet to the development of caries of the teeth in children. They pointed out that the disease is one of antiquity, evidence of it having been found in the skulls of Egyptian mummies; that it is widely prevalent, especially in the civilized countries; that it is worse during the years from 7 to 20; and finally that carious teeth may act as foci of infection.

They studied five groups of children placed on different diets. Each group contained from 74 to 159 children. Four of the groups lived in State institutions and could be closely followed. The first two groups were placed on a satisfactory diet (including milk, green vegetables, and fruit) and were required to use an antiseptic mouth wash daily. Of these two groups, at the end of a year 80 per cent were free of caries and only 5 per cent had active caries. The third group used a mouth antiseptic but their diet was not controlled. Of these 50 per cent had active caries and only 25 per cent were free. The fourth group had an adequate diet and no mouth wash. Seventy-five per cent of them were free of caries and only 6 per cent had an active process. The last group had no control of diet and did not use a mouth wash; 18 per cent were free from caries and 49 per cent had an active process. This indicated that an adequate diet, particularly one rich in Vitamin D, is a powerful preventive agent against caries. It seemed to show that the local use of antiseptics is of little value.

INFANTILE PARALYSIS (POLIOMYELITIS). Shaughnessy, Harmon, and Gordon reported in the *Proceedings of the Society for Experimental Biology and Medicine* for May, 1930, some interesting and significant work which demonstrated the unexpectedly high potency of the blood serum of normal adults to neutralize the virus of infantile paralysis *in vitro*. They added to a filtrate obtained from the infected spinal cord of a monkey various dilutions of the serum of patients who were convalescing from poliomyelitis, and also various dilutions of normal human serum. They found, surprisingly, that the serum of family contacts and of apparently normal adults and older children possessed a greater ability to neu-

tralize the virus of the disease than did the serum of convalescents. They also found that the serum of children under two years gave little evidence of any antibody while that of children over two neutralized the virus in dilutions of one to ten. In the past the disease had been treated by the use of convalescent serum, but this work suggested that the serum of healthy adults might be more effective.

ARTIFICIAL RESPIRATION. Dr. Philip Drinker of the Harvard Medical School reported the results obtained from the use of the "Respirator," a machine for the maintenance of artificial respiration which he first described in May, 1929 (*Jr. Am. Med. Assn.*, Oct. 25, 1930). This apparatus consists of a sheet-metal tank which contains a bed and mattress. The patient lies in the tank while his head protrudes through a rubber cuff which has an air-tight seal. By an electrically driven set of blowers and valves the pressure is changed from slightly negative (which causes the chest to expand and the patient therefore to inspire) to normal atmospheric pressure (which causes the patient to expire). The pressure may be varied as desired and a tracing of it is recorded. The patient eats, drinks, sleeps, and may even use the bed pan while in the machine. He is turned twice daily as a rule. The Respirator is used whenever a patient is unable for any reason to satisfactorily maintain his own respiration. It has been employed in cases of acute respiratory failure of infantile paralysis, in cases of carbon monoxide poisoning, alcoholic coma, drug poisoning, drowning, post-operative respiratory failure, and asphyxia of the new born. Twenty machines were in use (chiefly in Boston, New York, and Philadelphia) and at the time of this report 80 cases had been treated. There was no question but that in some cases its use had been a life-saving measure.

TYPHUS. This disease, which has occurred in several great epidemics with high mortality, as well as sporadically from time to time, has previously been shown to be transmitted by the bite of the body louse. The actual infective agent had not been positively identified, although Wohlbach, Todd, and Palfrey in 1922 were led to believe from their extensive studies that a small bacterium, one of the so-called Rickettsia bodies, bore an important etiological relationship to the disease. This view was strengthened by researches of Zinsser and Castenada who adduced strong evidence in favor of identifying the virus of Mexican Typhus fever with a Rickettsia which they had found in lesions of the testis of guinea pigs, which had been previously inoculated with typhus-infected blood. They found that the organisms were much more abundant in poorly nourished animals who had the disease than in well nourished ones. They were able to prepare a vaccine which protected animals against the disease, either by preventing it entirely or by making its course much milder. They also succeeded in culturing the Rickettsia, something which previously had been accomplished only with great difficulty. Their work promised to afford a means of immunizing man against this once dreaded disease.

TUBERCULOSIS. Interest in and discussion of the results obtained from Calmette's vaccination of young children with an attenuated tubercle bacillus of bovine origin (so called B. C. G. vaccine) was greatly increased by an unfortunate episode which occurred in Lübeck, Germany, in the spring. There, more than a hundred children died follow-

ing the vaccination. The exact cause of this deplorable event was not determined, but Professor Calmette was convinced that the vaccine had been contaminated with human tubercle bacilli. Professor Neufeld of Berlin, a leading German authority, felt similarly (*Deut. Med. Woch.*, Sept. 19, 1930). Professor Calmette, who was the director of the Pasteur Institute in Paris, in a letter to the *Journal of the American Medical Association* (Jan. 3, 1931), strongly repeated his faith in this method of treatment and urged its more extensive use in the United States. It was widely employed in France and in certain other parts of the world, and more than a million children have been vaccinated since 1924. Professor Calmette concluded his letter by stating that the evidence seemed overwhelming to him that—

B. C. G. is innocuous, never interferes with normal development, that mortality from tuberculosis in vaccinated children is reduced almost to zero, and that vaccinated children are more resistant to most infantile infections than non-vaccinated ones; that is why the general infantile mortality is everywhere manifestly reduced by vaccination, often by as much as 50 per cent or even more.

It is only fair to state that some prominent students of tuberculosis differed sharply from this view. Petroff, of the Trudeau Foundation in the United States, after a long study of the problem believed that bacterial types are not fixed, that changes in the character and virulence of organisms may occur, and that we have no right to believe that B. C. G. may not in some instances become pathogenic for man. He has isolated from the B. C. G. an organism pathogenic for guinea pigs. (Calmette insisted this is an accidental contamination with human tubercle bacilli.) Petroff intimated that Calmette's statistical studies are not valid, and seemed to believe that the Lübeck disaster was due to Calmette's vaccine assuming a pathogenic form. The whole question was still *sub judice*.

See also SURGERY, PROGRESS IN.

MEDIEVAL LANGUAGE AND LITERATURE. See PHILOLOGY, MODERN.

MEDITERRANEAN FRUIT FLY (MED-FLY). See ENTOMOLOGY, ECONOMIC.

MELCHETT, ALFRED MORITZ MOND, FIRST BARON. A British politician and industrialist, died in London, Dec. 27, 1930. Born in Farnworth, near Widnes, Lancashire, Oct. 23, 1868, he attended Cheltenham College and Cambridge and Edinburgh universities. He became a barrister of the Inner Temple (1894), and was a judge on the North Wales and Cheshire circuit. He was a member of Parliament for Chester from 1906 to 1910, for Swansea from 1910 to 1923, and for Carmarthen from 1924 to 1928. In 1926 he transferred his allegiance from the Liberal to the Conservative party. He served in the Cabinet as First Commissioner of Works (1916-21), and as Minister of Health (1921-22). He was chairman or director of many powerful companies in varied industrial fields, including Imperial Chemical Industries, Ltd. He was also a member of the Royal Institution, founder president of the Institute of Fuel, president of the British Science Guild (1927-28), president of the World Power Conference (1928), president of the Empire Economic Union, and joint chairman of the Conference on Industrial Reorganization and Industrial Relations, which was organized in 1928 for the purpose of bringing together in amiable relations the capital and labor of Great Britain. One

of the foremost leaders among the Jews of Great Britain, he was active in the Zionist cause. He was created a baronet in 1910, and in 1928 Baron Melchett of Landford. Besides articles on politics and economics, he wrote: *Questions of Today and Tomorrow* (1912); *Why Socialism Must Fail!* (1923); *The Remedy for Unemployment* (1925); *Industry and Politics* (1927); *Imperial Economic Union* (1930).

MEMEL. See LITHUANIA under History.

MENARD, mă'năr, ÉMILE RENÉ. A French painter, died Jan. 13, 1930, in Paris, where he was born Apr. 15, 1862. He studied with his father, René Joseph Ménard, director of the School of Decorative Arts in Paris, and first exhibited at the Paris Salon in 1883. In 1897 he began to exhibit at the International Exhibitions of the Carnegie Institute in Pittsburgh and was represented in practically every exhibition until the time of his death. In 1922 his painting, "Women Bathing in the Greve," was awarded second prize. He was best known for his landscape paintings, which were imaginative and poetical in feeling, and was often called a Hellenist because of his classical point of view. Among his important works are: "À la tombée de la nuit," in the Antwerp Museum; "Portrait de ma mère," in the Brussels Museum; "Crépuscule," in the Helsingfors Museum; "Portrait de Louis Ménard," in the Luxembourg Museum, Paris; "Temps d'orage," in the Munich Museum; "Le fleuve," in the Stockholm Museum; "Paysage corse," in the National Gallery, Budapest; "Terre antique," in the Museum of Venice; and "The Judgment of Paris" and "The Rape of Europa," in the Carnegie Institute, Pittsburgh. Several of his murals are found in the School of Higher Studies, the Sorbonne, Paris. He was an officer of the Legion of Honor, and in 1926 was elected a member of the French Institute.

MENTAL HYGIENE. See PSYCHOLOGY.

MENTAL TESTS. See PSYCHOLOGY.

MERCER, HENRY CHAPMAN. An American anthropologist and archaeologist, died Mar. 9, 1930, in Doylestown, Pa., where he was born June 24, 1856. He was graduated from Harvard University in 1879. In 1893 he went as an honorary member of the U. S. Archaeology Commission to Madrid. From 1893 to 1897, he was editor for anthropology in the *American Naturalist* and, during 1894-97, he was also curator of American and prehistoric archaeology at the University of Pennsylvania. In American caves he discovered remains of extinct animals, in particular in the bone cave of Port Kennedy, Pa., where he made valuable discoveries of fossil carnivora. He compared the remains of ancient man in drift gravels and flint workings of America and Europe and, after exploring the caverns of Yucatan, he fixed the geological date for the peninsular ruins. Research in the Pennsylvania Dutch pottery manufactures resulted in his perfecting a new method of manufacturing tiles for mural decoration (1899) and a new process for making mosaics (1902). He also patented a process for printing large designs in color on fabrics and paper in 1904. In 1916 he built and endowed a museum at Doylestown, in which is housed his collection of utensils and implements used in the colonial period of United States history. At his death, he gave his home Fontheil, containing exhibitions of ceramic art, to the city of Doylestown to be used as a museum. Dr. Mercer wrote *Lenape Stone* (1885); *Hill Caves of Yuca-*

tan (1896); *Researches upon the Antiquity of Man in the Delaware Valley and the Eastern United States* (1897); *Tools of the Nation Makers* (1897); *Bible in Iron* (1915); *Ancient Carpenters' Tools* (1925).

MERCURY. See QUICKSILVER.

MERCURY-ARC RECTIFIERS. See DYNAMO ELECTRIC MACHINERY.

MERCURY BOILER. See BOILERS.

MERRITT, ANNA LEA. A British painter, died in London, Apr. 7, 1930. She was born in Philadelphia, Pa., Sept. 13, 1844, and was a pupil of Henry Merritt, the English artist and critic, to whom she was married in 1877. She won medals at the Centennial Exposition, Philadelphia, 1876; the Columbian Exposition, Chicago, 1893; the Atlanta Exposition, 1895; and the Pan-American Exposition, Buffalo, 1901. She was a constant exhibitor at the Royal Academy in London from 1871 to 1906 and was represented in the Chantrey Collection of the National Gallery of British Art, London, by "Love Locked Out" and in the Pennsylvania Academy of Fine Arts, Philadelphia, by "Piping Shepherd." Among her other important works are: "Eve Repentant," "Merry Maids," and "I Will Give You Rest"; portraits of James Russell Lowell in Memorial Hall, Harvard University, and of Mrs. Arnold Toynbee in Lady Margaret Hall, Oxford; and eight mural paintings of St. Martin's Church, Chilworth, Surrey, England. She was also the author of *Memoirs of Henry Merritt* (1879); *A Hamlet in Old Hampshire* (1902); and *An Artist's Garden* (1908).

MERRY DEL VAL, RAPHAEL, CARDINAL. A prelate of the Roman Catholic Church and former Papal Secretary of State, died in Rome, Feb. 26, 1930. He was born Oct. 10, 1865, in London where his father was Secretary of the Spanish Embassy, and was educated at the Jesuit College of St. Michel in Brussels and at Ushaw University in Durham, England. On completing his course at the latter institution, he was chosen private tutor to King Alfonso XIII of Spain. He then entered the Gregorian University in Rome, where he prepared for the priesthood, and was admitted to the Academia dei Nobili Ecclesiastici in 1886. In 1887, while still a student, he was sent to London in the suite of Mgr. Rufo Scilla, who presented the Pope's felicitations on the occasion of Queen Victoria's golden jubilee. The following year he went to Berlin with Mgr. Galimberti to represent the Vatican at the funeral of William I, and also attended the jubilee in Vienna in honor of the fortieth anniversary of Francis Joseph's reign.

After his ordination to the priesthood in 1888, Cardinal Merry del Val was retained for service in the Vatican by Leo XIII, who made him Papal Chamberlain in 1892. In 1896 the Pope entrusted to him the office of Secretary of the Commission for the Study of the Validity of the Anglican Ordinations, and in the following year named him Domestic Prelate. In 1897 he was sent as Apostolic Delegate to Canada to bring about a settlement of the controversy over the closing of religious and other private schools in Manitoba, and on the basis of his report the Pope wrote his famous letter to the Roman Catholics of Canada on the principles underlying Catholic education. In 1899 Cardinal Merry del Val became president of the Accademia Pontifica, and the following year was consecrated titular bishop of Nicæa. In 1901 he represented the Vatican at the coronation of Edward VII, and in 1902 was honored with an appointment to the archbishopric of Nicosia.

On the death of Leo XIII, Cardinal Merry del Val was chosen secretary of the conclave of the Sacred College which in 1903 elected Pius X. In the same year he was created a cardinal by the new Pope and was appointed Papal Secretary of State. He attained distinction in the conduct of this important office, but was criticized later for adopting an aggressive policy which helped to intensify the strained relations between the Curia and the French Government. He relinquished the post of Secretary of State upon the accession of Benedict XV in 1914, and was appointed Archbishop of the Vatican Basilica and Secretary of the Congregation of the Holy Office. Under Pius XI, Cardinal Merry del Val was instrumental in bringing about the reconciliation between the Vatican and the Italian Government. He was a staunch supporter of the principle of ultramontaniam and was the author of *The Truth of the Papal Claims* (1909).

MESOPOTAMIA. See IRAQ.

MESSMER, THE MOST REV. SEBASTIAN GEHARD. An American Roman Catholic archbishop, died Aug. 3, 1930, in Goldach, Switzerland, where he was born Aug. 29, 1847. He was educated at St. George College in St. Gall, Switzerland (1861-66), and at the University of Innsbruck in Austria (1866-71). Ordained a priest in 1871, he was thenceforth until 1889 professor of theology at Seton Hall College, South Orange, N. J., and during 1890-92 was professor of canon law at the Catholic University in Washington, D. C. He was consecrated Bishop of Green Bay (Wis.) in 1892, and the following year was appointed Archbishop of Milwaukee. The D.D. degree was conferred on him by Pope Leo XIII in 1885 and the D.C.L. degree by the Appollinare University in Rome in 1890. His works include: *Praxis Synodalis* (1883); *Canonical Procedure* (1886); *Spirago's Method* (1901); and *Outlines of Bible Knowledge* (1910). He also edited Devivier's *Christian Apologetics* (1903) and Bishop England's *Works* (7 vols., 1908).

METABOLISM. See FOOD AND NUTRITION.

METALLURGY. Extremely low metal prices during the year stimulated metallurgists to make every refinement possible to cut costs, involving, in some instances, higher metal losses in slags and tailings, the unit value of the contained metal being comparatively small. Also, most plants were operating at from one-half to three-quarters capacity, giving metallurgists plenty of time to study the details of their work instead of bending every effort towards increasing output, as they had been forced to do a year or two previously. The tendency continued towards centralized operations, most of the newer plants being of large capacity; many of the smaller older plants were forced to close down. Added refinements were made in most metallurgical processes, but little that was totally new and not heretofore mentioned attracted attention during the year.

ORE DRESSING. Several new types of crushers and grinding mills recently were put on the market or were under development. The success of the cone crusher had stimulated other manufacturers to design new machines or to improve existing models of gyratory crushers. One produced a 15-inch reduction crusher with curved heads and concaves, to give a small discharge opening and a large feed opening. Heavy outside springs allow the head to be forced downward to release any obstruction that may catch between the crusher surfaces. Hammermill crushers were further im-

proved. Rolls continued to be displaced, as in the Tri-State zinc-lead district, where one of the large new mills expected to effect marked economies by the use of a suspended gyratory for secondary crushing.

Larger ball mills were becoming increasingly popular and considerable success was attained with special types of liners designed to secure a more violent action of the grinding media in the mill. The advantage of multiple-stage grinding was increasingly recognized. Bowl-type classifiers were popular in the final stage, and high circulating loads were maintained. The bowl type of classifier affords a more closely sized product than the standard type, which product is more adaptable to selective flotation processes.

In flotation equipment, the old Callow type pneumatic cells and the standard mechanically agitated machines had been pretty well displaced in modern plants. For selective flotation, sub-aerated mechanically agitated machines were widely used. These were also useful for floating coarse ore; native copper in Michigan was being successfully floated as coarse as 10-mesh. Pneumatic machines in which air is released into the pulp through pipes or slits at small pressure continued to extend their popularity, especially for large-scale work on lean ores. During the year these were made as much as 100 feet long, having a capacity of 3000 to 4000 tons a day, and using 3000 cubic feet of air per minute at 1½-lb. pressure. Another type of machine was built with a 16-inch header and 3-inch drop pipes, using 1-lb. air.

In the revolving rotor type machine, canvas was being supplanted by sheet rubber with exceedingly fine perforations, 225 to the square inch, of a special outline, cut into the rubber. Owing to the elasticity of the rubber, and its smooth surface, there is no tendency to blind in alkaline circuits, and its wearing quality is excellent.

Most flotation machines were made of steel instead of wood, and the mechanically agitated machines had individual motors with rope drives. No one type of machine could be said to be better than another: one may be low in power requirements and high in cost of reagents required; another may be simple to operate and of long life but inferior in metallurgical recovery.

Progress was constantly being made in greater knowledge concerning the best reagent to use on an ore of known type, though individual tests were still required as practically all ores show some varying characteristics. Among the most popular reagents are sodium, potassium, amyl, and butyl xanthates, the last two being recent developments; and several modifications of the phospho-cresylic acid reagent originated by F. T. Whitworth and developed by Utah Copper. Among other chemicals widely used in flotation were the pine oils, coal-tar creosotes, sulphuric acid, lime (practically all circuits are alkaline), sodium carbonate, sodium silicate, sodium sulphide (for sulphidizing), copper sulphate (for activation), zinc sulphate, and cyanide.

Data for the United States, covering the year 1928, for 208 plants, indicated 59,000,000 tons of ore treated by flotation, producing 3,696,000 tons of concentrates. Of this ore, 47,000,000 tons were copper ore. The total consumption of reagents during the year was 264,000,000 pounds, of which 208,000,000 pounds was lime.

Drum filters, with the filter cloth on the inside

of the drum, were increasingly popular, especially for coarse, fast-settling concentrate. A new type of filter with leaves attached to a traveling belt has just been introduced.

The most important new plant that went into operation during the year was the 8000-ton concentrator of the International Nickel Company of Canada, at Copper Cliff, Ont. This crushes 5-inch ore to 1 inch in cone crushers, to ¾ inch in rolls in closed circuit with vibrating screens, and grinds to minus 65-mesh in rod mills which may be used as ball mills if desired. Bowl classifiers are in closed circuit with the mills. Selective flotation of nickel and copper is practiced with pneumatic rotor machines. Dewatering of concentrates takes place in three stages: drag classifiers, tray thickeners, and internal-settling drum filters. Another important Canadian concentrator, for zinc-copper ore, rather an unusual combination, was completed by the Hudson Bay Mining & Smelting Company in 1930. This has a capacity of 3000 tons a day. In the United States, among important new plants to be completed during the year were the Bird Dog mill of the Commerce Mining & Royalty Company, near Picher, Okla.; the Sylvan Lake, N. Y., mill of St. Joseph Lead; and the Universal Exploration Company's concentrator at Jefferson City, Tenn. All of these mills treat a zinc ore, and their capacities per day are 2400, 500, and 800 tons, respectively.

HYDROMETALLURGY. Inspiration Copper at Miami, Ariz., was segregating a mixed sulphide and oxide copper ore, after crushing, into sand and slime, giving each a separate treatment. The slime is given counter-current continuous decantation with acid solution in four 150-foot traction thickeners of acid-resisting construction. The availability of acid-resistant alloys for equipment of this kind makes the process possible. A similar process was to be used at the Andes plant in Chile.

In electrolytic zinc plants, progress was reported in improving power consumption, reducing losses in the residues, and in making a higher-grade product. Commercial grades of electrolytic zinc were consistently above 99.99 per cent pure, traces of lead and cadmium only being present. Cadmium is a commercial by-product of the process. The bad effect of germanium, even in amounts as little as one part in 20,000,000 in cell solutions, recently was brought out, and purification methods to eliminate it devised. Better frames and guides for cathodes were designed also.

In cyanidation of gold ores, a novel practice was developed at the McIntyre property in Ontario during the year, wherein the ore is first concentrated by flotation, the concentrate re-ground and cyanided. Three plants in Australia had similar plants under construction or proposed. Sulphides or tellurides being important gold-bearing constituents of the ore, the concentrates would be roasted before cyanidation. Several amalgamation or cyanidation plants were changed over to straight flotation, with recovery of the gold from the concentrate by pyrometallurgical methods. Tabling was used instead of flotation, preceded by hand-sorting, to obtain a high-grade product for cyanidation at the Alaska Juneau. Here the gold content of the ore was only about \$1.12 a ton as mined, but the company had begun paying dividends, making it the lowest-grade profitable gold mine in the world. The highest-grade was probably the Ashanti mine in

the Gold Coast Colony, where the gold ore ran in the neighborhood of \$25 per ton.

New construction in the Kirkland Lake district of Ontario included 2000-ton mills for the Lake Shore and Teck-Hughes companies. Some tellurium was present. Teck-Hughes practice included grinding to 99 per cent through 200-mesh; 36- to 40-hour cyanide treatment; high dilution and alkalinity, with a number of changes of solution; aëration by low-pressure air at several points; and the use of sodium peroxide for oxidizing tellurium. The Dome mine at Porcupine erected a new straight cyanide mill to replace one burned a year or so previously.

Cyanide regeneration by the use of sulphur dioxide received more extended application. Research was under way to recover the cyanide from sulpho-cyanides and other complex cyanides, as well as from simple alkaline and alkaline-zinc cyanides.

PYROMETALLURGY. Flash roasting was the subject of discussion and experiment, the idea being to oxidize the sulphur almost instantaneously from finely ground particles of concentrate while they are suspended in air, rather than to plow them through a hearth furnace in a bedded condition, with the top surface of the beds exposed to oxidizing gases for several hours. Experimental work was carried on by the Tennessee Copper Company, and at the Consolidated smelter at Trail, B. C. The process so far was veiled in secrecy but essentially consisted of blowing concentrates into a preheated combustion chamber, using burner equipment similar to that used in coal-dust firing. So far, the multiple-hearth furnace had been modified by tearing out several hearths, making a large combustion chamber. One company was making a special ball mill to break up the concentrates before flash roasting. Flash roasting seemed likely to spread, with new furnaces specially designed for this work.

The practice of building roasting furnaces directly above reverberatory smelting furnaces was extended by the International Nickel Company, whose smelter was completed in the summer of 1930. Quick gravity flow of red-hot calcine to the smelting furnace was thus secured but at the expense of a higher construction cost. Roasting was being entirely eliminated at some copper plants which have a dearth of sulphur in the charge, there being no necessity of drying damp concentrates before feeding into the furnace. At others, where drying is desired, concentrates were fed on to one or more of the lower hearths of the roasting furnaces as well as on the top.

One new idea in reverberatory charging recently was introduced, the calcine being admitted through a telescopic pipe feeder discharging a few inches above the bath in the furnace. This allows better distribution of the charge, lower dust losses, and a longer life for the furnace.

An unusual problem in copper smelting was presented at the new Roan Antelope plant in Africa, under construction. The concentrates will contain from 50 to 60 per cent copper, and the matte made therefrom, 70 to 80 per cent, so that special treatment will probably be necessary for the rich slag, and there may well be difficulties in maintaining the heat in the converters.

Further progress was made in developing the use of the continuous vertical retort for volatilizing zinc, Grasselli having put in a plant at Meadowbrook, W. Va., during the year. Extreme purity of the zinc product, comparable with that

of electrolytic zinc, was secured. Lead impurities, in the reduced condition, may be filtered out as the volatilized zinc passes through the cool charge, and are not subsequently volatilized as would be the case if the lead were in the oxidized condition. The patent for the process states that zinc containing only 0.02 to 0.05 per cent lead can be made from ores containing 1.5 to 3.5 per cent lead. Such ores, under the standard methods of retorting, would give at least 1 per cent of lead in the product.

High-silica retorts, made of fireclay, clean firebrick culls, and silica flour, were a success at one plant. This gives a stiffer retort, and one that can better support heavy charges such as are now being used. The trend in zinc smelting during the last few years has been toward longer retorts and a higher charge density.

In the metallurgy of iron, progress was made in sintering ore by increasing the length and width of the sintering machine, and carrying a deeper bed. One plant used grates 72 inches wide and 127 feet long, with a charge 18 inches thick. Substitution of sintered ores have improved blast-furnace practice in some instances. Coke containing lower ash, made from washed coal, has improved furnace efficiencies. Increasing the size of blast-furnace tops has reduced the production of flue dust. Increasing cleaning of blast-furnace gas was notable, as was increased use of the gas for heating coke ovens and in open-hearth furnaces. Blast furnaces now produce regularly 1000 tons of iron a day.

Increased efficiency in the use of fuel in open-hearth furnaces had been brought about by semi-automatic combustion control, many furnaces being so equipped, with further improvements in this direction expected. Natural gas was being used to an increasing extent for smelting of both iron and non-ferrous metals. The relative advantages of a luminous and a non-luminous flame were still not fully understood.

Copper refineries were completed or were under construction at Copper Cliff, Ont., and at Montreal, reflecting increased Canadian production of that metal. The multiple system was employed at both, though reports of excellent progress in the series system recently had been made, and it could not yet be said to have been displaced in modern technology. New copper refineries in France and England were projected. Native copper from Michigan continued to be refined by fire methods, as it contains so little gold and silver.

Beryllium production had some publicity, but only about 3 to 5 pounds a day was produced in the United States, and about the same amount in Germany. Suitable large supplies of ore were difficult to find. A million-dollar plant for the reduction of titanium ores was under way in Virginia, most of the product being used for pigments. Pure ductile zirconium and hafnium metal had become available. Uranium was available for the first time in the form of ductile wire, rods, and sheets. Thorium was obtainable for three or four years but had become available as made by the electrolytic process. Tantalum was being used in increasing quantities, and columbium in ductile pliable form, as wire, sheet, and rod, was offered. Indium was isolated as a pure metal in 1930. Thallium-lead alloys were being developed and could be electroplated on iron, steel, and brass, affording a corrosion-resistant surface on those metals at a reasonable cost. A market for pure

strontium, now commercially available, was being sought. Research work in the production and use of these and other rare metals was particularly active during the year.

METAPHYSICS. See PHILOSOPHY.

METEORITES. See EXPLORATION under *Asia*. For chemistry of meteorites see CHEMISTRY under *Mineralogical Chemistry*.

METEOROLOGY. The large and rapid fluctuations in temperature that often occur from one day to another in the spring and early summer, and give rise to abnormally warm and abnormally cold periods, have always attracted considerable attention. In particular, it has long been an interesting question as to whether they have a tendency to recur on or about the same dates each year at a given place; irregular fluctuations still persist in the series of average daily temperatures as obtained from records 30 or 40 years in length, and it is still uncertain whether they would all become smoothed out as the length of the record increased indefinitely, or whether some of them are inherent and would always remain. From a recent study of the temperature records kept at the Kew Observatory since 1871, C. E. P. Brooks concludes it is very improbable that there is an abiding tendency for any periods of the year to be abnormally warm or abnormally cold, although such tendencies may spring up suddenly and persist for 10, 20, or 30 years before they vanish.

CLIMATE CHANGES. That marked changes of climate have occurred over large areas of the globe during geological times is well established, though these changes probably were not so profound as was at one time thought; that rather pronounced climatic changes have also taken place during comparatively recent, though largely prehistoric, times is likewise fairly certain. Whether or not further changes have taken place during historic times has long been a subject of controversy; instrumental records extend back less than three centuries, and were not of a very precise character previous to 1800, while non-instrumental data are often ambiguous and easy to discredit. During the 150 years from the middle of the eighteenth century to the end of the nineteenth, the climate of western Europe appears to have remained fairly stable. The remarkable series of warm winters in the twentieth century suggests that there may have been some kind of climatic change about 1900, but such a change is not shown by the weather elements other than temperature, and does not appear in any other season than winter.

It is only by going back to the beginning of the instrumental period before 1750 that definite indications of an appreciably different climate are found; and a study of the climate of the first half of the eighteenth century has recently been made by C. E. P. Brooks. Meteorological instruments, though not of high quality, were then sufficiently well distributed to give some indication of the climatic characteristics. The rainfall records are especially valuable; and they indicate a deficiency of rain over England and western Europe that appears to have been genuine; tree growths indicate that during the same period the rainfall of the western part of the United States was also deficient. This, and other, evidence as to the meteorological conditions over the globe during the first part of the eighteenth century seems to show that during

that period there was a weakening of the planetary circulation in the northern hemisphere, and of the associated minor circulations over the North Atlantic and North Pacific oceans.

CLIMATOLOGY. From a study of all the rainfall data that have now become available, C. E. P. Brooks has estimated that the average annual rainfall over the whole globe is 975 millimeters; the total volume of the water which falls each year is 4971×10^{11} cubic meters. The average annual rainfall over land is 659 millimeters, over the oceans 1107 millimeters. The maximum annual rainfall on land is just south of the equator, and there is a secondary maximum in the southern hemisphere between latitudes 50° and 60° ; in the northern hemisphere, the rainfall on land increases continuously from pole to equator, with no secondary maximum. There are three regions of maximum rainfall over the oceans, the chief of which is in the storm belt at latitude 50° N.; the equatorial maximum is almost as pronounced, while a less well developed maximum lies between latitudes 40° S. and 45° S.

South America receives nearly twice the average annual rainfall of any other continent; Australia receives the least. Africa as a whole has a rather high rainfall, since the heavy rains of the equatorial belt compensate for the subtropical deserts. The rainiest country in Europe is Switzerland, with Scotland second and Ireland third; Norway comes well toward the foot, and Russia is the driest of all. The average annual rainfall of the oceanic islands is 2086 millimeters, or 82.13 inches. The country with the greatest annual rainfall on the globe is Samoa, with a well authenticated average of 4300 millimeters, or 169.3 inches.

WEATHER. The West Indian hurricane of Sept. 1-5, 1930, resulted in \$50,000,000 damage and the loss of 4000 lives, in the Dominican Republic (q.v.).

The outstanding feature of the weather of 1930 in the United States was the unprecedented heat and drought east of the Rocky Mountains. A shortage of rain began in December, 1929; the deficiency was then in no way different from what occurs practically every year in some part of the United States, but the drought thus initiated continued for nearly a year, and spread to every State east of the Rockies except Florida. By March, 1930, the rainfall had become less than normal in 36 States; partial relief in May was followed by renewed dryness during June. July was the driest month of the drought, with the rainfall deficient in 36 States, and the least on record in nine States. In addition, July was extremely warm in most sections; every State had maximum temperatures of 100° F. or higher, and previous high temperature records were broken in nine States and equaled in three others; on the other hand, temperatures of freezing or below were reported from 11 States. In August, 35 States had deficient precipitation, four having the lowest of record; the abnormal heat continued through the first half of the month, though temperatures of freezing or below also occurred in 19 States. In September, much of the interior of the country experienced relief from the drought, but the rainfall was still deficient in 24 States; in several States, material relief had not yet been experienced at the close of the year. A somewhat detailed account of the drought will be found in the *Monthly Weather Review* for September, 1930.

NECROLOGY. Kiyo Nakamura, January 3; Henry J. Cox, January 7; Felix M. Exner, February 7; and Father José Algué, S.J., May 27.

BIBLIOGRAPHY. Books of note on Meteorology were: A. J. Henry, *Weather Forecasting from Synoptic Charts* (Washington); Sir Napier Shaw, *Manual of Meteorology*, Vol. III: Physical Processes of Weather (Cambridge); K. C. Edwards, *The ABC of Climate* (London); Air Ministry, Meteorological Office, *The Weather Map* (London); P. Holdefleiss, *Agrarmeteorologie* (Leipzig); F. Kerner-Marilaun, *Paläoklimatologie* (Berlin); Allen Hazen, *Flood Flows* (New York). See PHYSICS.

METEORS. See ASTRONOMY.

METHODIST CONNECTION (OR CHURCH) OF AMERICA, WESLEYAN. A branch of the Methodist Episcopal Church, organized May 31, 1843, in Utica, N. Y.; the outgrowth of controversy over what was termed "liberty of testimony and freedom of discussion," and also a protest against the exercise of ecclesiastical authority. The purpose of the new organization was a church that should be anti-slavery and non-episcopal. In doctrine, the church is in accord with the Methodist bodies generally. In 1930 the branch comprised 25 annual conferences. Its general conference meets quadrennially, a convocation being scheduled for June, 1931. In 1930 there were 602 churches, 782 ministers and 21,661 members; the Sunday schools numbered 584, with 6110 teachers and officers, 33,927 pupils, and 7081 persons enrolled in the home department and on the cradle roll. The foreign missionary department conducts missionary work in Africa, India, and Japan, and the department of home missions and church extension among the American Indians, Mexicans, and in the mountain region of the South. Among the colleges maintained by the church are Central College, Central, S. C.; Houghton College, Houghton N. Y.; Marion College, Marion, Ind.; and Miltonvale College, Miltonvale, Kans. *The Wesleyan Methodist*, published weekly in Syracuse, N. Y., is the official organ of the church. A large printing plant is maintained in Syracuse, and all the literature of the church is printed there. Headquarters for the denomination are maintained at 330 East Onondaga Street, Syracuse, N. Y.

METHODIST EPISCOPAL CHURCH. Methodism in its widest signification and intention was a "revival of Christian earnestness, simplicity, and power." John Wesley (1703-91) had no intention of establishing a new church; his effort was to revive pure and undefiled religion. He taught the doctrines of the Church of England and "faithfully urged the people to attend its ordinances, to be present at its public assemblies, and to be interested in its prosperity." Had the authorities of the Church of England accepted some of Wesley's plans, in place of driving him away from them, the future of Methodism might have been quite different. Richard Boardman and Joseph Pilmoor, two of Wesley's workers, came to America in 1709 and were followed in 1771 by Francis Asbury who was destined to be the great leader of the infant church. At the first conference held in Philadelphia in 1773, there were present 10 preachers who reported 1170 members. The Methodist Episcopal Church was organized at a "Christmas conference" held in Baltimore in 1784.

The governing body of the church is the general conference, composed of an equal number of ministerial and lay delegates who meet once in four years and make all the rules and regulations. The last quadrennial session of the general

conference convened in Kansas City, Mo., in May, 1928. An annual conference, presided over by the bishop of each area, meets once a year at which all pastoral changes are considered and reports of the local churches are gathered and compiled. There is also a local quarterly conference that administers all matters pertaining to the work of the local church.

In 1930 there were in the United States and territories 98 annual conferences and missions; 12,046 ordained ministers; 11,155 lay preachers; 4,044,851 church members; 24,195 Sunday schools; 371,649 Sunday-school officers and teachers; 4,100,311 Sunday-school pupils; and 509,873 Epworth League members. Conferences in white areas numbered 77 and consisted of 13,531 charges with 3,643,392 members; conferences in colored areas numbered 19 and consisted of 1995 charges with 302,222 members. Conferences outside the United States included 5 in Africa, 12 in Eastern Asia, 22 in Europe and North Africa, 6 in Latin America, 3 in Southeastern Asia, and 12 in Southern Asia, with a total membership of 640,899, 2070 ordained ministers, 3709 local preachers, 8388 Sunday schools, and 394,319 Sunday-school pupils.

The administration of the missionary, educational, and philanthropic work of the Methodist Episcopal Church is committed to six general benevolence boards: Foreign missions; home missions and church extension; education; hospitals, homes, and deaconess work; pensions and relief; and temperance, prohibition, and public morals. These boards cooperate in the world service movement, their budgets being fixed and their work correlated in the interest of cooperation, economy, and efficiency by the world service commission. On May 31, 1930, this commission reported total net receipts of \$7,494,185.

The board of foreign missions administers the missions of the church in Mexico, South America, Europe, Africa, southern and eastern Asia, the Philippines, and the islands of many seas. It received during 1930 a total of \$2,234,987. The constituency roll of the church in foreign mission fields numbered 893,881 persons, including 675,116 members of the church and 218,765 baptized children under instruction for membership. The board of home missions and church extension looks after weak churches in new and growing communities in the United States, where church buildings are needed and ministers have to be supported, and cares for the religious work among many foreign groups. During 1930 a total of \$1,383,250 was expended on home mission work, while appropriations for church maintenance and extension amounted to \$1,758,250. There are also two women's missionary societies, the foreign and the home, which reported receipts in 1930 amounting to \$3,868,429.

The educational system of the church, administered by the board of education, included, in 1930, 46 colleges and universities, 24 secondary or preparatory schools, 8 schools of theology, and 19 institutions for colored students. The total enrollment was 63,350. The board of hospitals, homes, and deaconess work administered, in 1930, 77 hospitals, 44 homes for the aged, 43 homes for children, 45 deaconesses' homes, and 26 homes for young business men and women. The board of pensions and relief reported in 1929 a gross income of \$3,369,446 and estimated capital resources of \$22,449,647; \$3,194,114 was paid during the year as annuity to a total of 8498 claim-

ants. The board of temperance, prohibition, and public morals is responsible to the general conference, its purpose being "to make more effective the efforts of the church to create a Christian public sentiment which will relate the experiences of the Gospel of Christ to the economic, political, industrial, and social relations of life" and "to crystallize opposition to all public violations of the moral law and to all attempts to undermine and destroy civil and religious liberties."

The official publications of the church are the *Christian Advocate* (New York); the *Epworth Herald* (Chicago); *Zion's Herald* (Boston); and *Der Christliche Apologete* (Cincinnati). Sectional editions of the *Christian Advocate* include the following: Western (Cincinnati); northwestern (Chicago); central (Kansas City, Mo.); Pacific (Portland, Ore.); California (San Francisco); southern (Cincinnati); and southwestern (New Orleans). The *Pittsburgh Christian Advocate* (Pittsburgh, Pa.) and the *Michigan Christian Advocate* (Detroit) are also official in character. The secretary of the general conference was the Rev. John M. Arters, 700 Hammond Street, Bangor, Me.

METHODIST EPISCOPAL CHURCH, COLORED. This denomination was organized in Jackson, Tenn., in 1870 and was composed of the colored membership of the Methodist Episcopal Church, South. In 1930 it reported 4410 churches with 481,610 members; 3624 traveling preachers and 2104 local preachers; 3190 Sunday schools with an enrollment of 296,350 pupils; and 1809 Epworth Leagues with a membership of 47,201. The amount raised during the year for educational purposes was \$271,520 and about the same for missionary purposes. More than \$1,000,000 was also contributed for home maintenance. The church has 10 bishops and 12 connexional officers. The *Christian Index* is the official organ, while the *Eastern Index* and *Western Index* serve their respective sections. A quadrennial general conference was held in Louisville, Ky., in May, 1930. Headquarters are maintained in Jackson, Tenn.

METHODIST EPISCOPAL CHURCH, SOUTH. A separate branch of the Methodist Episcopal Church formed in 1845 over the question of slavery. Statistics for 1930 showed that there were 54 conferences and missions, of which 41 were in the United States and 13 in foreign countries; 8357 traveling preachers and 4614 local preachers; 2,661,429 members; 17,123 churches which had a valuation of more than \$185,000,000; 6614 parsonages, with a valuation of \$29,355,000; 15,689 Sunday schools, 1,951,218 Sunday-school pupils; 9303 Epworth Leagues, and 253,129 Epworth League members. The contributions for all purposes for 1930 amounted to \$35,775,667. The denomination sponsored 248 educational institutions, including 32 universities and colleges, 21 academies, and 46 mission schools. The important periodicals of the denomination are the *Missionary Voice* and the *Christian Advocate*. The executive body is the College of Bishops which in 1930 had 16 members who hold office for life, subject to superannuation at the general conference nearest the seventy-second birthday. A general conference was held in Dallas, Texas, in May, 1930, at which 472 delegates were entitled to seats. Three new bishops were elected, and provision was made for the retire-

ment of bishops as stated above. The conference authorized the establishment of autonomous churches in Brazil, Korea, and Mexico. A general board of Christian education was established to do the work heretofore done by the board of education, Sunday-school board, and Epworth League board. Headquarters of the church are in Nashville, Tenn.

METHODISTS. **WESLEYAN METHODIST CHURCH.** The principal branch of the Methodist denomination in Great Britain and Ireland, founded at the University of Oxford in 1739 by John and Charles Wesley and holding its first conference in London in 1744. This is the mother church of the denomination and is composed of five divisions: Great Britain; Ireland; Foreign Missions; French Conference; and South African Conference. The church maintains a publishing house at 25-35 City Road, London, E. C., 1. See **METHODIST CONNECTION (OR CHURCH) OF AMERICA, WESLEYAN.**

PRIMITIVE METHODIST CHURCH. Commonly known as the "Camp Meeting Methodists," organized in Staffordshire in 1810. Next to the Wesleyan, this is the most numerous and most democratic of the denominations which have arisen out of the Methodist movement. The church was organized in the United States in 1844 by Hugh Bourne, one of the founders of the movement in England. A publishing house is maintained at Holborn Hall, Clerkenwell Road, London, E. C., 1.

UNITED METHODIST CHURCH. Formed in England in 1907 by the union of three denominations of Methodists which had hitherto been separate from and independent of each other: The Methodist New Connection; the Bible Christians; and the United Methodist Free Church. The church maintains a publishing house at 12 Farrington Avenue, London, E. C., 4.

WESLEYAN REFORM UNION. One of the smaller divisions of the Methodist movement, which separated in 1850 from the Wesleys and organized as a separate body in 1859. Its adherents are to be found mostly in the Midland counties of England.

INDEPENDENT METHODIST CHURCHES. Founded in 1796 in England and united with other societies in 1806. The title was changed twice, but in 1898 the old name was resumed.

AUSTRALASIAN METHODIST CHURCH. Methodism in Australia dates from 1812; the first conference was held in 1855. Publishing houses are maintained in Sidney, Melbourne, Adelaide, Brisbane, and Perth.

Other branches of the denomination include the New Zealand Methodist Church and the Japan Methodist Church. Also see **CANADA, THE UNITED CHURCH OF.**

In Great Britain, a scheme for the reunion of the Wesleyan, the Primitive, and the United Methodist churches, after having been approved by all three conferences and having received Parliamentary sanction, was to be voted on finally at the conferences of 1931.

METROPOLITAN MUSEUM OF ART. See **ART MUSEUMS.**

MEXICAN BOLL WEEVIL; **MEXICAN FRUIT WORM, ETC.** See **ENTOMOLOGY, ECONOMIC.**

MEXICAN FRUIT WORM. See **ENTOMOLOGY, ECONOMIC.**

MEXICAN LABOR. See **IMMIGRATION,** and also the article on **MEXICO** under *History*.

MEXICO. A federal republic lying between the United States and Central America. Capital, Mexico City.

AREA AND POPULATION. The area of the republic, which is divided into 28 states, one Federal district, and three territories, is about 767,198 square miles. The population at the census taken May 15, 1930, was 16,404,030, representing a gain of 2,069,231, or 14.4 per cent since the census of 1921. Females in the population in 1930 outnumbered the males by 273,000. In December, 1928, the Indian population was estimated at 4,179,472, of whom 1,791,000 still conserved their native tongue. Americans residing in Mexico in 1929 totaled 14,607.

The population of Mexico City in 1930 was 968,443 (752,194 in 1921) and that of the Federal District including Mexico City, 1,217,802 (906,063 in 1921). Other leading cities are Guadalajara (143,376 in 1921), Monterrey (88,458), Puebla (95,535), San Luis Potosi (57,353), and Leon (53,639). The population is predominantly Roman Catholic but the Church, under the Constitution of 1917, is separated from the State and strictly regulated.

EDUCATION. According to the census of 1921, 62.29 per cent of the population was illiterate. Primary education is nominally free, compulsory, and secular. An active campaign to reduce illiteracy was carried on in 1930, when 63,800,000 pesos (about \$31,900,000) were spent on education, 40,000,000 pesos being contributed by the Federal Government and the remainder by the States. The total enrollment in State and Federal schools in 1928 was 1,311,000 and in private schools, about 18,000. Students in the three universities, National University of Mexico, University of the Southeast, and the University of Guadalajara, totaled 9379 on July 31, 1928. The attendance at the National University of Mexico in 1929 was 7527.

PRODUCTION. Mexico's agricultural resources have been only partially exploited. In 1930 there were about 30,027,000 acres under cultivation, of which 5,700,000 acres were irrigated. Cultivation was by primitive methods, for the most part. The Don Martin Dam in the State of Nuevo Leon, the largest unit in the development programme inaugurated by the Federal Irrigation Commission in 1926, was completed in March, 1930. It was designed to reclaim 750,000 acres of arid land. Other extensive irrigation projects were under construction. The appropriation for agricultural development in 1930 was 23,000,000 pesos (about \$11,500,000). The policy of agrarian reform adhered to by the Obregon, Calles, Portes Gil, and Ortiz Rubio governments resulted in the distribution of 15,228,904 acres of public and confiscated lands to over 582,000 persons up to Jan. 1, 1930 (see below under *History*).

Production of the chief crops in 1929, with figures for 1928 in parentheses, was: Wheat, 11,333,000 bushels (11,031,000); corn, 60,778,000 bushels (85,542,000); rice, 3,338,000 bushels (4,074,000); beans, 3,789,000 bushels (6,472,000); tomatoes, 95,000 metric tons (89,000); coffee, 84,503,000 pounds (92,562,000); cotton, 112,541,000 pounds (132,884,000); sugar, 394,000,000 pounds (394,000,000); chick-peas, 2,540,000 bushels (2,363,000). Other crops, with the production for 1928, are: Barley, 3,970,000 bushels; tobacco, 25,794,000 pounds; cacao, 3,089,000 pounds; henequen, 139,000 metric tons; bananas, and chicle.

While copper, lead, and zinc production increased in 1929, as compared with 1928, the output of silver and gold was smaller than in the previous year. The output in kilograms, with the percentage of increase or decrease as compared with 1928, was as follows: Copper, 85,553,669 (32.13 per cent increase); lead, 248,400,859 (5.04 per cent increase); zinc, 174,049,687 (7.61 per cent increase); silver, 3,327,038 (7.61 per cent decrease); gold, 20,276 (2.15 per cent decrease).

Petroleum production was 44,689,000 barrels (50,151,000 barrels in 1928). The coal output averages slightly more than 1,000,000 tons annually. Other minerals, with their 1928 output in metric tons, are: Antimony, 3578; arsenic (white), 8669; graphite, 4972; mercury, 87 (83 in 1929). The drastic decline in silver prices in 1930 reduced the value of the Mexican output by more than \$18,000,000. The average price per troy ounce of silver was about 53 cents in 1929 and 34½ cents in 1930. Mexico's water-power resources are estimated at 6,000,000 horse power, of which 300,000 were developed in 1926.

Manufacturing centres in Mexico City and Monterrey and is mainly for local consumption. Textiles, shoes, iron and steel, soap, cement, and tobacco are the chief products. Protection was extended to a number of industries by the tariff imposed toward the end of 1929.

COMMERCE. Imports in 1929 totaled \$191,421,490 (\$178,881,000 in 1928) and exports \$295,317,000 (\$296,222,000 in 1928). Imports increased by \$12,540,311, or 7 per cent, while exports declined by \$905,396, or less than 1 per cent. The United States supplied 69.1 per cent of all imports (67.5 per cent in 1928) and took 60.7 per cent of all exports (68.2 in 1928). The United Kingdom, Germany, and France were the other chief customers and sources of imports. Exports, in order of value, were silver, copper, lead, zinc, petroleum, henequen, coffee, and raw cotton. For the fiscal year ended June 30, 1930, exports to the United States were valued at \$101,648,806 (\$122,808,840 in 1928-29) and imports from the United States totaled \$138,182,647 (\$118,984,885 in 1928-29).

FINANCE. The budget for 1930, as approved by the budget committee of Congress, estimated revenues at 293,806,950 pesos (about \$146,903,400) and expenditures at 293,773,787 pesos (about \$146,886,800), the anticipated surplus being 33,162 pesos. As approved by the Cabinet for submission to Congress, the 1931 budget placed revenues at 309,500,000 pesos and expenditures at 298,500,000 pesos. The expenditure items included 12,500,000 pesos allotted for highways. Increased revenues were expected from increased import duties and higher taxes on gasoline, tobacco, and alcohol. By confirming the President's power to promulgate changes in the rates of import and export duties, the Mexican Congress provided for the easy adjustment of the tariff schedule to meet revenue needs.

The 1931 budget set aside 34,000,000 pesos for the service of the foreign debt (20,000,000 pesos in 1930), while the appropriation for the Department of War and Marine was fixed at 70,000,000 pesos (79,000,000 pesos in 1930).

The fiscal year 1929 ended with a surplus of approximately 24,000,000 pesos (\$12,000,000), according to a report of the Minister of Finance submitted to Congress Sept. 1, 1930. In the budget for 1929, revenues and expenditures were

calculated to balance at about 288,000,000 pesos (1 peso equals \$0.4985 at par). The Government's cash balance on Dec. 31, 1929, was 17,895,235 pesos, as compared with 4,395,644 pesos on the same date in 1928.

Under an agreement signed in New York City July 25, 1930, by the Minister of Finance and Mexico's international creditors, the principal of the direct foreign debt was fixed at \$267,000,000, a reduction of \$7,000,000, and the principal of the debt of the National Railways of Mexico was reduced to \$225,000,000 from \$239,000,000. Substantial reductions in accrued interest were granted also. Previous to the signing of the agreement, the total unpaid on the direct foreign debt was placed at 946,958,808 pesos (about \$473,479,000), of which the principal was 550,470,000 pesos (about \$275,274,000) and the accrued interest, 396,409,476 pesos (about \$198,204,000). On the National Railways debt of about \$239,000,000, the accrued interest amounted to about \$171,988,000.

The agreement provided for the payment of the foreign debt in annuities beginning with \$12,500,000 for the year 1931 and increasing to \$15,000,000 in 1936 and thereafter until 1975. Out of the early annuities the bankers' committee was to reserve some \$11,750,000 for the retirement of overdue obligations with respect to the direct debt, and the balance was to be used to pay interest and amortization on bonds of two series (A and B) to be issued to retire the principal of the outstanding secured and unsecured debt, respectively. Both issues were to constitute a charge on the entire customs revenue of the Government (A bonds having priority) and were to bear interest beginning at 3 per cent and gradually rising to 5 per cent in 1935 for Series A and in 1936 for Series B.

Provision was made for the future reorganization of the railways under new management and the consolidation of the outstanding railway debt by means of a new general mortgage, part of which would be guaranteed by the Government for the purpose of refunding existing bonds bearing a similar guaranty. A prior lien mortgage was to be placed on the railways to finance capital requirements of the company under proper safeguards. Interest on the new railways obligations was to rise gradually from 2½ per cent to 5 per cent, and provision was to be made for the creation of a fund for retirement of the accrued interest on the same terms as for the foreign debt.

It was estimated that the revised foreign debt plus the specific internal debt amounted to about \$350,000,000. In addition, foreign claims for losses suffered during revolutionary disturbances totaled about \$150,000,000 and the agrarian debt, incurred by the expropriation of large estates for distribution to the peons, was estimated at \$750,000,000. A credit of \$15,000,000 was secured from the National City Bank of New York late in the year to stabilize the currency.

COMMUNICATIONS. Of the 12,359 miles of railway line in 1929, about 7460 miles comprised lines of the National Railways of Mexico, a company in which the Government held 52 per cent of the stock (1930). A general reorganization of the National Railways was undertaken in 1930, following the agreement for the resumption of interest payments on the railways debt (see above under *Finance*). Javier Sanchez Mejorada, Minister of Communications, was appointed executive president of the system, the programme for rail-

way expansion was curtailed, and strict retrenchment in expenditures was inaugurated. Improved railway service between Mexico and the United States was inaugurated in 1930, the running time from Mexico City to St. Louis, Mo., being reduced to 61 hours and to New York, to 85 hours.

Highway mileage in use during 1930 was reported at 62,137 miles, of which 994 miles were automobile highways, and the expenditure on road work during the year was about \$5,252,000. Work on a comprehensive highway programme was going forward in 1930. It included a 868-mile road from Matamoros, near the United States border on the Gulf of Mexico, to Mazatlan on the Pacific, which was expected to be completed in three years at a cost of 10,000,000 pesos. Air lines connected Mexico City with the United States and a new line linking Vera Cruz with the countries of Central and South America was inaugurated June 1, 1930.

GOVERNMENT. Under the constitution of 1917, executive power is vested in the President, elected by direct popular vote for four years and ineligible for reelection; legislative power in the Congress consisting of the House of Deputies elected for two years by universal suffrage, and the Senate, comprising two members from each State, elected in the same manner. A permanent committee of 14 Senators and 15 Deputies, appointed by the respective Houses, sits while Congress is in recess. President in 1930, Pascual Ortiz Rubio, who assumed office Feb. 5, 1930.

HISTORY

FOREIGN RELATIONS. Mexican foreign affairs in 1930 were marked by the continuation of amicable relations with the United States, the severance of diplomatic relations with Soviet Russia, a temporary estrangement with Guatemala (see GUATEMALA under *History*), and the resumption of diplomatic relations with Portugal on October 29.

The fruitful three-year term of Dwight W. Morrow, the American Ambassador to Mexico, was terminated September 17 when he left to further his successful candidacy for United States Senator from New Jersey. His outstanding accomplishment was the settlement of the long-standing controversy over Mexico's nationalization of petroleum deposits. He was credited also with playing an important rôle, as a friendly mediator, in the settlement of the struggle between the Church and the State in Mexico. J. Reuben Clark, appointed October 3 to succeed Ambassador Morrow, was a former Under Secretary of State and served also as adviser to Mr. Morrow at Mexico City. President Hoover on August 21 approved recommendations of the Mexican-United States Boundary Commission for the straightening of the course of the Rio Grande from El Paso to Fort Quitman, Texas. Negotiations were opened subsequently for the conclusion of a treaty embodying the recommendations. The commission's plans called for shortening the 154-mile course of the river to about 88 miles at a cost of \$6,000,000, 88 per cent of which would be borne by the United States as the country most benefited by the project. The Mexican Consulate at Laredo, Texas, closed Dec. 17, 1929, was reopened Jan. 17, 1930.

In May, the introduction into the United States Congress of several bills to limit Mexican immigration to the United States aroused widespread protest in Mexico. There were threats of

tariff retaliation, if the bills were enacted, and minor demonstrations by Mexico City students (see *Immigration*). Apprehension at what was described as the increasing passive conquest of Mexico by American interests, ranging from financial control to the denationalization of the Mexican mind by American schools and educational missionary institutions such as the Y. M. C. A., was widely expressed at a meeting of the University Council in Mexico City June 5. An appeal to Catholics to cooperate in stamping out Protestantism in Mexico "not only for religious motives but also for patriotic motives" was made by Archbishop Pascual Díaz of Mexico in his Christmas message for 1930, read in all Catholic Churches.

Another viewpoint was revealed in the recommendation of Gen. Juan Andreu Almazán, Minister of Communications and one of the most powerful military figures in Mexico, that Mexico align itself with the United States in any future war. General Almazán reported to President Ortiz Rubio July 30, after an extended trip in the United States, that such an alliance "is the only way of lessening danger to our own nation and subsequently obtaining advantages ourselves." Two American citizens kidnapped by bandits during the year were released upon payments of small sums of ransom. Federal troops were reported to have wiped out one band of kidnappers.

In January, Mexico suddenly severed diplomatic relations with Soviet Russia as a protest against Communist demonstrations before Mexican embassies in the United States and other countries, which Foreign Minister Genaro Estrada declared were organized with the approval of the Soviet Government. This action was preceded by raids on Communist headquarters in Mexico City, in which numerous arrests were made, including 12 foreign Communists, who were deported. The prisoners were charged with dynamite outrages and with planning to assassinate prominent men, including former President Calles. After hearings extending over a four-year period, the German-Mexican Claims Commission completed its work in 1930. Claims against Mexico aggregated 6,169,080 pesos, while those approved totaled only 508,912 pesos. A move in the direction of membership in the League of Nations was taken by Mexico in the spring of 1930 when Antonio Castro Leal, counselor to the Mexican Embassy in Paris, was appointed official observer at Geneva.

INTERNAL DEVELOPMENTS. Despite a serious depression in agriculture, mining, and business, sporadic banditry, and a quarrel over the governorship of the State of Chihuahua, internal conditions were comparatively peaceful during 1930. The Chihuahua dispute was ended when the Federal Government declared unconstitutional the coup by which Manuel Jesus Estrada was proclaimed Governor on June 25 and confirmed the incumbent, Gov. Francisco Almada, as rightful holder of the post. In a special election held in Chihuahua July 20, the National Revolutionary (Government) candidate defeated his Socialist opponent.

In his inaugural address on Feb. 5, 1930, President Ortiz Rubio pledged his administration to continue the revolutionary programme inaugurated by Obregon and Calles. He stressed his Government's intention to reduce the infant mortality rate, which was nearly 50 per cent of all births, to improve the character and efficiency of

the civil service, and to further education among the masses. The President was shot through the jaw in an attempt to assassinate him a few hours after his inaugural address and was incapacitated for 11 days. The Cabinet announced by President Ortiz Rubio was as follows: Interior, Former President Emilio Portes Gil; Foreign Affairs, Genaro Estrada; War, Joaquin Amaro; Treasury, Luis Montes de Oca; Agriculture, Manuel Perez Trevino; Industry, Commerce, and Labor, Luis León; Education, Aarón Sáenz; Communications and Public Works, Juan Andreu Almazán. Friction over the Government's economic policies led to a Cabinet crisis in October. Luis León, the Secretary of Industry, Commerce, and Labor, resigned October 8 and on the same day former President Portes Gil resigned as head of the National Revolutionary party, the dominant political group organized by former President Calles. Luis León was succeeded by Aarón Sáenz, the Secretary for Education, and Portes Gil by General Lázaro Cárdenas, former Governor of the state of Michoacán. The vacant portfolio of Education was filled December 10 by Dr. José Manuel Puig Casauranc.

The National Revolutionary party insured its control of Congress by a sweeping victory in the elections of July 6. The general voting public showed little interest in the elections, although election day riots resulted in two deaths and the wounding of 14 persons. The National Agrarians, a newly organized opposition party, had been weakened by internal dissensions. The National Revolutionary party enjoyed the official sponsorship of the Government under a decree issued by President Portes Gil on January 26. It provided that the wages of all Government employees for seven days a year should be diverted by the National Treasury into the hands of the party for use in political campaigns, social and charitable work, and the insurance against illness and death of members of the party.

A new Cabinet crisis was threatened in December in connection with attacks upon the debt accord signed in New York by Finance Minister Montes de Oca (see above under *Finance*). President Ortiz Rubio caused a sensation in Government circles by issuing a vigorous statement in defense of the Finance Minister and his debt settlement policy.

THE ECONOMIC CRISIS. The controversy over the debt settlement was the direct outgrowth of the economic crisis which faced Mexico during the year. The drastic decline in prices of bar silver, of which Mexico is the world's largest producer, the consequent unfavorable repercussions on Mexico's silver exchange, the poor harvest of 1929, and low agricultural prices combined to render the world-wide depression especially severe in that country. Various Government schemes for the revival of business activity were rendered ineffective by the necessity for financial retrenchment. On November 22 the Government resorted to tariff increases on a number of imported articles as a means of stimulating Mexican industry. At the same time the duties on imports of mining machinery and cattle were removed. A proposal submitted to the Chamber of Deputies November 29 urged a 10-year moratorium on the foreign indebtedness and the diversion of interest payments to internal development. On December 2, Congress voted to give the President extraordinary financial powers in the employment of public funds to alleviate the crisis.

The number of unemployed men in the country early in 1930 was estimated at about 300,000.

AGRARIAN POLICY. Minister of Labor Luis León announced February 18 that the Government's policy of distributing communal lands would be continued until every agricultural worker had his own plot of ground. He referred, however, to the necessity of facing the agrarian indebtedness. Agrarian bonds issued for expropriated land totaled only \$4,200,000 up to the beginning of 1930, although some 15,000,000 acres had been distributed to about 3000 native villages. Of this land 1,775,000 acres had been expropriated from foreigners, including 465,000 acres owned by American citizens.

Ortiz Rubio's agrarian policy was further developed in two decrees issued April 27 and May 8, respectively. The first authorized the issuance of \$25,000,000 of bonds on the public agrarian debt, bearing 5 per cent interest and redeemable in 20 years. The second provided for the leasing and eventual sale to citizens of land from the public domain, provided they had a capital of \$2500, took the lands on five-year contracts, and agreed not to cultivate plants producing alcoholic drinks. The greater restrictions placed on the wholesale distribution of land indicated a growing realization of the insufficiency of the effort to resuscitate the communal system of land holding. In June, former President Calles, after consultation with leaders of the National Revolutionary party, publicly confessed that the agrarian policy had been to a large degree a failure and demanded its early revision. It was admitted that agricultural production had shown no noticeable increase and that agricultural products were being imported increasingly, while the henequen industry of Yucatan had been virtually ruined. A third decree signed by President Ortiz Rubio on August 12 provided for the apportionment in communal grants to small holders of the government-owned haciendas, or large plantations and ranches. The President announced that all lands expropriated for distribution under his administration would be paid for in cash. For the agrarian debt, see above under *Finance*.

NEW MINING LAW. A new mining law, promulgated by the President August 2, went into effect Oct. 1, 1930. It made the extraction and commercial preparation of mineral substances a public utility, with a *a priori* right to the use of the soil. Exploitation of mineral wealth can be undertaken only under a concession issued by authority of the President. Foreigners may obtain concessions only upon the pledge to observe the provisions of Article 27 of the Constitution.

CHURCH AND STATE. In his message to Congress on September 1, President Ortiz Rubio stated that the conflict between Church and State was not likely to recur so long as the Church obeyed the laws. That the Government intended to enforce the religious laws was indicated by the levying of a \$100 fine on Monsignor Pascual Diaz, Archbishop of Mexico, for having confirmed child prisoners in Belen prison in August in violation of the statute forbidding religious ceremonies outside of churches. The Catholic Cathedral of Mexico was formally reopened August 15, after having been closed since July, 1926. Roman Catholic critics of the settlement reached between the Church and the State in 1929 were warned on September 22 by the Apostolic Delegate to Mexico, Archbishop Leopoldo Ruiz y Flores, that he could not "permit discussion (of the settlement)

by people holding such views, for now is not the time to discuss but to obey, and I cannot recognize any right to demand of me an account of my official actions." It was reported in September that the Government had started legal proceedings to nationalize all property of the Methodist Episcopal Church in Mexico. In anticipation of this action, the Methodist congregations of Mexico were organized as a national church by the parent organization in the United States. For archaeological studies, see *ANTHROPOLOGY*.

MEYER, EDUARD. A German historian and educator, died in Berlin, Aug. 31, 1930. He was born in Hamburg Jan. 25, 1855, and attended the Universities of Bonn and Leipzig, receiving the Ph.D. degree from the latter institution in 1875. He was appointed professor of ancient history at the University of Leipzig in 1884, at Breslau in 1885, at Halle in 1889, and at Berlin in 1902. In 1909 he was German exchange professor at Harvard University, and during 1919-20 served as rector of the University of Berlin. Honorary degrees were conferred on him by Oxford, St. Andrews, Freiburg, and Chicago Universities. He was also a member of academies of art and science in Berlin, Amsterdam, Copenhagen, and Munich, and in 1910 received the University of Berlin's Gold Medal for Knowledge. His works include: *Geschichte von Troas* (1877); *Geschichte des Altertums* (5 vols., 1884-1902); *Geschichte des alten Aegyptens* (1887); *Forschungen zur alten Geschichte* (2 vols., 1892-1899); *Untersuchungen zur Geschichte der Gracchen* (1894); *Wirtschaftliche Entwicklung des Altertums* (1895); *Die Israeliten und ihre Nachbarstämme* (1906); *Aegypten zur Zeit der Pyramiden* (1908); *Ursprung und Geschichte der Mormonen* (1912); *Reich und Kultur der Chetiter* (1914); *Caesars Monarchie und das Principat des Pompejus* (1919); *Preussen und Athen* (1919); *Ursprung und Anfänge des Christentums* (2 vols., 1920-22); and *Hellenismus in Asien* (1925). Professor Meyer was also the author of several books in which he attempted to justify Germany's attitude during the World War.

MIAMI UNIVERSITY. A coeducational institution in Oxford, Ohio; founded in 1809. The enrollment for the autumn of 1930 was 2215, distributed as follows: College of liberal arts, 727, school of education (four-year course), 722 (two-year course), 217; business administration, 408; fine arts, 84. The enrollment in two summer sessions was 1075. The faculty numbered 167, of whom 17 were new appointees. The income from the State of Ohio for maintenance and from gifts, fees, and income on investments for 1930-31 was \$1,331,042. There were 118,000 bound volumes in the library. During 1930 a new chemistry building and a physical education building and gymnasium, costing in all approximately \$600,000, were under construction, the funds being appropriated by the Ohio Legislature. The Oxford College Loan Fund (for women) was increased during the year from \$8000 to \$14,000. The historic Rogers mansion, facing the campus, was presented to the university as a guest house by John R. Simpson, a prominent New York alumnus. President, Alfred H. Upham, Ph.D.

MICHIGAN. POPULATION. According to the Fifteenth Census, the population of the State on Apr. 1, 1930, was 4,842,325. The population on Jan. 1, 1920, was 3,668,412, according to the Fourteenth Census. The capital is Lansing.

AGRICULTURE. The following table gives the

acreage, production, and value of the principal farm crops during the years 1929 and 1930:

| Crop | Year | Acreage | Prod. Bu. | Value |
|---------------|------|-----------|------------|--------------|
| Hay | 1930 | 2,876,000 | 3,800,000* | \$58,802,000 |
| | 1929 | 8,029,000 | 5,085,000* | 54,207,000 |
| Corn | 1930 | 1,384,000 | 28,372,000 | 21,846,000 |
| | 1929 | 1,844,000 | 32,928,000 | 29,808,000 |
| Oats | 1930 | 1,482,000 | 56,316,000 | 19,147,000 |
| | 1929 | 1,372,000 | 40,886,000 | 19,625,000 |
| Wheat | 1930 | 824,000 | 19,336,000 | 14,118,000 |
| | 1929 | 904,000 | 16,810,000 | 18,994,000 |
| Dry beans .. | 1930 | 819,000 | 4,832,000 | 12,563,000 |
| | 1929 | 694,000 | 5,691,000 | 21,057,000 |
| Potatoes ... | 1930 | 263,000 | 15,254,000 | 12,966,000 |
| | 1929 | 263,000 | 19,725,000 | 24,656,000 |
| Sugar beets . | 1930 | 85,000 | 559,000* | ..... |
| | 1929 | 52,000 | 300,000* | 2,881,000 |
| Barley | 1930 | 245,000 | 7,350,000 | 4,042,000 |
| | 1929 | 243,000 | 5,589,000 | 3,856,000 |
| Rye | 1930 | 171,000 | 2,565,000 | 1,411,000 |
| | 1929 | 166,000 | 2,241,000 | 1,972,000 |

* Tons.

Farms in the State numbered 169,915 in 1930, the total having fallen considerably from 192,327 for 1925 and 196,447 for 1920.

MINERAL PRODUCTION. Second only to Minnesota in the mining of iron ore, Michigan was increasingly active in this industry, producing 16,838,568 long tons in 1929, in contrast to 14,241,102 in 1928. The value of the year's product rose to \$47,597,976 for 1929, from \$37,039,644 for 1928. The ore was, as usual, chiefly shipped outside the State. The local iron industry, however, more than held its own. Though producing little coal (804,869 net tons in 1929, as against 617,632 in 1928, or, in value, \$2,904,000 for 1929 and \$2,631,000 in 1928), the State was a fairly large producer of coke, its byproduct ovens furnishing 2,679,971 short tons in 1929, and 2,399,656 in 1928. These quantities were valued at \$14,867,651 for 1929 and \$13,461,466 for 1928. Coke, in turn, went into the blast furnaces, which produced, in 1929, 841,089 long tons of pig iron, as against 797,766 in 1928; in value, \$14,099,467 for 1929 and \$15,157,535 for 1928. The product of the copper mines was large in 1929, attaining 186,402,218 pounds, as against 178,442,704 in 1928; the value of copper mined was \$32,806,790 for 1929, and \$25,695,749 for 1928. The cement mills shipped 13,325,727 barrels of cement in 1929; in 1928, 14,044,230. The value of the shipments was, for 1929, \$18,916,711; for 1928, \$19,268,707. Foremost State in the salt industry, Michigan produced, in 1929, 2,650,220 short tons of salt, an increase over the 2,405,240 short tons of 1928. By value the product was \$8,343,670 for 1929 and \$8,249,437 for 1928. The value of clay products was \$6,310,586 for 1928 (for 1927, \$6,772,283). Gypsum yielded, in 1928, 677,108 short tons, in value, \$3,159,369 (in 1927, 668,617 short tons, in value \$4,216,524). A heavy and increasing production of stone, chiefly of low grades, attained 12,472,600 short tons, valued at \$7,588,840, for 1928. The value of all the native mineral products of the State totaled, for 1928, \$123,535,869; for 1927, \$124,029,572.

TRANSPORTATION. The total number of miles of railroad line under operation on Jan. 1, 1930, was 8155.35. There were built, in 1930, 5.62 miles of first, and 3.90 of second track.

EDUCATION. The movement toward the equalization of educational facilities in the several localities of the State made further advance in 1930; the State educational survey commission conducted a study of elementary and secondary schools throughout Michigan. It was expected by

State Superintendent of Public Instruction Pearce, writing in the *Journal* of the National Education Association, to use its findings as the basis of a recommendation to the legislative session of 1931 that it establish a programme of minimum education and adjust the resulting cost to the means of poor localities by State aid. Plans for revising the system of teachers' retirement were under consideration of a commission appointed by the Legislature. They had to do particularly with the correction of the unsatisfactory condition of the teachers' retirement fund. For the year ended June 30, 1929, the school-age population of the State was reckoned to be 1,337,018 persons from 5 to 19 years old. The number of those enrolled as pupils in the public schools was 942,615 net of duplications. Of the enrolled, 818,560 were in the elementary and 157,481 in the high-school grades. The net expenditure for education in the public schools, for the year, was \$91,827,140. The monthly salaries of teachers averaged, for men, \$220; for women, \$160.

CHARITIES AND CORRECTIONS. The State Welfare Department, as functioning in 1930, comprised five commissions, those respectively of welfare, prisons, hospitals, corrections, and the State institutions for the education of special classes. These commissions, consisting of from five to seven appointive members each, performed the central duties of administration or control in their respective fields. The department itself had as its administrative head a director. Under the State Hospital Commission were the following State mental hospitals, as named with their populations of October, 1930; Kalamazoo State Hospital, 2591; Pontiac State Hospital, 1728; Traverse City State Hospital, 2092; Newberry State Hospital, 1149; Ionia State Hospital, 691; also the Farm Colony for Epileptics, Wahjamega, 803. Under the State Prison Commission were the State Prison, Jackson, 5201; Michigan Reformatory, Ionia, 1846; Branch Prison, Marquette, 931. The Corrections Commission had charge of the Girls' Training School, Adrian, 300; and the Boys' Vocational School, Lansing, 698. The State Institute Commission controlled the Michigan School for the Deaf, Flint, 407; Michigan School for the Blind, Lansing, 149; Employment Institution for the Blind, Saginaw, 64; and State Public School, Coldwater, 383. Another State institution, the Michigan Home and Training School, had a population of 3029.

POLITICAL AND OTHER EVENTS. There was initiated by petition, prompted by a movement in Detroit, a proposed constitutional amendment for the reappointment of representation in the State. The petition was filed in June and carried about 172,000 names. It called for the submission of the proposal to popular vote at the election in November, should it be found to carry at least 135,000 legal signatures. The boring of the \$25,000,000 international tunnel under the Detroit River was carried through on June 1, the two bores of the 35-foot tunnel being successfully joined.

The State administration in the effort to establish a State broadcasting station for news to police brought about a clash with the Federal Radio Commission. When the Commission failed to issue a license for the station Governor Green announced in March that the State would go ahead and build its station without a license. Abandoning its plans to seek legal means to

prevent him, the Commission issued the license on May 8. The case was regarded as bearing on the issue of States' rights in respect to police operations. Of the life sentences that had been imposed on traffickers in liquor and its possessors under the State's "life-for-a-pint" law, Governor Green on January 15 commuted five, to terms of from seven and one-half to fifteen years. An analysis of the results of the first year of the Michigan tax on malt, published by the Secretary of State, was reported as indicating that enough malt had been sold in the year to provide 97½ pints of beer for every inhabitant of the State.

In Detroit there was much unemployment by reason of the reduced activity of the automobile factories and particularly because of shutdowns of two weeks or more in July, affecting about 160,000 workers. Mayor Murphy summoned an unemployment conference, which organized efforts among merchants and others to provide work. Warning was issued at the outset of October that persons without means of support coming to Detroit would be turned back by specially posted police or, if they succeeded in entering, would be expelled. As early as March there appeared considerable unrest, and Detroit was one of the American cities in which were held Communist demonstrations. A gathering of 75,000 persons, by estimate, was dispersed on March 6 by mounted police, with some casualties but no fatalities. A proposal to amend the city charter with regard to provisions affecting the debt limit was put to a popular vote in a special election on September 9 and defeated.

The Common Council granted permission on February 6 for the private construction of an elevated high-speed highway for automobiles, 28 miles in length, along the Detroit River, subject to ratification by popular vote. The project was connected with plans of the Grand Trunk Railroad for a \$100,000,000 development of rapid transit and commuter traffic.

Dissatisfaction with the Mayor's attitude toward the prevalence of lawlessness in Detroit and with his strife with Police Commissioner Harold H. Emmons led to the presentation of a petition on June 19 for Mayor Charles Bowles's recall. The petition, carrying 111,270 names, necessitated a popular vote on the proposed recall. Mayor Bowles sought to delay or stop the taking of the popular vote by resort to the courts, but failed. The vote was cast on July 22 and gave a majority of 30,956 for recall, out of a total vote of 210,770. On the following day a radio announcer, Gerald E. Buckley, who had been active in the campaign against the Mayor, was shot to death by unidentified criminals, his assassination being the eleventh recorded in the city in 19 days. F. Murphy was elected Mayor in September.

The tunnel for vehicular traffic under the Detroit River between Windsor, Ont., and Detroit was finished, and was opened on November 23.

ELECTIONS. The vote of the State remained pre-eminently Republican on November 4. For Governor, Wilber M. Brucker, Republican, defeated William A. Comstock, Democrat, by 426,139 votes, as unofficially totaled, to 316,295. For U. S. Senator, James Couzens was reelected, over his Democratic opponent, Thomas E. Weadock, by 520,247 votes (unofficial) to 139,814. Republicans obtained all 13 seats in the House of Representatives and majorities in the State Legislature. A measure to impose a cigarette tax in order to

allow of lessening the tax on real estate was defeated in a referendum vote. Constitutional amending proposals to let the State participate in river and harbor improvements, to increase homestead exemption and to give populous counties more Legislative representation were also defeated. An amendment to render township officers elective was approved.

OFFICERS. Governor, Fred W. Green; Lieutenant-Governor, Luren D. Dickinson; Secretary of State, John S. Haggerty; Treasurer, Frank D. McKay; Auditor, Oramel B. Fuller; Attorney-General, Wilber M. Brucker; Superintendent of Public Instruction, Webster H. Pearce.

JUDICIARY. Supreme Court: Chief Justice, Howard Wiest; Associate Justices, Louis H. Fead, Nelson Sharpe, William W. Potter, John S. McDonald, George M. Clark, Henry M. Butzel, Walter H. North.

MICHIGAN, LAKE. See SEWERAGE AND SEWAGE TREATMENT.

MICHIGAN, UNIVERSITY OF. A State institution for the higher education of men and women in Ann Arbor; founded in 1817. In 1929-30 the enrollment was 15,154, of whom approximately 36 per cent were women; 66 per cent were inhabitants of the State of Michigan, and the remaining 34 per cent, with the exception of 368 foreign students, were from all parts of the United States. Of the net total enrollment in the regular session for 1929-30 and the 1929 summer session, 5304 were in the college of literature, science, and arts; 1560 in the college of engineering; 384 in the college of architecture; 797 in the medical school; 122 in the school of business administration; 233 in the university hospital school of nurses; 652 in the law school; 104 in the college of pharmacy; 328 in the school of dentistry; 864 in the school of education; 44 in the school of forestry and conservation; and 2321 in the graduate school. The registration in the 1930 summer session was 3095. The teaching staff was composed of 861 members, including 57 members of the summer session staff not at the university during the regular year.

For current expenses, the State appropriated \$4,925,000, while approximately \$4,000,000 was derived from other sources. During 1930 an elementary model school and the John P. Cook Building, a dormitory for law students, were completed, and the William W. Cook Legal Research Library was under construction. The most important gift of the year was that of William W. Cook (q.v.), an alumnus of New York City who bequeathed to the university for the development of its law school practically his entire estate, amounting to approximately \$12,000,000. In addition, he left certain trust funds for the completion of the Legal Research Library and for the erection of a law school building. These buildings were to complete the Law Quadrangle, the other parts of which (the Lawyers' Club, refectory, and extensive dormitories) had been erected by Mr. Cook during his lifetime. The university libraries contained 775,516 volumes. President, Alexander Grant Ruthven, Ph.D.

MICROBIOLOGY. See SOILS.

MIDDLEBURY COLLEGE. A coeducational, nonsectarian college in Middlebury, Vt.; founded in 1800. For the autumn term of 1930, 625 students were registered as undergraduates and 15 as graduates; of these 352 were men and 273 women. The enrollment in the special summer

schools of French, Spanish, and English, conducted by the college, amounted to 558. There were 61 members on the faculty, including administrative officers and those on leave of absence. The productive funds of the college in 1929-30 amounted to \$4,244,818, and the income for the year was \$339,019. Gifts to the college amounted to \$51,209. The library contained 60,000 volumes. President, Paul D. Moody, D.D.

MILBURN, JOHN GEORGE. An American lawyer, died in London, England, Aug. 11, 1930. He was born near Sunderland, Durham, England, Dec. 13, 1851, and came to the United States when 18 years old. After studying law in the offices of Wakeman and Watson in Batavia, N. Y., he was admitted to the bar in 1874 and practiced privately in Buffalo for several years. In 1879 he became a member of the firm of Sprague, Milburn and Sprague in Buffalo, and in 1883 of Rogers, Locke and Milburn. He was president of the Pan-American Exposition held in Buffalo in 1901, and it was to his home that President McKinley was removed after the fatal assault on his life and died. In 1904 he removed to New York City, becoming a member of the firm of Carter, Ledyard and Milburn with whom he was associated at the time of his death. He was counsel for many important organizations and institutions, including the New York Stock Exchange, and was a member of the Board of Commissioners of Statutory Consolidation, which consolidated all the general statutes of New York State from 1777. He was also president of the New York State Bar Association during 1902-04 and of the Association of the Bar of the City of New York during 1919-21. The LL.D. degree was conferred on him by Princeton and Alired Universities.

MILITARY PROGRESS. World forces during the year were at work along paths that lead nowhere, or to war, which is the same thing. Surveying the countries of the globe in 1930 there were heard rumors of war; war antagonisms still continued unabated, and preparations for war were going on apace. Nations, like individuals, cannot refrain from encounters if things go wrong or an advantage is to be gained.

The Preparatory Disarmament Commission of the League of Nations, after five years of effort finally drafted a framework of a treaty for limitation of the world's land, sea, and air armaments. Probably by 1932 there would be convoked the first conference of its kind in the history of mankind. Most of the Geneva delegates in their final speeches stressed the need for the peoples of the world to act and give their answer. They must bring pressure to bear on their governments and never forget the grave dangers if the disarmament movement fails. Not all hopes were realized. Russia dwelt upon the Commission's refusal to limit trained reserves, or the amount of army weapons, to abolish tanks, and ban air bombing or the manufacture of poison gas. See **DISARMAMENT**.

The Commission had previously met six times without accomplishing anything, and since its inauguration the military budgets of the five greatest powers had increased 27 per cent. There were in Europe in 1930 many more men under arms than there were in 1914. In fact there were not a few of the opinion that, barring accident or miracle, another European war was near at hand.

Walter Duranty's wireless despatches from Russia to *The New York Times* Nov. 8, 1930,

stated that the most interesting feature of the Russian military parade at the Soviet Anniversary Celebration in Red Square, apart from the equipment and discipline of troops, which improved steadily from year to year, was the evidence of the progressive mechanization of the Red Army, and the possession of an admirable outfit of searchlights, radios, airplane detectors, and anti-aircraft guns, all drawn by tractors, and a large number of light tanks, armored cars, automobile and motorcycle machine guns and light artillery. "There were hundreds of motor lorries full of troops, but no heavy artillery, mechanized or not . . . small combat biplanes and a gigantic four-motored monoplane bomber flew back and forth, and in excellent formation one group of five planes performed regular battle stunts at a daringly low altitude." One who had seen a good deal of armies during the World War, and since, said Soviet Russia ranked with the United States as a first-class military power, not perhaps for offensive purposes or trench fighting but for self-defense in conditions of open warfare on the vast Russian plains.

The German propaganda at home and abroad to force a disarmament pact or an alteration of post-war conditions curtailing German armaments was considerably heightened by the statement of Minister of Defense Groener to the effect that the nation was surrounded by neighbors who were

far better equipped for war than they were in 1914.

Peace is endangered while disarmament is limited to one country, which is defenceless and exposed to every hostile attack . . . the German army of 100,000 in the west (French border) faces the French and Belgian armies of 740,000 active troops. Of these 157,000 are officers and non-commissioned officers. In addition, on the east are 450,000 Poles and Czechoslovaks. Moreover, our neighbors can place 8,000,000 trained reserves in the field. . . . How can Germany threaten French security when Germany is able to place only 288 pieces of field artillery against France's 2700 pieces of light and heavy artillery? . . . What good are Germany's cardboard tanks against France's 2000 real tanks? . . . France's outlay for fortifications exceeded Germany's entire military budget. . . . (*Herald Tribune*, Nov. 29, 1930.)

Furthermore a word seems opportune on the most difficult problem confronting Great Britain in the solution of her Indian question, the control of the army. The security of India within her borders, and her protection from invasion from without, has been insured by an army consisting roughly of 60,000 British and 150,000 Indian troops, the latter commanded by British officers. What is not generally realized is the extent to which the troops composing the Indian Army are drawn from a limited number of the more martial Indian fighting races. The 54,000,000 people of Bengal and Assam did not contribute a single soldier to the regular army. On the other hand the virile races of the Punjab supplied 86,000 out of the total, while the next largest contribution—19,000,—was made by Nepal, an independent state and not part of British India at all. The fighting Moslem of the Punjab had less than no respect for the high-caste Hindu of Madras, where the 40,000,000 population contributed but 4000 combatants to the Indian Army.

The Simon Commission in its report of 1930 emphasized what could not be controverted that "the presence of British troops and the leadership of British officers secure that the fighting regiments of India . . . shall not be a menace to the millions who are conducting their civil occupations without any thought of the consequences

which might ensue if British troops were withdrawn and the Indian army consisted of nothing but representatives of the Indian fighting races." The Marquess of Zetland in the article in *Foreign Affairs* (October, 1930) went on to say:

The experiment which has already begun of training up Indians to hold commissioned rank in the Indian army must continue; but years must elapse before a body of Indian officers capable of commanding even a portion of the Indian army can come into existence . . . the army as at present constituted cannot possibly be placed under the control of an Indian legislature . . . and the Simon Commission suggests that henceforth the defence of India should be accepted not as a purely Indian interest but as an imperial obligation and that the army, both British and Indian, should be controlled by the Viceroy—not as head of the Government of India, but as the agent of the Imperial Government, acting of course in consultation with the Commander-in-Chief, who shall cease to be a member of the Indian Government. Such in brief is the experiment which is in progress in India and such are the lines along which it should proceed.

GENERAL. There was really no such thing in 1930 as "Air Control," if by the term is meant the substitution of air power for land defense forces. Control which air forces could exercise without land troops and armored vehicles is ineffective anywhere. It is impossible to control a disorderly population solely from the air. The ultimate safety of any region must depend on the presence there of an adequate ground force.

The approximate percentages of increase and decrease in air expenditures for 1930 as compared with 1925 was as follows: Great Britain—2 per cent; United States—plus 140 per cent; France—plus 114 per cent; Italy—plus 31 per cent.

SERVICE AIRCRAFT OF THE POWERS

| | <i>First line</i> | <i>Reserve</i> | <i>Total</i> |
|---------------------|-------------------|----------------|--------------|
| France | 1,730 | 3,000 | 4,730 |
| United States | 1,463 | 350 | 1,823 |
| Italy | 840 | 800 | 1,640 |
| Great Britain | 772 | 520 | 1,292 |
| Japan | 572 | unknown | 572 |

The Under Secretary of State for Air gave these figures for the first line: France, 1300; Italy, 1100; United States, 900; Great Britain, 772.

GREAT BRITAIN. The importance of the closest coöperation among the Army, Navy, and Air Force not only in war but also in training in time of peace was deemed necessary (*The Army Quarterly*, vol. xx, No. 2, July, 1930). The first few years after the Armistice there was a marked tendency to attach undue importance to the exaggerated claims made by the Air Power. The passage of time, however, has brought with it closer acquaintance with aircraft, their capabilities, and their limitations, and great increase in efficiency in anti-aircraft gun shooting since the war has had a steady effect upon military opinion. At the end of the World War some thousands of rounds had to be fired to bring down one airplane. In 1930 that could be accomplished in about one hundred rounds. And this from guns of semi-mobile nature.

The defense of the ports could not be entrusted to the Air Force or any one service. It was to be successfully accomplished with the help and close coöperation of all three services. The commander of the land force is the most suitable person to command the defenses of a port. There was no indication yet that the time was approaching when guns could be dispensed with in defense of ports. Therefore they should be manned by the army.

The necessity of speeding up communication by signals and sound detectors to give as early warning as possible of air craft was evident. Also the importance of arranging for rapid dissemination of intelligence and for the control of the civil population in ports in time of war was stressed.

The 1930 estimates for Army and Air Force showed a slight reduction for the former and a slight increase for the latter. The total expenditure indicated a determination to reduce defense forces to a minimum. For 1930 the effective charges were £32,119,870; non-effective charges £8,383,300. War terminal charges were £40,500,000, a reduction of £605,000.

The strength of the Army, inclusive of troops in India, was approximately 10,000 below establishment and almost entirely in the infantry of the line.

The net total of the Air Force estimates (£17,850,000) showed an increase of £890,000. The existing units of Home Defense Force were consolidated, with one non-regular squadron alone added. The air strength was 70 regular squadrons (including equivalent of 12 squadrons in Fleet Air Force and 12 non-regular squadrons). There were in service in the first line 772 planes, and in reserve 520, a total of 1292.

The War Office withdrew support of the Cadet Corps of Great Britain, notwithstanding the testimony of men of various types that the training given in the corps to many thousands of its future citizens was primarily moral in character. The policy of the government was that it was not desirable for boys between the ages of 12 and 16 to receive military training.

The steps taken to bring the Army up to date, partly as the result of the lessons learned in the various theatres of the World War and partly by the application of modern mechanical and scientific development, show that the reorganization of the Staff was required to place and maintain a force in the field. The effect of mechanization was most noticeable in the composition of the staff of the Army. The Master General of the Ordnance became represented in the field. The Director of Ordnance Services, under the M.G.O., was concerned with the repair and maintenance of all vehicles other than the R.A.S.C. vehicles and with the supply of ammunition and stores of a technical nature.

There were also two new directorates, under the Director of Artillery and Director of Mechanization respectively, both of whom were technical officers only and not represented below G.H.Q. The Director of Works was represented in the branch of the D.Q.M.G. in the field and had under him a Director of Works and a Director of Stores. At Corps Headquarters the artillery became represented by two officers, one responsible for the corps artillery, survey, and counter-battery work, the other dealing with medium and heavy artillery.

As for the cavalry one regiment was allotted to each division for local patrol and reconnaissance work. A division was the largest self-contained unit of cavalry, consisting of two brigades and ancillary services, together with a cavalry armored car regiment. The cavalry regiment consisted of two sabre squadrons and one machine-gun squadron. The Hotchkiss gun having been discarded the regiment had only a few Lewis guns for anti-aircraft work. All cavalry first-line transport became mechanized. The field squadron and cavalry field ambulance were also unchanged

and to the mobile veterinary section was added a motor horse ambulance. For all this a cavalry divisional ordnance workshop was added.

ARTILLERY. Medium and army field brigades were in process of mechanization on the basis of six-gun batteries, the proportion of howitzers to guns being unchanged. Divisional artillery was to remain horse-drawn. Brigade and divisional ammunition columns were abolished and replaced by ammunition companies and divisional maintenance companies. The ammunition portion of the divisional maintenance companies were planned to consist of four sections, three of which carry ammunition and serve the three artillery brigades, while the fourth carries small arms and light artillery ammunition.

The tendency was to work more and more through specialists, and it was accepted that, if the problem was to transport certain goods from one place to another, it was the nature of the operation rather than the nature of the cargo that should decide which branch of the Service should carry out the removal.

ENGINEERS. In the Royal Engineers field organization the field squadrons were left unchanged and the field companies remained horsed. There were three field companies to a division but a new unit, a field park company, was added to each division. This unit was to be equipped with certain plant and labor-saving gear and would be concerned with camp construction, divisional workshops, and the like.

INFANTRY. With infantry the division was to be the largest self-contained unit, consisting of three brigades with other arms added when needed. Infantry brigade headquarters was partly mechanized and the infantry battalion was to consist of a headquarters wing, three rifle companies, one machine-gun company with guns carried in horse-drawn limbered wagons. Increased fire power was being supplied the infantryman by the new machine-gun organization with battalions, and mobility developed by lorry movement, both strategic and tactical. The infantryman must be able to fight immediately on arrival at his destination and with this in view all modern research and development were being directed.

CANADA. The term "Militia" means all the military forces in Canada. The militia is active and reserve, the active, consisting of such corps as are from time to time named by the Governor in Council, the reserve, unorganized, being provided by all the remaining male inhabitants of Canada between 18 and 60 years, physically fit and not legally exempt. Active militia comprises the Permanent Force, whose personnel are enrolled for continuous service and whose main duty is instruction. Under the National Defense Act of 1922 the fighting forces were consolidated under a Department of National Defense; and the country divided into eleven military districts commanded by a major-general or brigadier-general with adequate staff.

The distribution of troops of the active militia in each district depends on the density of population, effect of topography and the civil occupations of the inhabitants. The Prairie Provinces of Manitoba, Saskatchewan, and Alberta, for instance, are comparatively strong in Mounted Militia units and weak in infantry. In the peace organizations the active militia units follow British establishments as far as local conditions permit and on mobilization British war establishments come into force. Of the 120 infantry

regiments of the Canadian Non-Permanent Militia 64 were either allied or arranging alliances with British regiments, thus increasing effectiveness in imperial relationships.

ACTIVE MILITIA OF CANADA

| <i>Permanent</i> | <i>Non-permanent</i> |
|--|--|
| Cavalry: 2 Regiments | Cavalry: 85 Regiments and mounted rifles |
| Artillery: 3 Battalions (horse) 1 Medium battery 4 Heavy batteries | Artillery: 76 Field batteries 13 Medium batteries 11 Heavy batteries 3 Anti-aircraft sections |
| Engineers: 13 Detachments | Engineers: 11 Div'l engineers 11 Div'l signals Officers' Training Corps: 22 Univ. contingents |
| Signal Corps. | Infantry: 120 Regiments Machine-gun Corps: 2 Motor M. G. brigades 1 M. G. squadron 12 M. G. battalions |
| Infantry: 3 Regiments | Army Service Corps: 12 Div'l trains |
| Army Service Corps: 4 Depots 8 Detachments | Army Medical Corps: 11 Casualty clearing stations 27 Field ambulances 7 Cav. ambulances 11 Hygiene sections |
| Army Medical Corps: 12 Detachments | Army Dental Corps: 11 Detachments |
| Army Ordnance Corps: 12 Detachments | Army Ordnance: 11 Detachments |
| Army Vet. Corps: 5 Detachments | Army Vet. Corps: General list of officers |
| Army Pay Corps: 12 Detachments | Postal Corps: 12 Detachments |
| Staff Clerks: 12 Detachments | Cadet Services: General list of officers |
| Small Arms School: A, B, O Wings | Chaplain Services: General list of officers |

AUSTRALIA. The new conditions of service provided for enlistment between 18 and 40 years for a full period of three years and subsequent reënlistment for one year, the age for retirement of non-commissioned officers and men being 48 years. Annual period of training was to consist of 16 days, 8 days home training in whole days, half days, and night parades, and 8 days continuous training in camp supplemented by courses, schools, and classes. The pay was four shillings per day for privates. Senior Cadet Corps were being continued under the Voluntary System; in one case as regimental detachments with the Citizen Forces (in this Cadets must be 16 years of age and must leave on reaching 18 years); in the other case of pupils over 14 years in the care of detachments at educational establishments. The annual training for Cadets consists of a minimum of 60 hours duration made up of a whole day, one-half day, night parades, but no camp.

The distribution of troops was as follows:

1st Cavalry Division, consisting of 2nd and 4th Cavalry Brigades in New South Wales and 1st Cavalry Brigade, Queensland;
2nd Cavalry Division, consisting of 3rd and 5th Brigades in Victoria;
1st Infantry Division, consisting of the 1st and 8th Infantry Brigade in New South Wales and 7th Infantry Brigade in Queensland;
2nd Infantry Division, consisting of 5th, 9th, and 14th Brigade in New South Wales;
3rd Infantry Division, of the 4th, 10th, and 15th Brigade in Victoria;
4th Infantry Brigade, consisting of 2nd and 6th Brigade also in Victoria;
Field Troops, 4th Military District, of the 6th Cavalry Brigade and 3rd Infantry Brigade in South Australia;
5th Infantry Division, Queensland; 11th Infantry Brigade in Brisbane;
12th Mixed Brigade in Tasmania and Western Australia.

There were six district bases.

FRANCE. It was apparent that French military thought was not passing lightly the remarks of General Von Seeckt in August—"The retention of a certain minimum armament is generally recognized," therefore, "as necessary and the amount to be retained will depend less on the relative size of the populations concerned than on their sense of insecurity and their natural desire for national self-preservation." . . . and "A country naturally seeks to satisfy its desires for security by making full use of its resources, and, in estimating the amount of protection it needs, it cannot be expected to listen to views dictated from outside." His ideas were not by any means to underrate the importance of numbers, but he insisted that the object of modern strategy should be to strike a decisive blow by the use of a mobile and highly trained force without setting in motion mass armies.

French military experts were considerably exercised as to the best method of meeting the kind of attack that might be directed against their country by the type of professional soldier contemplated by the German general.

The French army was in process of reorganization, and the question to be decided was whether a highly trained professional army or a national army raised by the ordinary methods of conscription would best serve the interests of France. According to the *Times* correspondent the French army in 1930 consisted of 108,000 long-service professional soldiers, and an annual class (numbering approximately 240,000 men) called up in half-yearly contingents for one year's intensive military training. In addition to these troops France had also a large number of trained reserves and her Colonial forces. In the event of war her entire male population was liable for service either civil or military. The security of her frontiers was based upon a chain of fortifications on which endless thought and money were being spent. On the whole, it seemed likely that the French would rest content with the professional nucleus that already existed in their army, and would not abandon the form of national service to which they were accustomed. (*Army Quarterly*, October, 1930.) See FRANCE under *Army and History*.

MEXICO. Army estimates for 1931 showed the greatest reduction of any government department, the figures being the lowest on record due undoubtedly to the elimination of eight cavalry regiments. The army of the line included 382 generals, 31 of them holding the highest rank, that of divisional general. There were 119 generals of brigade, 232 brigadiers, and about 500 colonels. The effectives were reduced to 61,394 officers and men, including more than 2000 reserves.

ITALY. Two important changes in the military organization of Italy were made. One made compulsory service for all men between the ages of 18 and 20 and, frequent courses in pre-military training which were to be established by the Fascist militia in every municipality in Italy. Another, while confirming that the normal period of compulsory military service was eighteen months, reduced that service to twelve, six, and three months for special categories of young men with particular reference to whether they had gone through the whole course of pre-military training. The object of the two changes was mainly military, with the idea of furnishing the army with recruits who already had acquired the rudiments of military training; their effect would be financial. The pre-military training was to be imparted on holidays, those taking the courses were to receive no pay, or be housed, or fed. All young men, on reaching the age of 18 must attend courses on holidays, which of course means Sundays, under pain of a fine of from \$2 to \$25. Those living more than six miles from the seat of a municipality would be exempt. Three privileged classes were to be formed corresponding to the three, six, or twelve months' course. The choice of Sunday training of Italian youths was obviously made so as not to interfere with the young men's week-day activities.

UNITED STATES. The retiring Chief of Staff, Gen. Charles P. Summerall, in his last report to the Secretary of War, declared the strength of the army is "entirely inadequate" to serve as "an agency for facilitating a general mobilization." The past decade "has seen no reduction in the mobilization forces of foreign nations in trained troops," while "the number of men under arms throughout the world is greater than at any previous epoch in the peaceful history of mankind."

Since 1921, he stated, the strength of the army had been reduced from 280,000 to 118,750 and added—"When from this strength there are deducted the forces required for overseas garrisons, service schools, instructors for civilian components, and the overhead required for the administration of the Army of the United States, there remain available only 53,954 men for the formation of a mobile force capable of taking the field on the outbreak of war and coast artillery sufficient to furnish only 10 per cent of the strength required for harbor defenses in time of war."

Describing the national defense act of June 4, 1920, as a "distinct advance over all previous legislative measures for the national defense," General Summerall declared, "The funds provided have been insufficient for even an approximate realization of the military system contemplated by that act." The American effort in the World War he described as "the most remarkable example of the improvisation of an army in the course of a war recorded in the military history of the world" and added that the achievement should not lead to complacency. He declared the army was inadequate for national defense in view of world conditions.

COAST ARTILLERY. During the year the corps was reorganized within the continental limits of the United States and training concentrated on anti-aircraft, fixed railway and tractor-drawn work. Experimental long range firing was held with 16-inch guns and a system of fire control by aerial observation was developed. Consistent improvement in anti-aircraft and machine-gun practice was reported by the Chief of the Corps. An increase in appropriations in the estimate needed for modernization of the nation's harbor defenses of \$20,000,000 was asked. Approximately \$30,000,000 had been expended toward the programme which originally was based on an eight-year construction period for the United States, a three-year period for the insular departments and a two-year period for Panama. By 1928 this had become a more than ten-year programme for the United States, and a five-year programme for the overseas departments. On the basis of the 1931 appropriations the overseas programme had become more than a ten-year programme and that

for the continental United States would have to be extended greatly.

CAVALRY. The cavalry strength of the regular army was 7974 men, a great reduction in this arm, and much of its strength was being mechanized through the addition of armored cars. Ten years previously this strength was 20,000 men. A provisional platoon was equipped with 11 armored cars and 2 trucks as an experiment. There were 5 light cars, completely armored, each mounting a .30-calibre tank machine gun, with 6 medium cars. These latter were in pairs to diversify the experimentation. One pair had a .50-calibre water-cooled gun as its main armament; one pair carried a Lewis gun and the remaining pair a Browning machine gun. All the cars carried either two Lewis guns or two machine rifles, to be mounted on brackets outside of the cars for use as anti-aircraft weapons when halted. All guns except the .50-calibre could be used as anti-aircraft fire. Two trucks were constructed on the same frame and with the same mechanical features as the medium car to determine if such vehicles could satisfactorily replace the escort wagon used by cavalry regiments.

NATIONAL GUARD. The strength of the National Guard on June 30, 1930, was 12,732 commissioned officers, 198 warrant officers and 169,785 enlisted men. Federal appropriations during the year were \$32,474,798. There were established throughout the nation 16 headquarters and 45 units. During the year the allocation of flying equipment was revised and placed on a basis of five standard observation planes, one basic plane and two primary training planes for each of the 19 squadrons. The demand for aviation units far exceeded the number allotted.

There were 11,969 enlisted men in the Reserve, of whom 5420 were assigned to organizations and 6549 unassigned.

While rearmament of anti-aircraft batteries progressed during the year an acute shortage still existed in 3-inch guns, modern fire-control equipment, sound locators, and searchlights.

A serious note was sounded by Assistant Secretary of War Davison in his annual report for 1930 in so far as the Reserve Corps is concerned. There were 79,385 reserve officers on the lists, whereas there were 102,779 in 1928. In the fiscal year 1929-1930, 22,843 reserve officers separated themselves from active participation as against only 8008 in 1928.

AIR CORPS. According to the Assistant Secretary of War the Air Corps was also reaching a serious condition due largely to inequalities in promotion. Of the 53 airplane squadrons but five were commanded by majors, the normal commanders. As to equipment, under the five-year plan, there should have been 1520 serviceable planes in June. Actually there were 1139, including those undergoing repairs and 133 which were more than five years old.

Congress in 1926 authorized the addition of 6240 men to the Air Corps, but since that time had not appropriated pay and maintenance for more than the previous authorized strength of 118,000 men. The Air Corps was to have been increased by annual increments over five years. In 1927 there were added to it 1248; in 1928, some 530; in 1929, 1960; and in 1930, 1248; with 1248 to be added in 1931. The consequence was that with these increases the other branches have had to suffer. To provide for these additions the Ordnance, Engineers, Field Artillery, and Cavalry were depleted,

and some reductions in strength ordered. About 13 organizations were seriously affected, with this reduction, in efficiency and morale.

Contracts for the purchase of \$5,936,419 for new airplanes, engines, and accessories would result in the Air Corps receiving 402 new airplanes with spare parts, 128 new engines and spare parts. Army airplanes were divided into eight classes, according to type or model:

| | |
|--|----|
| Pursuit (fighting) planes | P |
| Observation | O |
| Attack (ground strafing) | A |
| Transport, Cargo, Ambulance, Workshop | O |
| Bombardment | B |
| Primary Training | PT |
| Basic Training | BT |
| Photographic | P |
| Airplanes of experimental and service tests status are prefixed by X or Y. | |

The actual officer strength by grade in the Air Corps on June 30, 1930, was: Maj. Gen. 1; Brig. Gen. 2; Col. 5; Lt. Col. 15; Maj. 93; Capt. 156; 1st Lt. 494; 2d Lt. 500; total 1266. During the year 27 Air Corps officers resigned.

The Air Corps Tactical School graduated 14 Air Corps officers, three Marine Corps officers, one foreign officer, and 11 officers from other branches of the army. Reserve training, limited as it was by restrictions in the Army Appropriations Act to combat pilots, was interfered with. Of the 3675 rated officers in the Air Corps Reserve 1559 had either become physically disqualified or had gone on record as not desiring further flying duty.

The Assistant Secretary of War, Colonel Payne, declared the necessary supplies with which to mobilize the army, while private industry was being made ready to meet wartime needs, were being rapidly depleted and faster than replacements could be obtained under existing programmes. There was a sad lack of these supplies, for the Army had been existing on what was left of wartime supplies. Ammunition was deteriorating faster than it could be replaced. Specific procurement plans had been drawn up for 1705 of the 3876 commodities essential for war operations.

The dispute between the Army and Navy Departments over control of the coast air defenses was reaching settlement and it was hoped to avoid the serious duplication between the Army and the Navy in carrying out the joint board agreement with reference to land-based aircraft for coast defense. The Army claims the right to direct these operations.

The strength of the United States Army on June 30, 1930, was 137,645 officers and men, according to the report of the Adjutant General of the Army. This was divided into 12,255 commissioned officers and 124,301 enlisted men. In addition there were 807 army nurses, 32 contract surgeons, and 922 cadets at the U. S. Military Academy. The maximum commissioned strength, authorized by law, during the year was 12,322 but inasmuch as current appropriations were sufficient only for an average of 12,000 that number was not exceeded for the greater part of the year. Appropriations for the fiscal year 1931 provided for an enlisted strength of about 118,750, exclusive of Philippine Scouts. Of the total strength reported 97,171 were serving in the United States proper, 15,155 in Hawaii, 9302 in the Canal Zone, 11,232 in the Philippine Islands, including 6542 Scouts, 315 in Alaska, 1008 in China, 37 in France, 1 in Japan, 280 in Nicaragua, and 1506 were en

route from one country to another, on leave of absence or serving as military attachés in various foreign countries.

The loss during the year was 175 officers retired, 102 resigned, 16 discharged, 5 dismissed, 1 dropped, and 79 died. The percentage of desertion was 4.78 as against 5.20 for the preceding year, due no doubt to better housing facilities and the intelligence tests conducted in selecting recruits.

INFANTRY. According to the Chief of Infantry that branch of the service was progressing with mechanization and the infantryman had, in addition to rifle and bayonet to support him, tanks, tractors, armor-piercing machine guns and anti-aircraft weapons. For experimental purposes a cannon company was added to the Twenty-ninth Infantry at Fort Benning, Ga. The tests that had been made with the special object of increasing the fire power of the infantry without sacrificing freedom of movement resulted in the reorganization of the infantry division.

The Twenty-ninth Infantry, the war strength regiment at the Infantry School, was organized according to the new table approved by the War Department. The following changes were to be noted in this connection. Increasing the number of machine guns in the battalion from 12 to 16. Increasing the automatic rifles in the squad from 1 to 2, with corresponding reduction in the number of magazine rifles. Adding a machine-gun company of 16 guns to the regiment. Increasing the number of 75-mm mortars and 37-mm guns from 3 each to 8 each. The reorganization contemplated 1 tank company of 24 tanks, a division headquarters company, a military police company, and two infantry brigades of two infantry regiments each. The regiment comprised a headquarters and headquarters company; a service company; a cannon company of eight 37-mm guns and eight 75-mm mortars; a calibre .30 machine gun company of 16 guns and three combat battalions. The battalion includes a headquarters and headquarters company, three rifle companies each armed with 144 rifles and 36 automatic rifles, and one machine-gun company of 16 guns.

The newly approved infantry brigade war strength with 128 machine guns showed a decided increase in these powerful weapons over the World War brigade which had 96 and the 1930 strength with 72 machine guns. Likewise, the number of automatic rifles in the new brigade—848—was about double that of the World War organization of 384 and the 1930 brigade of 324. This increase indicated greatly increased fire power. The increase in infantry cannon, which was designed to provide a counter for the modern tendency to fight with armored vehicles, was likewise marked. The eight 37-mm guns and the eight 75-mm mortars of increased range and accuracy as compared to the World War regiment of three 37-mm and six mortars and 1930 regimental organization of three each was to be noted.

The tendency toward increased use of motor transportation evident in modern armies was reflected in this organization by the new motorized field trains of the infantry regiment, such trains being animal drawn. The combat trains remained animal-drawn.

The evolution of the armament of infantry in calibre .30 weapons was shown by the following: In May, 1917, the infantry regiment had six machine guns and 1820 rifles, a proportion of 1 of the former to 303.3 of the latter. There were no automatic weapons in this organization. During

the World War there were 48 machine guns (including proportion of infantry brigade guns), 192 automatic rifles, and 3200 rifles, a proportion of one automatic calibre .30 weapon to 13.3 magazine rifles. The proportion of machine guns to rifles was 1 to 66.6. The proportion of automatic rifles to rifles was 1 to 16.6. In the 1930 regiment there were 36 machine guns, 162 automatic rifles, and 1852 rifles, a proportion of 1 automatic weapon to 9.4 rifles. The proportion of machine guns to rifles was 1 to 51.4. The proportion of automatic rifles to rifles was 1 to 11.5. In the new organization there were to be 64 machine guns, 324 automatic rifles, and 1751 rifles, a proportion of 1 automatic weapon to 4.5 rifles. The proportion of machine guns to rifles was to be 1 to 27.3 and of automatic rifles to rifles 1 to 5.4.

The 75-mm infantry mortar M1 was the latest development in an infantry mortar weapon. It was smooth bore and fired a vaned projectile weighing approximately 10½ pounds to a maximum range of about 2000 yards. The carriage permitted a traverse of 13 degrees without moving the trail and a maximum elevation of 80 degrees. The weapon in firing position weighed 362 pounds and its total weight, including accessories, was 422 pounds. It broke down for transportation purposes into five one-man loads, the heaviest of which was 94 pounds for transportation. Initial ignition is obtained with a shotgun shell and different zone charges made by added increments of powder inserted between the vanes.

Mechanization includes even the band. A mechanical substitute for an army band was to be tested for use at stations which have no bands. The apparatus as supplied by the Radio Corporation was a neat unit, ruggedly built into a ¾-ton truck. It is capable of playing while in motion to the same degree as is a dismounted band. This apparatus can be used as a complete substitute for the instrumental music of the band and to a limited degree for field music. However it cannot be utilized in conjunction with a band, therefore there will be no reduction in the strength of bands.

FIELD ARTILLERY. The Field Artillery was undergoing reorganization during the year. The object was to increase the efficiency of this branch and to place its units where they would be of most use and assistance in training the National Guard and Organized Reserves. Four stations became the home of a new battalion of 155 howitzers, this regiment of 155's being now a part of the Field Artillery Brigade of the Infantry Division. Three ammunition trains and 14 batteries were so depleted in furnishing their quota to build up the Air Service that they have had to be rendered inactive.

An all-around, all-purpose field gun successfully combined in one piece of field calibre the functions of ground and air defense. Modern fire control equipment and recent metallurgical development permitting greater strength with no disproportionate increase in weight made this possible. It is a 75-mm gun (muzzle velocity, 2175 feet seconds) giving a maximum range of 15,000 yards with a 15-pound projectile. The new carriage was equipped with wheels mounting balloon tires and having roller bearings at the hubs. Either single or dual tires would be mounted. The increased ground contact area would make it possible for the vehicle to pass through sand and

soft mud. In the first position of the gun it could be fired through an angle of traverse of 90 degrees, and at an elevation from 0 to plus 80 degrees. In the second position the gun could be fired through 360 degrees of traverse and at angles of elevation from 0 to plus 80 degrees.

Twenty-four four-wheel-drive cargo trucks were purchased for the replacement of the war-time equipment of one artillery regiment. Sufficient Caterpillar "20" tractors were purchased to equip two motorized divisional field artillery units in the continental United States.

ANTI-AIRCRAFT REGIMENT. The new regiment was of a composite type, consisting of a band, combined headquarters battery and combat train, a searchlight battery, a 3-inch gun battery and a machine-gun battery, totaling 16 officers and 330 enlisted men. The equipment was to include the latest type 60-inch searchlights, 3-inch mobile anti-aircraft machine guns, as well as the modern fire-control instruments. The searchlights are carried on motor trucks, and the 3-inch guns are on wheeled mounts fitted with pneumatic tires. As motor vehicles are to be provided for transporting all other equipment and the personnel, the regiment was to be a highly mobile unit.

A high-speed tank of the Christie type for technical and tactical test was developed and purchased. Its general characteristics were: weight, not over 15 tons; engine, Liberty as used in Mark VIII tank; type, convertible wheel and track; required speed, 40 miles per hour on wheels and 30 miles per hour on tracks; crew, two men; armament, one 37-mm and one .30 calibre machine gun in combination mount in an all-around fire turret. The tank for test purposes was to be equipped with soft steel plate of the same thickness as the proper armor plate.

RESERVE CORPS. The aggregate strength of the Officers' Reserve Corps was 113,523, a net increase of 766, with 321 units of the Officers' Training Corps with an enrollment of 114,464 located in 228 civil institutions. Twenty-two per cent of the enrollment of officers taking the special courses in the army service schools was of personnel of the Officers' Reserve Corps.

SIGNAL CORPS. After a number of years of study and experiment the Signal Corps completed the design, development and preliminary test of a new type of wire for portable field use that would take the place of both the heavy and light types as issued, and provide a better all-around wire for field telephone and telegraph communication. The new type of wire (called field wire, type W-110) possesses high tensile strength and insulation, light weight and flexibility, and when lying flat on the ground will successfully withstand considerable abrasion caused by passing vehicles, trampling by horses and men, or other abuse. Because of its lighter weight and decreased volume per mile, relatively larger amounts of the new-type wire can be transported and put on reels than was possible with the old type of heavy wire.

MILITARY TERRITORY OF THE NIGER. A territory under the Governor-General of French West Africa. Capital, Zinder. See FRENCH WEST AFRICA.

MILK. See DAIRYING; FOOD AND NUTRITION.

MILLISITE. See MINERALOGY.

MILLS COLLEGE. A college for women in Oakland, Calif., founded in 1885. The enrollment in the autumn of 1930 was 511, while that for the summer session was 124. The summer session

included courses only in music, art, drama, and physical education. The faculty numbered 83 members. The total productive funds amounted to \$1,568,180, while the income for the year ending June 30, 1930, was \$711,383. Gifts amounted to \$52,502, and buildings, equipment, and grounds were valued at \$2,368,529. The library contained 55,000 volumes. President, Aurelia Henry Reinhardt, Ph.D., LL.D., Litt.D.

MINAS GERAES. See BRAZIL under History.

MINE ACCIDENTS. See WORKMEN'S COMPENSATION.

MINERALOGICAL CHEMISTRY. See CHEMISTRY.

MINERALOGY. Two important contributions to the science of mineralogy stand out in contrast and as marking the progress of the science for the year 1930. As the result of work carried on for several years in the laboratories of the U. S. Geological Survey, the U. S. National Museum, and Columbia University, Dr. Clarence S. Ross of Washington, and Prof. Paul F. Kerr of Columbia have defined the identity and character of the Kaolin Groups of hydrous silicates, and have eliminated from this much burdened section of the mineral classification many clay minerals whose identity in the past was established upon chemical analysis alone. These are now shown to be intimate mixtures of three kaolin minerals, kaolinite, macrite, and a newly announced member of the group, for which these authors propose the name *dickite*, in honor of Dr. Allen B. Dick who as early as 1888 drew attention to its occurrence.

In a series of studies extending over the last seven years Prof. Esper S. Larsen of Harvard University and Dr. Earl V. Shannon of the U. S. National Museum have dealt with an intricate series of phosphate minerals occurring in nodules near Fairfield, Utah. In the course of this investigation (*Amer. Mineralogist*, Vol. XV, page 303) the authors have separated and identified eight new mineral species from these concretionary druses and crusts. This study was rendered both intricate and difficult by reason of the intimately intergrown character of the concretions, close determinations of the specific gravity and the optical constants constituting in most instances the ultimate criteria. The mineral species from this occurrence, that has since 1896 been known as *wardite*, has been shown to be identical with the *sousmanite* from Montebas, Creuse, France, a species announced in 1910. Priority is claimed for the species name *wardite*. The new hydrous phosphates of lime, soda potash, and alumina announced in this paper are (1) *deltaite* named from a characteristic Greek letter (Δ) cross section: (2) *dennisonite*, named in honor of J. M. Dennison, who first described *wardite*; (3) *der-nite*, named from *Dehrn*, Nassau, Germany, where the species also occurs; (4) *lewistonite*, named from Lewiston, Utah; (5) *englishite*, named in honor of George L. English; (6) *millisite*, named in honor of F. T. Millis, who sent the original specimens to the U. S. National Museum; (7) *lehiite*, named from Lehi, near Fairfield, Utah; (8) *gordonite*, named in honor of S. L. Gordon.

A number of new mineral species were announced during the year, in addition to the above. The most commercially important of these is the lime soda hydrated borate from the Kramer district, Kern County, California. *Probertite* is the name that has been given to this new borate in honor of Prof. Frank H. Probert, Dean of the

Mining College of the University of California. A more recent description proposes the name *kramersite* for this species. The first-mentioned name, however, seemed to have priority. The mineral occurs in embedded rosettes and in colorless, radiating, monoclinic crystals. *Fersmanite* was named in honor of Prof. A. E. Fersman of Moscow. This new mineral, which is a titano-silicate of lime and soda, occurs in crystals resembling those of titanite on the Kola Peninsula of Russia. *Lessingite*, which was also a new Russian mineral, is a silicate of calcium and the rare earths occurring in greenish to reddish yellow rolled pebbles in an affluent of the Borzovka River, near Kychtyn, Urals. It was named in honor of Prof. F. Loewinson Lessing, a Russian petrologist.

The Rumanian mining locality Felsöbánya, which has long been noted for its rare and unique minerals, yielded a new basic hydrous sulphate of antimony. This mineral occurs as powdery yellow crystals on stibnite, and was named

klebelsbergite, in honor of Dr. Kuno Klebelsberg. *Fülöppite*, a new lead sulph-antimonide of the pligionite semseyite group, was found at Nagbánya, Szatmar, Rumania, where it occurs in bright, metallic, steel-blue monoclinic crystals. It was named in honor of Bela Fülöpp, a Hungarian mineral collector.

Two new mineral species were brought to light by the recent development of mining in Africa. Of these *bismutotantalite*, a new tantalate of bismuth related to stibotantalite in which bismuth takes the place of antimony, occurs at Gamba Hill, in the Kampala section of Uganda in pitch-black orthorhombic crystals.

A new basic silicate of tin, found near Arandis, South West Africa, was named *arandisite* from the locality. It occurs in apple-green resinous and fibrous masses. The volcanoes of Italy, which have been very productive of new and rare mineral species in the past, furnished a new lime magnesium fluoride. This mineral was found in gray

MINERAL PRODUCTS OF THE UNITED STATES, 1928 AND 1929 *

| Product | Quantity | Value | Quantity | Value |
|---|------------------|--------------------------|------------------|--------------------------|
| METALLIC | 1928 | | 1929 | |
| Aluminum pounds | 210,000,000 | \$ 47,899,000 | 225,000,000 | \$ 51,864,000 |
| Antimonial lead ^b short tons (2,000 pounds) | 33,058 | 3,978,318 | 25,669 | 3,267,095 |
| Antimony ^c do | 3,432 | 707,000 | 3,052 | 545,700 |
| Bauxite long tons (2,240 pounds) | 375,426 | 2,273,898 | 365,777 | 2,265,638 |
| Cadmium pounds | 1,875,896 | 1,144,297 | 2,481,427 | 2,009,956 |
| Chromite long tons | 660 | 14,807 | 180 | 3,226 |
| Copper, ^d sales value pounds | 1,825,900,393 | 262,930,000 | 2,002,863,135 | 352,504,000 |
| Ferro-alloys long tons | 794,695 | 66,578,039 | 829,324 | 75,506,078 |
| Gold ^e troy ounces | 2,233,251 | 46,165,400 | 2,208,386 | 45,651,400 |
| Iron: | | | | |
| Ore ^f long tons | 63,432,826 | 155,788,657 ^f | 75,602,734 | 197,148,640 ^f |
| Pig do | 38,303,699 | 661,351,270 | 41,549,161 | 731,858,075 |
| Lead (refined), ^d sales value short tons | 626,202 | 72,639,000 | 672,498 | 84,735,000 |
| Manganese ore (35 per cent or more Mn) long tons | 46,860 | 1,214,853 | 60,379 | 1,612,357 |
| Manganiferous ore (5 to 35 per cent Mn) ^g long tons | 1,177,632 | 3,053,307 | 1,188,258 | 3,274,466 |
| Mercury: | | | | |
| Metal flasks (75 pounds net) | 18,108 | 2,207,003 | 23,998 | 2,892,638 |
| Ore short tons | (^h) | (ⁱ) | (^h) | (ⁱ) |
| Nickel (value at New York City) do | 522 | 291,836 | 340 | 297,273 |
| Ores (crude), tailings, etc.: | | | | |
| Copper do | 62,125,000 | (^j) | (^j) | (^j) |
| Copper-lead and copper-lead-zinc do | 351,000 | (^j) | (^j) | (^j) |
| Dry and siliceous (gold and silver) do | 8,095,000 | (^j) | (^j) | (^j) |
| Lead do | 8,048,000 | (^j) | (^j) | (^j) |
| Lead-zinc do | 18,379,000 | (^j) | (^j) | (^j) |
| Zinc do | 5,855,000 | (^j) | (^j) | (^j) |
| Platinum and allied metals (value at New York City) troy ounces | 59,039 | 5,692,786 | 47,977 | 3,121,471 |
| Silver do | 58,462,507 | 84,200,567 | 61,327,868 | 32,687,754 |
| Tin (metallic equivalent) short tons | 47 | 47,400 | 39 | 35,600 |
| Titanium ore: | | | | |
| Ilmenite do | (^k) | (^k) | (^k) | (^k) |
| Rutile do | (^k) | (^k) | (^k) | (^k) |
| Tungsten ore (60 per cent concentrates) do | 1,208 | 753,900 | 830 | 654,000 |
| Uranium and vanadium ores do | (^k) | (^k) | (^k) | (^k) |
| Zinc, ^d sales value do | 591,525 | 72,166,000 | 611,209 | 80,680,000 |
| Total value of metallic products (approximate) | | 1,284,580,000 | | 1,475,900,000 |
| NONMETALLIC | | | | |
| Arsenious oxide short tons | 11,767 | 735,373 | 14,546 | 883,771 |
| Asbestos do | 2,239 | 351,178 | 3,155 | 351,004 |
| Asphalt: | | | | |
| Native do | 807,860 | 5,175,055 | 804,027 | 5,456,993 |
| Oil ^f do | 1,741,392 | 20,425,371 ^f | 1,725,896 | 19,709,394 ^f |
| Barite (crude) do | 269,544 | 1,754,924 | 275,285 | 1,851,989 |
| Borates (colemanite and naturally occurring sodium borates) do | 181,000 | 3,999,773 | 169,870 | 4,515,375 |
| Bromine pounds | 2,164,000 | 649,475 | 6,414,620 | 1,759,325 |
| Calcium-magnesium chloride short tons | 102,090 | 1,995,603 | 114,240 | 2,097,061 |
| Cement barrels (376 pounds net) | 178,051,977 | 278,883,042 | 172,027,452 | 255,104,506 |
| Clay: | | | | |
| Products ^t | | 373,550,882 | | (ⁱ) |
| Raw ^f short tons | 4,026,332 | 14,200,739 ^f | 4,347,020 | 14,850,744 ^f |
| Coal: | | | | |
| Bituminous ^m do | 500,744,970 | 938,774,000 | 532,352,000 | 990,175,000 |
| Pennsylvania anthracite long tons | 67,275,062 | 393,637,690 | 68,429,000 | 393,500,000 |
| Coke ^f short tons | 52,805,828 | 252,833,780 ^f | 59,426,826 | (^f) |
| Diatomite and tripoli ⁿ do | 84,043 | 555,576 | 88,011 | 545,658 |
| Emery do | 1,341 | 16,787 | 924 | 10,722 |
| Feldspar (crude) long tons | 210,811 | 1,418,975 | 197,699 | 1,276,640 |

MINERAL PRODUCTS OF THE UNITED STATES, 1928 AND 1929—Continued

| Product | Quantity 1928 | Value | Quantity 1929 | Value |
|--|---------------------|------------------|----------------------|-------------------------|
| NONMETALLIC—continued | | | | |
| Fluorspar short tons.. | 140,490 | 2,656,554 | 146,439 | 2,791,126 |
| Fuller's earth do.... | 287,012 | 3,895,991 | 315,983 | 4,309,723 |
| Garnet for abrasive purposes do.... | 6,617 | 459,307 | 5,961 | 435,420 |
| Gems and precious stones | | (^a) | | (^a) |
| Graphite: | | | | |
| Amorphous short tons.. | 2,994 | 43,320 | 3,555 | 48,650 |
| Crystalline pounds.. | 5,233,300 | 253,773 | 5,806,410 | 264,241 |
| Grindstones and pulpstones short tons.. | 33,238 | 1,508,837 | 27,738 | 1,241,548 |
| Gypsum do.... | 5,102,250 | 32,036,163 | 5,016,132 | 31,292,969 |
| Lime do.... | 4,458,412 | 36,449,635 | 4,260,000 | 33,387,000 |
| Magnesite (expressed as equivalent crude) do.... | 127,200 | 1,098,550 | 187,660 | 1,500,000 |
| Mica: | | | | |
| Scrap do.... | 7,760 | 132,422 | 7,500 | 127,500 |
| Sheet pounds.. | 1,681,777 | 230,956 | 1,700,000 | 238,000 |
| Millstones | | 42,886 | | 31,407 |
| Mineral paints: | | | | |
| Natural pigments ^a short tons.. | (^b) | (^b) | (^b) | (^b) |
| Zinc and lead pigments ^c do.... | 202,863 | 26,017,743 | 204,574 | 26,211,556 |
| Mineral waters gallons sold.. | (^d) | (^d) | (^d) | (^d) |
| Natural gas M cubic feet.. | 1,568,139,000 | 363,726,000 | 1,860,000,000 | 419,000,000 |
| Natural gasoline gallons.. | 1,814,034,000 | 138,944,000 | 2,195,400,000 | 159,400,000 |
| Oilstones, etc. short tons.. | 956 | 228,245 | 838 | 212,017 |
| Peat do.... | (^e) | (^e) | (^e) | (^e) |
| Petroleum barrels (42 gallons) | 901,474,000 | 1,054,880,000 | 1,005,598,000 | 1,240,000,000 |
| Phosphate rock long tons.. | 8,501,406 | 12,443,179 | 8,761,164 | 13,153,259 |
| Potassium salts short tons.. | 60,370 ^f | 3,029,422 | 57,540 ^g | 2,988,448 |
| Pumice do.... | 57,430 | 278,516 | 60,873 | 318,579 |
| Pyrites ^h long tons.. | 182,049 | 605,459 | 333,465 ⁱ | 1,250,141 ^j |
| Salt short tons.. | 8,074,700 | 26,772,568 | 8,543,560 | 27,334,695 |
| Sand: | | | | |
| Glass do.... | 2,310,828 | 3,435,645 | 2,200,000 | 3,500,000 |
| Molding, building, etc., and gravel do.... | 206,808,040 | 115,772,292 | 197,000,000 | 108,700,000 |
| Sand-lime brick ^k thousands.. | 313,553 | 3,654,590 | (^l) | (^l) |
| Silica (quartz) short tons.. | 22,198 | 209,333 | 19,121 | 169,507 |
| Slate do.... | 646,360 | 11,472,291 | 669,430 | 11,235,853 |
| Stone do.... | 133,869,510 | 196,820,697 | 138,912,000 | 199,922,000 |
| Sulphur long tons.. | 2,082,924 | 37,500,000 | 2,437,238 | 43,800,000 |
| Sulphuric acid (60° Baumé) from copper and zinc smelters short tons.. | 1,140,268 | 9,007,809 | 1,239,842 | 9,828,004 |
| Talc and soapstone ^k do.... | 202,976 | 2,537,994 | 221,839 | 2,645,110 |
| Total value of nonmetallic products (approximate) | | \$4,091,120,000 | | \$4,343,000,000 |
| SUMMARY | | | | |
| Total value of metallic products | | \$1,284,580,000 | | \$1,475,900,000 |
| Total value of nonmetallic products (exclusive of mineral fuels) | | 1,206,158,000 | | 1,141,000,000 |
| Total value of mineral fuels | | 2,884,962,000 | | 3,202,000,000 |
| Total value of "unspecified" (metallic and nonmetallic) products (partly estimated) ^m | | 9,200,000 | | 11,100,000 ⁿ |
| Grand total approximate value of mineral products | | \$5,384,900,000 | | \$5,830,000,000 |

^a In this general statement certain of the figures represent shipments rather than quantity mined, and some of the figures for 1929 are estimates. The reader is referred to articles on the various mineral products for information in greater detail than it seems practicable to give here.

^b From both domestic and foreign ores.

^c Figures represent antimony content of antimonial lead. Value excluded from metallic total as the value of the antimony is included in the antimonial lead value. Value for antimony other than that in antimonial lead is included in metallic total; Bureau of Mines not at liberty to publish figures.

^d Product from domestic ores only.

^e Value, \$20.671834625323 an ounce.

^f Value not included in total value.

^g Including ore used for fluxing.

^h Figures not available.

ⁱ Figures showing values not available.

^j Figures for 1929 not yet available.

^k Value included in total value of metallic products; Bureau of Mines not at liberty to publish figures.

^l Figures obtained through cooperation with Bureau of the Census. Figures for 1929 not yet available; estimate of value included in total value of nonmetallic products.

^m Includes brown coal and lignite, and anthracite mined elsewhere than in Pennsylvania.

ⁿ Figures represent tripoli only. Value of diatomite is included in total value of nonmetallic products; Bureau of Mines not at liberty to publish figures.

^o No canvass. Estimate of value included in total value of nonmetallic products.

^p Canvass discontinued after 1915. Value of iron ore sold for paint included under last item ("Unspecified").

^q Sublimed blue lead, sublimed white lead, leaded zinc oxide, and zinc oxide.

^r Equivalent as K₂O.

^s Figures for 1929 include pyrites concentrates from Tennessee and partly desulphurized tailings from zinc operations in Wisconsin; similar output in earlier years was not included in the statistics.

^t Figures represent talc only. Value of soapstone is included in total value of nonmetallic products; Bureau of Mines not at liberty to publish figures.

^u Includes for 1929 the value of bismuth, cadmium compounds (\$498,734), cherts (\$577,000), columbite (\$17,261), flint lining for tube mills and pebbles for grinding (\$66,178), gem feldspar (\$2,200), iron ore sold for magnets, iron ore sold for paint (\$90,852), lithium minerals, new ingot magnesium (\$1,146,175), natural magnesium salts (\$1,081,817), calcareous marl (\$130,866), greensand marl (\$255,680), micaceous minerals (\$91,021), molybdenum (\$2,259,000), selenium (\$568,265), silica sand and sandstone (finely ground) (\$1,333,263), sodium salts (carbonate, bicarbonate, sulphate, and trona) from natural sources (\$1,957,831), tellurium (\$2,710), and an estimate of the value of miscellaneous mineral products, statistics for which are not collected annually by the Bureau of Mines.

mamillary masses and white radiating fibres in an old fumerole channel on Monte Rossi, Etna, Sicily. It was named *zamboninite*, in honor of Prof. F. Zambonini of Naples. *Scawtite*, a new silicate and carbonate of calcium, occurs in clusters of flattened, colorless plates at Scawt Hill, in County Antrim, Ireland.

MINERAL DEPOSITS. See GEOLOGY.

MINERAL PRODUCTION OF THE UNITED STATES. In 1930, as discussed in the articles on the separate minerals, there was a marked decline in production, measured both by quantities and values. As a result of the general industrial depression in many fields, activity was curtailed, though gold mining, as is quite usual at times of poor business, experienced increased activity. Mineral fuels declined in amount and for the first time the production of petroleum and natural gas both were smaller than in the previous year. Coal suffered a considerable decrease, as did iron ore, while copper production declined to a marked degree. Such an outlined statement, prior to the appearance of the annual summary for 1930 issued by the U. S. Bureau of Mines, must be considered in relation to the extraordinary output for 1929.

The U. S. Bureau of Mines stated the value of all mineral products in 1929 at \$5,830,000,000, or 8 per cent greater than the value in 1928. The upward trend was, however, neither general nor uniform and did not bring the total to preceding high levels—\$6,213,600,000 in 1926, a year of marked prosperity, and \$5,986,500,000 in 1923 and \$6,981,340,000 in 1920, two years of high price levels. Comparisons for the major groups of mineral industries show that the total value of metals produced in 1929 was exceeded only twice—in 1923 and 1920—in the past decade; that the total value of all nonmetallic products, except fuels, was less in 1929 than in any year of the decade except the first three; and that the total value of all mineral fuels in 1929 surpassed that for each year of the decade except 1926, 1923, and 1920.

The mineral fuels as a group show an increase of about 11 per cent in total value of products, attributable chiefly to a large gain in the value of petroleum produced and commensurate gains in the value of natural gas and natural gasoline, whereas the value of the bituminous coal output increased only moderately and the value of anthracite showed no material change. However, the moderate increases in 1929 in the quantity and value of bituminous coal mined and in the quantity of anthracite mined are noteworthy, as they followed two years of declining output. Petroleum production passed the 1,000,000,000-barrel mark in 1929, an increase of more than 12 per cent over 1928. The sales of natural gas and natural gasoline continued strong in growth throughout 1929.

The total value of metallic products of the mines of the United States was about 15 per cent greater in 1929 than in 1928. Except for gold and silver, all the important metals contributed to this increase, of which nearly one-half was accounted for by a great increase in the value of copper. Whereas the smelter output of copper in the United States increased 10 per cent, the total value increased 34 per cent; the average price for the year was higher by 3.2 cents per pound, or 22 per cent, than that for 1928. Production and consumption of copper continued at a high rate throughout 1929, but production so far out-

distanced consumption as to cause an accumulation of stocks of refined copper at the end of the year of more than two and one-half times the stocks at the beginning. In lesser degree the lead, zinc, and aluminum industries also benefited by increased output and higher price levels in 1929 as compared with 1928. The production of steel reached a new high level, exceeding 1928 production by about 9 per cent, and concomitantly shipments of pig iron reached a new peak total of 8 per cent in quantity above 1928. Although not keeping pace with the outputs of steel and pig iron, the shipments of iron ore were 19 per cent greater in 1929 than in 1928. Values of both pig iron and iron ore also averaged higher in 1929 than in 1928. The production of high-grade manganese ore in 1929 showed the first increase since 1925 by reason of sustained operation of a process of beneficiating carbonate ores. The production of mercury was nearly one-third greater in quantity and value in 1929 than in 1928 and was the largest annual output since 1918. Gold production declined by about 1 per cent. The quantity of silver produced increased moderately, but the average and total value decreased.

The total value of nonmetallic products (not including fuels) decreased about 5 per cent in 1929 as the result not only of decline in quantity of production of a number of important items but also by reason of generally lower price levels for nonmetallic products. The decline in the total is due to the preponderance of the structural materials, in the use of which there was recession in 1929, whereas most of the chemical, metallurgical, and other mineral materials showed increases. See table on pages 488 and 489.

MINES AND MINING, MINERAL TREATMENT. See INTERNATIONAL LABOR OFFICE; METALLURGY.

MINIMUM WAGE. American public attention was again focused on the subject of minimum wage regulations for women when Harvard University decided to release 21 women employed as cleaners in the Widener Library because it refused to pay the minimum wage recommended by the State Minimum Wage Commission. In November and December, 1929, despite the fact that the University authorities were meeting with considerable public censure, the discharges were made and male employees were appointed in the places of the women. The Minimum Wage Board recommended a minimum of \$.37 an hour for cleaning women employed for less than 42 hours per week. The Harvard authorities insisted that they were not willing to pay more than \$.32 for this type of labor. Early in 1930 the University was compelled to take official notice of the criticisms leveled against it and a statement was issued defending the University's policies. The points made by this statement were that men were more efficient than women and that the University had always had in mind the replacement of the part-time women cleaners by a full-time male porter staff. The move too was justified on the ground of economy, the treasurer of the University declaring that the replacement of 21 part-time women by 7 full-time men was to result in an annual saving of \$2000. Despite this defense it was the general opinion of commentators that Harvard University had not particularly distinguished itself as a result of the controversy with the Minimum Wage Board and was setting a poor example to industrialists of the State. After all, the Minimum Wage Commission

of Massachusetts had no mandatory powers and its effectiveness depended entirely upon the willingness of concerned parties to accept its budgets and minimum wage regulations as fair. Harvard University, by its action, threatened seriously the principle of voluntary minimum wage regulation which had heretofore proved so successful in the State.

MINING AND METALLURGICAL ENGINEERS, AMERICAN INSTITUTE OF. An organization founded in 1871 and incorporated under the laws of New York State in 1905 "to promote the arts and sciences connected with the economic production of the useful minerals and metals and the welfare of those employed in these industries." It is made up of 27 local sections and has 43 affiliated societies in colleges throughout the United States. There are six classes of membership: Members, men who have been practicing engineers for at least six years; junior members, the younger engineers; associates, men interested in or connected with mining, geology, metallurgy, or chemistry, but not practicing engineers; student associates, students in engineering schools; Rocky Mountain members, for life by merger; and honorary members, engineers of international distinction or persons who have rendered to the Institute some distinctive service, elected by unanimous vote of the board of directors. On Nov. 15, 1930, there were 9132 members, distributed as follows: Honorary, 15; members, 6644; junior members, 174; associates, 1011; student associates, 367; Rocky Mountain members, 133; and junior associates (class abolished in 1930), 788. The income for 1930 was \$194,283.

In addition to the monthly meetings of the local sections and regional meetings held in various important mining or metallurgical centres, an annual meeting, or four-day convention beginning on the third Tuesday in February, is held in New York City. The medals and prizes awarded by the society during 1930 for notable work in the field of mining and metallurgy were: The James Douglas Medal, to John Van Nostrand Dorr; William Lawrence Saunders Gold Medal, to Daniel C. Jackling; Robert W. Hunt Medal, to James Aston; and J. E. Johnson, Jr., Award, to William S. Unger. The Institute publishes *Transactions*, an annual in several volumes containing the best papers of the year on mining and metallurgical subjects; *Mining and Metallurgy*, a monthly bulletin; the *Year Book*, which constitutes a "Who's Who" in the profession; *Technical Publications*, a series of individual technical pamphlets; and special volumes from time to time. In connection with three other societies, it maintains the engineering societies library and an employment bureau. The officers elected at the 1930 convention were: President, William H. Bassett; vice-presidents, Henry Krumb and Scott Turner; directors, R. C. Allen, Cadwallader Evans, Jr., John M. Lovejoy, John A. Mathews, and Milnor Roberts; secretary, H. Foster Bain; and treasurer, Karl Eilers. Headquarters are in the Engineering Societies Building, 29 West 39th Street, New York City. See GEOLOGY.

MINNESOTA. POPULATION. According to the Fifteenth Census, the population of the State on Apr. 1, 1930, was 2,563,953. The population on Jan. 1, 1920, was 2,387,125. The capital is St. Paul.

AGRICULTURE. The table in the second column gives the acreage, production, and value of the principal crops during 1929, and 1930.

| Crop | Year | Acreage | Prod. Bu. | Value |
|-------------|------|-----------|-------------|--------------|
| Corn | 1930 | 4,880,000 | 135,780,000 | \$71,963,000 |
| | 1929 | 4,253,000 | 148,855,000 | 96,758,000 |
| Hay | 1930 | 4,098,000 | 5,611,000* | 50,800,000 |
| | 1929 | 4,326,000 | 6,467,000* | 62,118,000 |
| Oats | 1930 | 4,358,000 | 171,351,000 | 42,888,000 |
| | 1929 | 4,212,000 | 153,798,000 | 53,863,000 |
| Wheat | 1930 | 1,301,000 | 21,525,000 | 12,367,000 |
| | 1929 | 1,872,000 | 19,723,000 | 20,804,000 |
| Barley ... | 1930 | 1,980,000 | 55,836,000 | 19,543,000 |
| | 1929 | 2,200,000 | 59,400,000 | 28,512,000 |
| Potatoes .. | 1930 | 805,000 | 21,350,000 | 13,878,000 |
| | 1929 | 822,000 | 27,370,000 | 27,370,000 |
| Flaxseed .. | 1930 | 732,000 | 7,820,000 | 10,614,000 |
| | 1929 | 523,000 | 4,707,000 | 13,509,000 |
| Rye | 1930 | 416,000 | 7,197,000 | 2,231,000 |
| | 1929 | 396,000 | 6,930,000 | 5,683,000 |

* Tons.

Farms in the State numbered 185,476 in 1930, as against 188,231 in 1925 and 178,478 in 1920.

MINERAL PRODUCTION. The State supplied about five-eighths of the iron ore produced in the United States in 1929. The mines of the State yielded 46,470,243 long tons of iron ore, as against 38,129,018 in 1928; in value, \$121,776,312 for 1929 and \$94,258,899 for 1928. The great bulk of this ore was as usual exported from the State, although the small production of pig iron rose slightly, to 376,551 long tons for 1929, from 341,203 for 1928. Clay products totaled \$1,492,792 for 1928 (for 1927, \$1,675,662). Quarries furnished a moderate quantity of stone of fairly high average grade, in 1928, 474,450 short tons, in value \$3,699,498. The remainder of the mineral product was made up largely of manganiferous ore, to the quantity of 1,028,501 long tons for 1928, in value about \$2,000,000, and of sand and gravel. The value of all native mineral products of the State was, for 1928, \$108,274,963; for 1927, \$102,972,753.

FINANCE. State expenditures in the year ended June 30, 1929, as reported by the U. S. Department of Commerce, were: for maintaining and operating governmental departments, \$36,723,878 (of which \$9,948,136 was for local education); for interest on debt, \$3,970,275; for improvements, \$10,514,423; total, \$51,217,576 (of which \$13,878,680 was for highways, \$4,173,929 being for maintenance and \$9,704,751 for construction). Revenues were \$63,041,416. Of these, property and special taxes supplied 24.9 per cent; departmental earnings and compensation to the State for officials' services, 8.7; sales of licenses, 47.8 (in which was included State revenue from the gasoline sales tax, totaling \$3,678,105). State revenue from the gasoline tax diminished for 1929, because in that year a higher proportion of the receipts from this source was ceded to the counties. The funded debt of the State, outstanding on June 30, 1929, was \$56,219,059, of which total the debt incurred to defray the granting of rural credits formed a part, while the so-called county-reimbursement road bonds were excluded. These road bonds, though the State was obligated to pay both their principal and their interest, were the direct issues not of the State but of the counties. On the above basis the State debt net of sinking fund assets was \$6,086,614. On taxable property assessed at \$2,358,810,615 were levied in the fiscal year State taxes of \$10,580,229.

TRANSPORTATION. The total number of miles of railroad line under operation on Jan. 1, 1930, was 8816.16. No additional construction of line or trackage in 1930 was reported.

EDUCATION. There were enrolled in the public schools of the State, in the year 1929-1930, 551,-

741 pupils. Of these, 436,281 were in common schools or elementary grades, and 98,613 were in high schools. The expenditures for public-school education in the fiscal year 1930 totaled \$53,636,116. For men teachers, the year's salaries averaged \$188.80 a month in the graded districts and \$105.59 in the ungraded rural districts; for women teachers, \$131.20 in the graded districts and \$93.49 in the ungraded rural districts.

CHARITIES AND CORRECTIONS. The chief central authority, the State Board of Control, as operating in 1930, had general control over 18 State institutions, supervised 14 county tuberculosis sanatoria, acted as a board of parole, purchased institutional supplies, conducted prison industries, collected charges for maintenance of the insane, inspected jails, lockups, poor-houses and infirmaries, appointed county welfare boards, and performed a variety of other duties. The entire number of inmates of the State institutions on June 30, 1930, was 14,290. Of these, 7800 were listed as insane, 2306 as feeble-minded or epileptic, and 2258 as criminal. The State eleemosynary and custodial institutions were: State asylums at Anoka, Hastings, and Willmar; State Training School; Fergus Falls State Hospital; Rochester State Hospital; St. Peter State Hospital; three schools for the feeble-minded, the blind and the deaf; Colony for Epileptics; State Public School; Home School for Girls; State Reformatory; State Reformatory for Women; State Prison; Sanatorium for Consumptives; Hospital for Crippled Children.

POLITICAL AND OTHER EVENTS. The solution of the water-power situation along the State's Canadian border was essayed through Federal authority, by the passage in Congress of the Shipstead-Nolan Act, a measure for the preservation of the watercourses in the area of the border lakes. This measure was widely approved in Minnesota, although it allocated to the Federal government a function supposed to have been within the province of the State authority. The act had the support of a resolution of the Minnesota Legislature of 1929 memorializing Congress in favor of its passage. Under the terms of the act non-agricultural lands in the area of the border lakes were to be withdrawn from settlement, private works on waterways fronting on Federal lands were to be prohibited and general schemes of power development were to be postponed until after the negotiation of an agreement with Canada on the subject. The act checked the project of E. W. Backus for the creation of seven reservoirs designed to cover a considerable part of the region, which was desired for a forest preserve.

The State of Minnesota appeared before the Interstate Commerce Commission in June to oppose, on behalf of railroad employees, the approval that the Commission had granted the proposed consolidation of the Great Northern and Northern Pacific railroad systems. The steady exploitation of the iron ore mines of the State led in 1930 to the active exploration of its lands by private prospectors for iron ore, provided with permits issued on the basis of bids of from 12 to 12½ cents a ton of royalty to be paid for ore discovered and extracted. With regard to the State demand for the deepening of the upper Mississippi River, Secretary of War Hurley announced on September 1 that, while the Government favored creation of a 9-foot channel, it would not be bound to attain this result within the life of the five-year programme for waterways.

Minneapolis and St. Paul carried on negotiations for the division of the costs of the projected metropolitan drainage system which the previous legislature had authorized them to build jointly, at an outlay of about \$26,000,000. At a special election held in St. Paul on June 16 the voters again, as in 1929, failed to adopt a proposal to establish municipal government under a city manager. The vote cast—28,553 in favor to 20,888 opposed—fell short of the required majority. Mayor Bundle of St. Paul declared in July that the 15 civilian members of the City Planning Committee were no longer entitled to office, their terms having expired with the previous year, and made new appointees. The First National Bank of St. Paul let contracts in June for the construction of a new bank building of 30 stories, at Fourth and Minnesota Streets, to cost about \$3,000,000.

ELECTIONS. Senator Thomas D. Schall, Republican, was reelected by a narrow majority, over his Democratic opponent, Einar Hoidale, the vote on November 4, as unofficially reported, being 287,081 to 278,854. Floyd B. Olson, Farmer-Labor candidate, was elected Governor, defeating Chase, the Republican contender. To the House of Representatives were elected 10 Republicans and one Farmer-Laborite, Paul Kvale. The voters rejected three constitutional amendments, which respectively would have allowed the Legislature large discretion in fixing the liability of stockholders in corporations; would have replaced the existing court commissionerships with associate judgeships and would have allowed the State to alter the prices for the sale of State lands and to exchange such lands for Federal lands.

OFFICERS. Governor, Theodore Christianson; Lieutenant-Governor, Charles E. Adams; Secretary of State, Mike Holm; State Treasurer, Julius A. Schmahl; Auditor, Ray P. Chase; Attorney-General, Henry N. Benson; Commissioner of Education, James M. McConnell.

JUDICIARY. Supreme Court: Chief Justice, Samuel B. Wilson; Associate Justices, Homer B. Dibell, Andrew Holt, Clifford L. Hilton, Royal A. Stone. In accordance with an amendment to the State Constitution, adopted November 4 and increasing the membership of the court by two members, I. M. Olsen and Charles Loring were later appointed to the court.

MINNESOTA, UNIVERSITY OF. A coeducational, State institution for higher learning in Minneapolis, Minn.; founded in 1851. The 1930 autumn registration was 12,157, while the summer session enrollment for the same year was 6015. The university staff on a full-time basis, including professors, associate professors, assistant professors, and instructors, numbered 706. The income for the year ending June 30, 1930, amounted to \$11,390,665, distributed as follows: State appropriations for maintenance, buildings, and special purposes, \$4,744,840; Federal aid, \$348,857; permanent university fund, \$228,782; income from student fees, \$1,167,980; income from service enterprises, revolving funds, and intercollegiate athletics, \$2,858,819; income from trust funds, \$1,188,863; 1929 building fund certificates of indebtedness, \$300,000; sales and miscellaneous income, \$552,524. The permanent university fund was increased by \$596,538; a bequest of \$229,830 was also received from William Henry Eustis to increase the endowment of the Minnesota Hospital and Home for Crippled Children. Additions were made during 1929-30 to the

Cyrus Northrup Memorial Auditorium at a cost of \$420,846 and to the Elliot Memorial Hospital at a cost of \$114,663. The library contained 654,447 volumes. Chancellor, Lotus Delta Coffman, Ph.D., LL.D.

MINORITIES. See LEAGUE OF NATIONS.

MISSISSIPPI. POPULATION. According to the Fifteenth Census, the population of the State on Apr. 1, 1930, was 2,009,821. The population Jan. 1, 1920, was 1,790,618. Capital, Jackson.

AGRICULTURE. The following table gives the acreage, production, and value of the principal crops in 1929 and 1930:

| Crop | Year | Acreage | Prod. Bu. | Value |
|------------------|------|-----------|------------------------|-------------|
| Cotton | 1930 | 4,249,000 | 1,500,000 ^a | \$..... |
| | 1929 | 4,071,000 | 1,915,000 ^a | 164,690,000 |
| Corn | 1930 | 1,730,000 | 19,895,000 | 19,497,000 |
| | 1929 | 1,765,000 | 35,300,000 | 32,829,000 |
| Hay | 1930 | 435,000 | 383,000 ^b | 5,240,000 |
| | 1929 | 479,000 | 592,000 ^b | 9,044,000 |
| Sweet potatoes . | 1930 | 53,000 | 5,035,000 | 3,776,000 |
| | 1929 | 59,000 | 7,670,000 | 6,136,000 |
| Potatoes .. | 1930 | 14,000 | 970,000 | 1,358,000 |
| | 1929 | 14,000 | 1,214,000 | 1,882,000 |

^a Bales. ^b Tons.

The number of farms in the State was 312,453 in 1930, having risen notably, from 257,228 for 1925 and 272,101 for 1920.

MINERAL PRODUCTION. The mineral production of the State remained in 1928 a minor feature of its industry. The output of clay products was slightly less, as to value, being \$1,129,799 for 1928, as against \$1,146,472 for 1927. The digging of sand and gravel furnished almost all the rest of the yearly total of mineral production, which was, for 1928, \$2,634,347; for 1927, \$2,553,633.

FINANCE. State expenditures in the year ended Sept. 30, 1928, as reported by the U. S. Department of Commerce, were: for maintenance and operation of governmental departments, \$14,758,248 (of which \$4,819,148 was for local education); for interest on debt, \$812,731; for permanent improvements, \$5,541,465; total, \$21,112,444 (of which \$6,174,317 was for highways, \$2,214,650 being for maintenance and \$3,959,667 for construction). Revenues were \$17,448,831. Of these, property and special taxes formed 34.9 per cent; departmental earnings and remuneration to the State for officers' services, 10.9; sales of licenses, 29.9 (including taxes of \$2,468,680 on sales of gasoline). The State's funded debt outstanding on Sept. 30, 1928, was \$20,280,549. Net of sinking-fund assets, it was \$19,846,587. On property bearing an assessed valuation of \$775,716,077 were levied in the year State taxes of \$6,205,720.

TRANSPORTATION. The total number of miles of railroad line under operation on Jan. 1, 1930, was 4284.13. There were built, in 1930, 1.17 miles of additional second track.

EDUCATION. A new school code, adopted by the Legislature in the spring, embodied provisions affecting the school system in divers respects. The number of persons of school age in the State was reported in 1930 to be 873,065, the white numbering 379,678 and the colored 493,987. There were enrolled in the public schools of the State, according to the same report, 584,705 pupils, of whom 301,850 were white and 292,855 colored. In common schools or elementary grades were enrolled 542,317, of whom 254,989 were white and 287,328 colored; in high schools, 52,288, made up of 46,861 white and 5427 colored. Expenditures of one year for public-school educa-

tion totaled \$15,843,417, of which \$14,259,875 was for whites and \$1,583,542 for the colored. Yearly salaries of teachers averaged \$625 for all; for whites, \$800; and for the colored, \$226.

LEGISLATION. The Legislature convened in January and adjourned on May 31, after the longest session in its history. Strife with Governor Bilbo and difficulty in reaching a long-sought agreement for financing an \$88,000,000 programme of road construction protracted the session. Though the lower house passed a measure to this effect at the last moment, the adjournment of the Senate, which had taken place in the meantime, was regarded as nullifying its action. A sales tax was enacted, providing that ordinary retail stores pay the State one-fourth of one per cent of the year's gross sales, and that merchants operating more than five separate stores pay one-half per cent. A privilege tax was also enacted, to apply to natural-gas pipe lines running through any part of the State. An issue of \$5,000,000 of notes to correct the condition of the State treasury was authorized, the payment of the notes to be provided from new taxation. Provision was made for the popular election of a new Highway Commission of three members.

POLITICAL AND OTHER EVENTS. The difficulties between the Legislature and Governor Bilbo that largely nullified the efforts of the legislative session centred in charges of corruption brought against the Governor's friends and appointees by his factional opponents. There were contempt proceedings and efforts to bring about impeachments, but little in the way of actual reform was accomplished. The constitutionality of the chain store tax on gross sales and that of the tax on pipe lines were attacked in the courts of the State.

According to information elicited in the course of the legislative investigation of the matter, an antitrust suit started in 1929 in the State courts by a firm of Jackson lawyers against the Warren Brothers Company of Boston, manufacturers of paving materials, was abandoned upon the payment of \$80,000 and papers in the possession of the plaintiffs' counsel were surrendered to the defendants. One of the lawyers who had been occupied with the prosecution, Carl Marshall, declined to tell what had become of the chief part of the \$80,000, asserting the obligation to preserve the confidence of a client. He was arrested for contempt of the Legislature, but was freed by the Governor's pardon and absented himself from the State. The ultimate destination of the money remained undisclosed. In June Governor Bilbo dismissed, without publicly assigning charged against them, a number of teachers in the State-supported schools and colleges, including the chancellor of the university. The action was the subject of protests from the American Medical Association and the American Chemical Society.

Application was made to the city of Jackson by the Mississippi River Light and Power Company for a franchise to serve the city with natural gas, but was opposed by the Mayor on the ground of too high a proposed rate. The new Highway Commission provided by the Legislature of 1930 was duly elected, but the failure of the ambitious construction programme in the legislative session left it with but \$4,700,000 a year, approximately, to expend, and without Federal aid, for which complying legislation had not been enacted.

ELECTIONS. Pat Harrison, Democratic Senator,

and a delegation of eight Democratic Representatives were reelected to the Federal Congress, without opposition, on November 4.

OFFICERS. Governor, Theodore G. Bilbo; Lieutenant-Governor, Bidwell Adam; Secretary of State, Walker Wood; Attorney-General, George T. Mitchell; Treasurer, H. C. Yawn; Auditor, C. C. White; Superintendent of Education, W. F. Bond.

JUDICIARY. Supreme Court: Chief Justice, Sydney Smith; Associate Justices, W. D. Anderson, James G. McGowan, George H. Ethridge, W. H. Cook, V. A. Griffith.

See **CHEMISTRY, INDUSTRIAL.**

MISSISSIPPI, UNIVERSITY OF. A coeducational, State institution of higher learning in University, Miss.; chartered in 1884 and opened in 1848. The university consists of a college of liberal arts and schools of law, engineering, medicine, pharmacy, education, and commerce and business administration. The total enrollment for the autumn of 1930 was 1254; the registration for the 1930 summer session was 312. The faculty numbered 73, exclusive of fellows and student assistants. There were approximately 40,000 volumes in the library. The income for the year was \$609,481. A special appropriation of \$1,600,000 was made by the 1928 Legislature for the construction of new buildings and other permanent improvements. The buildings completed by the end of 1930 were those for the law and graduate schools, a gymnasium, a field house, and seven dormitories. Chancellor, J. N. Powers, M.A., M.Pd., LL.D.

MISSISSIPPI FLOODS. See **FLOODS.**

MISSOURI. POPULATION. According to the Fifteenth Census, the population of the State on Apr. 1, 1930, was 3,629,367. The population on Jan. 1, 1920, was 3,404,055. The capital is Jefferson City.

AGRICULTURE. The following table gives the acreage, production, and value of the principal crops in 1929 and 1930:

| Crop | Year | Acreage | Prod. Bu. | Value |
|------------------|------|-----------|------------------------|---------------|
| Corn | 1930 | 5,922,000 | 72,841,000 | \$ 54,631,000 |
| | 1929 | 5,384,000 | 126,524,000 | 108,811,000 |
| Hay | 1930 | 3,736,000 | 3,419,000 ^a | 40,570,000 |
| | 1929 | 4,056,000 | 5,368,000 ^a | 55,324,000 |
| Wheat | 1930 | 1,420,000 | 19,880,000 | 14,699,000 |
| | 1929 | 1,730,000 | 17,300,000 | 19,546,000 |
| Oats | 1930 | 1,781,000 | 48,978,000 | 19,101,000 |
| | 1929 | 1,535,000 | 33,770,000 | 15,872,000 |
| Cotton | 1930 | 369,000 | 160,000 ^b | ..... |
| | 1929 | 343,000 | 220,000 ^b | 17,952,000 |
| Potatoes .. | 1930 | 82,000 | 8,692,000 | 8,257,000 |
| | 1929 | 81,000 | 5,508,000 | 8,262,000 |
| Sweet potatoes . | 1930 | 11,000 | 1,045,000 | 1,150,000 |
| | 1929 | 12,000 | 1,320,000 | 1,584,000 |

^a Tons. ^b Bales.

The number of farms in the State was 256,131 in 1930; it had declined slightly from 260,473 for 1925 and 263,004 for 1920.

MINERAL PRODUCTION. Ranking as the foremost among the States in the mining of lead in 1928, Missouri slightly increased its lead production in 1929, for which year the mine production of recoverable lead in the State was 198,469 short tons, as against 195,393 for 1928; in value the product was \$25,007,094 for 1929 and \$22,665,588 for 1928. Cement production was 7,984,337 barrels, for 1929 and 7,943,367 for 1928, as indicated by mill shipments; in value it was \$11,557,905 for 1929 and \$12,367,018 for 1928. Coal production, as to quantity, increased to 4,030,

311 net tons for 1929, from 3,732,421 for 1928; as to value, it was \$9,778,000 for 1929 and \$9,637,000 for 1928. The clay products, exclusive of pottery, totaled \$14,891,273 for 1928 and were \$16,392,171 for 1927, with pottery included. The output of stone, 3,445,690 short tons for 1928 and 3,064,600 for 1927, was valued at \$6,137,631 for 1928 and \$5,170,859 for 1927. There was a substantial production of zinc, 11,017 short tons in 1929 and 12,974 in 1928; by value, \$1,454,244 in 1929 and \$1,582,828 in 1928. Leading in the domestic production of barite, Missouri produced 118,550 short tons of the crude mineral in 1929, as against 114,274 in 1928; by value, \$901,891 in 1929 and \$810,203 in 1928. The aggregate value of the native mineral products of the State was, for 1928, \$74,981,382; for 1927, \$75,890,415.

TRANSPORTATION. The total number of miles of railroad line under operation on Jan. 1, 1930, was 7939.91. There were built, in 1930, 18.26 miles of second track.

EDUCATION. The publication of the report of the State's survey commission, made in 1930, presented a definite view of the position of the public schools of the State. The report was welcomed as affording the basis for better planning of the school's activities on a state-wide scale. The number of persons of school age in the State was estimated for the fiscal year 1928-29 at 925,672. There were enrolled in the public schools 668,735 pupils. Of these, 203,064 were in common or ungraded schools; 340,547 in elementary grades; and 125,124 in high-school grades. The year's expenditures for public-school education totaled \$51,311,573. Salaries of teachers, for the year, averaged as follows: rural—men, \$658 and women, \$610; high school districts—men, \$1437 and women, \$919.

CHARITIES AND CORRECTIONS. As functioning in 1930, the State Board of Charities and Corrections exercised the duty of inspection over county jails and hospitals. It also inspected and licensed those maternity hospitals and boarding homes for children throughout the State which were not maintained with public funds. Connected with it was a children's bureau which received and cared for dependent and neglected children committed to it by the courts. It placed such children temporarily in a Receiving Home at Carrollton, awaiting their placement in private families. There were at the end of 1930, about 150 children in this institution and between four and five hundred placed in homes. Among the other State institutions of care or custody were four State hospitals, the Missouri Colony for the Feeble-minded and Epileptic, Missouri State Sanatorium, Confederate Home, State Soldiers' Home, State Penitentiary, Reformatory, Industrial Home for Girls, and Industrial Home for Negro Girls.

POLITICAL AND OTHER EVENTS. At Kansas City was set under way in June an organized movement of leading citizens to expedite the development of the community in accordance with a ten-year programme. Kansas City was the scene of a peculiar conflict between a public-service corporation and the Federal District Attorney on the subject of prohibition enforcement. It was asserted that the Kansas City Gas Company had furnished gas to a supposed still, and officials of the company when questioned refused to supply such information about the premises as their meter readers might have acquired. About 1100 convicts in the State penitentiary mutinied on

March 25 and 27 but were subdued by a National Guard force, which was called out for the emergency.

ELECTIONS. There were elected, on November 4, twelve Democratic and four Republican Representatives, this result affording the Democrats a net gain of six seats. The lower house of the State Legislature went under Democratic control, while the State Senate remained Republican. No election for Governor or United States Senator was held. Seven proposals for constitutional amendments were presented on the ballot; all, with the possible exception of one, on which the vote was close, were reported to have been defeated.

OFFICERS. Governor, Henry S. Caulfield; Lieutenant-Governor, Edward H. Winter; Secretary of State, Charles U. Becker; Auditor, L. D. Thompson; Treasurer, S. L. Cantley; Attorney-General, Stratton Shartel; Superintendent of Public Schools, Charles A. Lee.

JUDICIARY. Supreme Court: Chief Justice, William T. Ragland; Associate Justices, Berryman Henwood, Frank E. Atwood, Earnest S. Gantt, William F. Frank, John Turner White, George R. Ellison.

MISSOURI, UNIVERSITY OF. A State institution of higher education in Columbia and Rolla, Mo.; founded in 1830. The enrollment for all divisions for the first semester of 1930-31 was 4592, of whom 3276 were men and 1316 women. This enrollment was distributed as follows: Agriculture, 364; arts and sciences, 1709; business and public administration, 211; education, 392; engineering, 417; mines, 597; fine arts, 125; graduate, 357; journalism, 320; law, 134; medicine, 72; short course in agriculture (first term), 20. The total enrollment for the summer session of 1930 was 2449, of whom 1229 were men and 1220 women. The total annual enrollment of all classes of students, including those in correspondence and extension courses, was 8368. There were 434 faculty members. The endowment of the university was approximately \$2,500,000, and the total income from all sources was \$4,212,686. The libraries contained approximately 326,000 volumes. President, Walter Williams, LL.D.

MIXED CLAIMS COMMISSION. See ARBITRATION, INTERNATIONAL.

MOCQUEREAU, mòk'kè-rô', DOM ANDRÉ. A French musical scholar, died in Solesmes, France, Jan. 25, 1930. Born in Tessoualle, near Cholet, June 6, 1849, he received his education in Paris, and while still very young appeared as cellist in Dancal's chamber-music concerts. In 1875 he entered the order of the Benedictines of Solesmes. There he became intensely interested in Gregorian music, to the study and elucidation of which he devoted his whole life. In 1889 he began the publication of his famous *Paléographie musicale*, a collection of liturgical chants of the Roman Catholic Church in all their forms and in all epochs, with photographic reproductions of medieval manuscripts. In 1904 Pope Pius X issued an order that all reprints of Gregorian music appearing thereafter in the *Editio Vaticana* must conform to the versions given in the *Paléographie*. Besides this monumental work, of which 13 volumes had appeared to 1928, he wrote: *L'Art grégorien* (1895); *Notes sur l'influence de l'accant et du cursus tonique latins dans le chant ambrosien* (1897); *Méthode de chant grégorien* (1899); *Le nombre musical grégorien ou rythmique grégorienne* (1908); *Le nombre musical grégorien* (published in two volumes, 1908-27).

MODERNISTIC MOVEMENT. See ARCHITECTURE.

MOFFATT TUNNEL. See COLORADO under *Political and Other Events*.

MOHLER, ALBERT L. A former American railroad official, died in Chicago, Ill., June 6, 1930. He was born in Ephrata, Pa., in 1850, and was educated in the common schools. In 1868 he entered railway service as clerk for the Chicago & Northwestern Railway. In 1882 he became general freight agent for the St. Paul, Minneapolis & Manitoba Railway (later the Great Northern). He served as assistant general manager and general manager of several western railroads until 1897, when he became president and general manager of the Oregon Railroad & Navigation Co., remaining in that position until 1904. From 1904 to 1911, he was general manager of the Union Pacific Railroad Company and, after 1905, also vice president. In 1911 he was elected president of the Union Pacific and the Oregon Short Line Railroad Companies. He retired from the railway business in 1916.

MOHLER, J(OHN) FREDERICK. An American physicist and educator, died in Carlisle, Pa., Jan. 28, 1930. He was born in Boiling Springs, Pa., Oct. 30, 1864, and was graduated from Dickinson College in 1887. From 1887 to 1890 he was instructor in mathematics and science at Wilmington Conference Academy, Dover, Del., and from 1890 to 1894, instructor in mathematics at the Wesleyan Academy, Wilbraham, Mass. In 1896 he became professor of physics at Dickinson College, where he remained until his death. His researches included investigations on the surface tension of water below 0° C., measurement of the pressure in the electric-light spark, and the discovery that the pressure surrounding the electric arc changed the wave length of the light emitted. He also discovered the relation of the shift of spectral lines to the atomic volume, as well as a peculiarity in the light spectrum of magnesium. The M.A. degree was conferred on him by Dickinson College in 1890 and the Ph.D. degree by Johns Hopkins University in 1897. He was the author of *A Manual of Practical Physics* (1897) and numerous articles in scientific journals.

MOLLUSCA. See ZOÖLOGY.

MOLUCCA ARCHIPELAGO. See DUTCH EAST INDIES.

MONACO, món'à-kô. A principality on the Mediterranean coast, surrounded on the land sides by the French Department of Alpes Maritimes. Area, 370 acres; population, according to the census of 1928, 24,927. It is chiefly known for its gambling resort, Monte Carlo (population in 1928, 11,055). Other towns are Monaco (2085) and La Condamine (11,787). Under the constitution of Jan. 7, 1911, the Government consists of the Prince, assisted by a Council of State and a National Council elected by universal suffrage. Revenue is mainly derived from the gambling concession. The ruler in 1930 was Prince Louis II, born July 12, 1870, who succeeded his father, Prince Albert, June 26, 1922.

HISTORY. Political disturbances, which threatened to result in the abdication of Prince Louis, were apparently terminated in 1930 by two elections in which the principality's voters decided overwhelmingly in favor of maintaining the dynasty. Factors in the situation were the marital difficulties of Prince Pierre and his wife, Charlotte, adopted daughter of Prince Louis, local discontent with the administration of the

Casino, and an agitation for the establishment of a republic. Prince Pierre was granted a decree of separation from Princess Charlotte by a Monagasque court in Paris, Mar. 20, 1930. He was Count de Polignac of France before his marriage to Charlotte in 1920. On May 7, Prince Louis issued a decree annulling the election of March 30, in which his supporters had been successful, on the ground that the subsequent election of the entire National Council by the electors chosen March 30 had been carried out contrary to the Constitution. In the second election on May 18, the party of Eugene Marquet, Mayor of Monte Carlo, who supported the Prince, again swept the field, receiving a majority of 100 out of a national vote of 540.

Marquet became head of the Council of State, but was removed by Prince Louis following the failure of a leading real estate company headed by Marquet's brother. Upon his return to the principality from Paris on Dec. 22, 1930, Prince Louis was greeted with a hostile demonstration by the populace. On December 26, he dismissed both the State and Municipal Councils and announced that constitutional guarantees would remain suspended in part until his subjects had repented their unruliness. His assumption of dictatorial powers was believed to have had the support of the French Foreign Office.

MOND, ALFRED MORITZ. See MELCHETT, ALFRED MORITZ MOND, FIRST BARON.

MONEY. The table on page 497 from the annual report of the director of the United States Mint shows the distribution of the stock of money in the United States on June 30, 1930, June 30, 1929, Oct. 31, 1920, June 30, 1914, and Jan. 1, 1879.

MONEY RATES. See FINANCIAL REVIEW.

MONGOLIA. A vast and indefinite tract of territory lying to the west of Manchuria and divided into two political divisions, Inner Mongolia, which is administratively a part of China, and Outer Mongolia, a soviet republic in close relations with Soviet Russia. In 1928 the Nationalist government of China made provinces of the former special administrative districts of Jehol, Suiyuan, and Chahar into which Inner Mongolia had been divided. Chengteh, Kweisui, and Kalgan are the respective provincial capitals. The total area is about 1,875,000 square miles, although some authorities place it as low as 1,367,000 square miles. Population, variously estimated at 750,000 to 2,000,000. Outer Mongolia has an area of about 714,000 square miles and a population estimated at 670,000 (including 7000 Chinese and 90,000 Russians). The capital is Urga (population, 30,000).

Mongolia is inhabited by nomadic Mongol and Kalmyk tribes, but latterly the Chinese have emigrated in considerable numbers. The chief occupation is stock raising and the principal exports are furs, skins, hides, horns, and wool. The soil is naturally fertile but needs irrigation to be productive. Gold, iron, copper, silver, and tin are found, but are not worked extensively. Since 1917 there has been a motor-car freight service across the Gobi Desert. See CHINA.

MONOPLANES. See AERONAUTICS.

MONTAGUA VALLEY. Border territory under dispute between Guatemala and Honduras. For treaty settlement in 1930, see GUATEMALA, under *History*.

MONTANA. POPULATION. According to the Fifteenth Census, the population of the State on

Apr. 1, 1930, was 537,606. At the census taken Jan. 1, 1920, it was 548,889. The capital is Helena.

AGRICULTURE. The following table gives the acreage, production, and value of the principal crop in 1929 and 1930:

| Crop | Year | Acreage | Prod. Bu. | Value |
|--------------|------|-----------|-------------|--------------|
| Wheat | 1930 | 3,913,000 | 33,698,000 | \$16,332,000 |
| | 1929 | 4,226,000 | 40,688,000 | 38,741,000 |
| | 1930 | 2,135,000 | 2,381,000 * | 25,893,000 |
| Hay | 1929 | 2,082,000 | 2,527,000 * | 30,762,000 |
| | 1930 | 526,000 | 9,205,000 | 2,854,000 |
| | 1929 | 554,000 | 9,418,000 | 4,803,000 |
| Corn | 1930 | 271,000 | 3,252,000 | 2,146,000 |
| | 1929 | 301,000 | 3,612,000 | 3,034,000 |
| | 1930 | 480,000 | 1,776,000 | 2,327,000 |
| Flaxseed ... | 1929 | 343,000 | 1,098,000 | 3,074,000 |
| | 1930 | 226,000 | 3,729,000 | 1,529,000 |
| | 1929 | 251,000 | 4,016,000 | 2,731,000 |
| Potatoes ... | 1930 | 29,000 | 2,204,000 | 2,424,000 |
| | 1929 | 34,000 | 1,980,000 | 3,366,000 |
| | 1930 | 60,000 | 690,000 | 1,690,000 |
| Dry beans .. | 1929 | 60,000 | 660,000 | 2,376,000 |
| | 1930 | 45,000 | 564,000 * | ..... |
| | 1929 | 38,000 | 386,000 * | 2,815,000 |

* Tons.

Farms in the State numbered 47,563 in 1930, as against 46,904 in 1925 and 57,677 in 1920.

MINERAL PRODUCTION. The production of copper, with regard to which Montana held in 1928 third rank among the States, increased to 297,725,973 pounds for 1929, from 248,262,027 for 1928. By value, the product of 1928 was \$35,749,732. An average price of 17.6 cents a pound in 1929, well above the 14.4 cents average of 1928, indicated for the product of 1929 a total value in excess of \$52,000,000. The mining of lead also rose, to 39,213,707 pounds for 1929, from 33,700,000 for 1928, when the year's product was valued at \$1,958,059. Of zinc were mined 136,351,734 pounds in 1929, a decline from the 165,660,189 pounds, in value \$10,105,272, of 1928. Gold production, 54,758 fine ounces, was somewhat lower for 1929 than the 58,196 ounces of 1928; in value it was about \$1,100,000 for 1929 and was \$1,203,020 for 1928. The output of silver rose to 12,716,977 fine ounces for 1929, from 10,853,276 for 1928, when this product attained the value of \$6,349,166. Petroleum production diminished, being 3,183,000 barrels for 1929, as against 4,015,000 for 1928; in value, it was \$5,700,000 (estimated) for 1929 and \$6,400,000 for 1928. Coal production rose slightly to 3,407,256 net tons for 1929, from 3,324,195 for 1928; and to \$7,561,000 in value, from \$7,550,000. The output of natural gas reached, for 1928, 6,277,000 M cubic feet, in value \$1,446,000. The aggregate value of the mineral product of the State was, for 1928, \$74,752,309; for 1927, \$68,264,687.

FINANCE. State expenditures in the year ended June 30, 1929, as reported by the U.S. Department of Commerce, were: for maintenance and operation of governmental departments, \$6,981,214 (of which \$1,764,139 was for local education); for interest on debt, \$395,502; for permanent improvements, \$4,360,797; total, \$11,737,513 (of which \$4,820,363 was for highways, \$610,303 being for maintenance and \$4,210,000 for construction). Revenues were \$11,839,078. Of these, property and special taxes formed 19.5 per cent; departmental earnings and remuneration to the State for officers' services, 6.3; sales of licenses, 36.4 (including taxes of \$2,661,875 on sales of gasoline). The State's funded debt outstanding on June 30, 1929, was \$5,629,711. Net of sinking-fund assets, it was \$3,284,841. On property bearing an assessed valuation of

LOCATION, OWNERSHIP, AND PER-CAPITA CIRCULATION OF UNITED STATES MONEY, JUNE 30, 1930
 [From Annual Report Director of the Mint, 1930]

| Kind of money | Total | Money held in the Treasury | | | Money outside of the Treasury | | |
|----------------------------|------------------------|--|--|---|--|------------------------|-------------------------|
| | | Amount held in trust against gold and silver certificates (and Treasury notes of 1890) | Reserve against United States notes (and Treasury notes of 1890) | Held for Federal Reserve banks and agents | Held by Federal Reserve banks and agents | In circulation | Per capita ^d |
| Gold coin and bullion | \$3,493,522,533 | \$1,489,989,479 | \$156,039,088 | \$1,796,239,235 | \$684,107,489 | \$357,235,684 | \$2.90 |
| Gold certificates | ..... | ..... | ..... | ..... | 495,148,330 | 994,841,149 | 8.08 |
| Standard silver dollars | 495,057,388 | 488,458,161 | ..... | 6,599,227 | 6,273,463 | 38,628,669 | .31 |
| Silver certificates | ..... | ..... | ..... | ..... | 100,282,831 | 386,915,280 | 3.14 |
| Treasury notes of 1890 | ..... | ..... | ..... | ..... | ..... | 1,260,050 | .01 |
| Subsidiary silver coin | 5,233,513 | ..... | ..... | 5,233,513 | 24,513,628 | 281,231,234 | 2.28 |
| Minor coin | 4,177,685 | ..... | ..... | 4,177,685 | 4,387,792 | 117,435,575 | .95 |
| United States notes | 2,847,706 | ..... | ..... | 2,847,706 | 55,444,084 | 288,389,226 | 2.34 |
| Federal reserve notes | 1,726,070 | ..... | ..... | 1,726,070 | 342,708,767 | 1,402,066,048 | 11.39 |
| Federal reserve bank notes | 52,165 | ..... | ..... | 52,165 | 2,207 | 3,205,670 | .02 |
| National-bank notes | 19,319,703 | ..... | ..... | 19,319,703 | 28,218,388 | 650,779,377 | 5.29 |
| Total June 30, 1930 | \$4,021,936,763 | \$1,978,447,640 | \$156,039,088 | \$1,796,239,235 | \$1,741,086,979 | \$4,521,987,962 | \$36.71 |

Comparative totals:

| | | | | | | | |
|---------------|------------------|-----------------|---------------|-----------------|---------------|-----------------|---------|
| June 30, 1929 | \$3,789,886,214* | \$1,854,372,591 | \$156,039,088 | \$1,562,425,579 | \$217,048,956 | \$6,603,282,569 | \$39.62 |
| Oct. 31, 1920 | 2,436,864,530* | 718,674,378 | 152,979,026 | 1,212,360,791 | 352,850,336 | 6,761,430,672 | 53.01 |
| Mar. 31, 1917 | 2,952,020,313* | 2,681,691,072 | 152,979,026 | ..... | 117,350,216 | 5,126,267,436 | 40.23 |
| June 30, 1914 | 1,845,575,888* | 1,507,178,879 | 150,000,000 | ..... | 188,397,009 | 3,458,059,755 | 34.92 |
| Jan. 1, 1879 | 212,420,402* | 21,602,640 | 100,000,000 | ..... | 90,817,762 | 816,266,721 | 16.92 |

*The amount of money held in trust against gold and silver certificates and Treasury notes of 1890 should be deducted from this total before combining it with total money outside of the Treasury to arrive at the stock of money in the United States.

†This total includes \$8,675,623 of gold deposited for redemption of Federal Reserve notes, and \$28,226,376 deposited for redemption of national-bank notes, against which \$20,758,412 of notes in process of redemption are a charge, \$1,900 deposited for retirement of additional circulation (act of May 30, 1908), and \$7,691,499 deposited as a reserve against postal savings deposits.

* Includes money held by the Cuban agency of the Federal Reserve Bank of Atlanta.

* Population of continental United States (estimated) June 30, 1930, 123,156,000; June 30, 1929, 119,788,000; Oct. 31, 1920, 107,491,000; Mar. 31, 1917, 103,716,000; June 30, 1914, 99,027,000; Jan. 1, 1879, 48,231,000.

* Includes United States money in circulation in foreign countries and the amount held by the Cuban agency of the Federal Reserve Bank of Atlanta.

† Does not include gold bullion or foreign coin other than that held by the Treasury, Federal Reserve banks, and Federal Reserve agents. Gold held by Federal Reserve banks under earmark for foreign account is excluded, and gold held abroad for Federal Reserve banks is included.

* These amounts are not included in the total since the money held in trust against gold and silver certificates and Treasury notes of 1890 is included under gold coin and bullion and standard silver dollars, respectively.

NOTE.—Gold certificates are secured dollar for dollar by gold held in the Treasury for their redemption; silver certificates are secured dollar for dollar by standard silver dollars held in the Treasury for their redemption; United States notes are secured by a gold reserve of \$150,039,088 held in the Treasury. This reserve fund may also be used for the redemption of Treasury notes of 1890, which are also secured dollar for dollar by standard silver dollars held in the Treasury. Federal Reserve notes are obligations of the United States and a first lien on all the assets of the issuing Federal Reserve bank. Federal Reserve notes are secured by the deposit with Federal Reserve agents of a like amount of gold coin and such discounted or purchased paper as is eligible under the terms of the Federal Reserve act. Federal Reserve banks must maintain a gold reserve of at least 40 per cent, including the gold redemption fund which must be deposited with the United States Treasurer, against Federal Reserve notes in actual circulation. Lawful money has been deposited with the Treasurer of the United States for retirement of all outstanding Federal Reserve bank notes. National-bank notes are secured by United States bonds except where lawful money has been deposited with the Treasurer of the United States for their retirement. A 5 per cent fund is also maintained in lawful money with the Treasurer of the United States for the redemption of national-bank notes secured by Government bonds.

\$428,381,209 were levied during the year State taxes aggregating a total sum of \$1,825,191.

The value of gold, silver, copper, lead, and zinc produced from Montana mines in 1930, according to estimates of the U. S. Bureau of Mines, was about \$32,943,350, a decrease of more than 54 per cent from the record value of \$71,779,547 in 1929. The unusually large decrease in the output of the five metals was caused by the marked curtailment of metal output combined with a sharp decline in metal prices. The curtailment of the copper production in Montana was particularly notable and resulted in a decrease of nearly 100,000,000 pounds from the record output in 1929. There were also marked decreases in the output of zinc, lead, gold, and silver. The value of the gold output decreased from \$1,131,949 in 1929 to about \$870,300 in 1930. The output of silver decreased from 12,716,977 ounces in 1929 to about 7,760,000 ounces in 1930, a decrease of nearly 5,000,000 ounces; it was the lowest output since 1921. The decrease in the silver output combined with the decline in the average price of silver from 53.3 cents an ounce in 1929 to 38.5 cents an ounce in 1930 resulted in a decrease in the value of the output from \$6,778,149 in 1929 to about \$2,987,600 in 1930. Most of the silver produced in Montana is recovered from copper ore and the output varies directly with the copper output. Due to the curtailment in the production of copper ore there was a large decrease in the output of silver from the mines at Butte, and particularly from the group operated by the Anaconda Copper Mining Co., which reported a decrease of about 38 per cent. The copper output decreased from 297,725,973 pounds in 1929 to about 198,200,000 pounds in 1930, and the value from \$52,399,771 to about \$24,576,800, the lowest output and value since 1922. The decrease of nearly 100,000,000 pounds of copper, combined with the decline in price from 17.6 cents a pound in 1929 to 12.4 cents a pound in 1930, resulted in a decrease of more than 53 per cent in the value of the output. Despite the marked decline in the output of copper the State regained its position, ranking second as a producer of copper in the United States. The Anaconda Copper Mining Co., as in the past, produced most of the State's copper from its mines at Butte, but decreases from the property operated by this company accounted for nearly all the decrease in the State output.

The production of lead decreased from 39,213,707 pounds valued at \$2,470,464 in 1929 to about 23,300,000 pounds valued at \$1,211,600 in 1930, the lowest output and value since 1921. The decrease of about 40 per cent in the production of lead was due to curtailment at all the leading producers of lead in the State. The output of zinc recovered from ore mined in Montana decreased from 136,351,734 pounds in 1929 to about 70,150,000 pounds in 1930, and the value from \$8,999,214 to about \$3,297,050, the lowest output and value since 1921 and a decrease of more than 63 per cent from the value of the output in 1929. The electrolytic zinc plants near Great Falls and Anaconda were operated continuously, treating concentrate from Anaconda and Butte and considerable custom material, chiefly from Utah, Idaho, and Montana. Nearly 64 per cent of the total output of zinc from Montana mines was produced from three properties at Butte, and most of the remainder represented the output of the East Helena fuming plant and the Block P mine,

TRANSPORTATION. The total number of miles of railroad line under operation on Jan. 1, 1930, was 5230.60. There were built, in 1930, 5.84 miles of additional first track.

EDUCATION. Pursuant to a resolution of the Legislature of 1929, the State Board of Education conducted, through a commission of superintendents, principals, and supervisors, a survey of secondary education, on the basis of which the commission drafted a bill for the reform of the system. The number of individuals of school age (from 6 to 21 years) in the State was reported for 1930 as 154,413. There were enrolled in the public schools, in the year 1929-30, 120,337 pupils. Of these, 95,550 were in common schools or elementary grades, and 24,787 were in high schools. The expenditures of the year for public-school education totaled \$14,969,486. The approximate average salaries of teachers, for the year, were: in rural elementary schools, \$1000; urban elementary schools, \$1200; junior high schools and initial grades of high schools, \$1350; other high-school grades, \$1500.

POLITICAL AND OTHER EVENTS. The discovery of apparently important chromite mineral areas in southern Montana was reported in August by Prof. Edward Sampson of Princeton University. It was stated to be situated in Stillwater and Sweetgrass counties, near the northeastern corner of Yellowstone Park. Its possible commercial value lay in the use of chromite as an alloy to steel, in the production of rustless steel and chrome plating. The wool raising industry of the State, organized under the Montana Coöperative Wool Association, operated under the Federal Farm Board and attained a quota of 12,000,000 pounds, of which the governmental agencies undertook to dispose. Montana joined with Colorado, Utah, Wyoming, and New Mexico in mandamus proceedings in the courts of the District of Columbia to compel the Secretary of the Interior to reinstate applications and file other applications made under the Leasing Act of 1920. This act to permit the development of petroleum deposits on Federal lands had been suspended in its operation in these mountain States by an executive order of Mar. 12, 1929, to which Montana, like the other States, took exception as adverse to its welfare. The Great Northern and Northern Pacific railroads sought permission of the Interstate Commerce Commission in October to abandon plans that they had filed for extensions in Montana to cost some \$15,000,000.

ELECTIONS. United States Senator Thomas J. Walsh, Democrat, was reelected, defeating Albert J. Galen, Republican candidate, on November 4 by a vote unofficially reported as 104,735 to 66,510. One Republican and one Democratic Representative were reelected. The popular vote approved an issue of \$3,000,000 of State bonds for the building of State institutions.

OFFICERS. Governor, J. E. Erickson; Lieutenant-Governor, Frank A. Hazelbaker; Secretary of State, W. E. Harmon; Treasurer, F. E. Williams; Superintendent of Public Instruction, Elizabeth Ireland.

JUDICIARY. Supreme Court: Chief Justice, Lew L. Callaway; Associate Justices, John A. Matthews, Albert J. Galen, S. C. Ford, Albert H. Angstman.

MONTANA, STATE UNIVERSITY OF. A State institution for the higher education of men and women in Missoula, Mont.; founded in 1895. The enrollment for the autumn of 1930 was 1393, of

whom 791 were men and 602 women. These were distributed as follows: Arts and sciences, 917; business administration, 69; education, 24; forestry, 99; journalism, 96; law, 63; music, 26; pharmacy, 54; music specials, 28; shorthand and typewriting specials, 5; and unclassified, 12. In the 1930 summer session, 556 students were registered, of whom 160 were men and 396 women. The faculty had 98 members. The productive funds and income for the year amounted to \$480,241. There were about 183,000 volumes in the library, including government documents. President, Charles H. Clapp, Ph.D.

MONTENEGRO, mōn'tā-nā'grō. A former Balkan kingdom incorporated as a province of Yugoslavia in 1921. In 1929 the territory was abolished as an administrative subdivision of Yugoslavia and was absorbed in one of the nine new banats established by the dictatorship. See YUGOSLAVIA.

MONTSEERAT, mōnt'sē-rāt'. One of the presidencies of the Leeward Islands. See LEEWARD ISLANDS.

MOON. See ASTRONOMY.

MOONEY CASE. See CALIFORNIA under *Political and Other Events*.

MOORE, ADDISON WEBSTER. An American educator and philosophical scholar, died in London, England, Aug. 25, 1930. He was born in Plainfield, Ind., July 30, 1866, and was graduated from De Pauw University with the A.B. degree in 1890 and the A.M. degree in 1893. After studying at Cornell University during 1893-94, he was an assistant in philosophy at the University of Chicago during 1895-97 and associate during 1897-98, receiving his Ph.D. degree from that institution in 1898. Until his retirement as professor emeritus he was connected with the University of Chicago, serving as instructor from 1898 to 1902, assistant professor from 1902 to 1904, associate professor from 1904 to 1909, and professor from 1909 to 1929. In 1918 he was lecturer on philosophy at Harvard University. He was president of the Western Philosophical Association in 1911 and of the American Philosophical Association in 1917. For some years he was associated with John Dewey, to whose philosophical ideas he gave his support. His works include: *Functional versus Representational Theories of Knowledge in Locke's Essay* (1902); *Existence, Meaning, and Reality in Locke's Essay and in Present Epistemology* (1903); and *Pragmatism and Its Critics* (1910). He was co-author of *Studies in Logical Theory* (1903) and *Creative Intelligence* (1916).

MOORE, ALEXANDER POLLOCK. An American publisher and diplomat, died in Los Angeles, Calif., Feb. 17, 1930. Born in Pittsburgh, Pa., Nov. 10, 1867, he attended Carry University there during 1877-81. He entered newspaper work in 1878 and was, successively, reporter, city editor, managing editor, and publisher. He was part owner of the Pittsburgh *Telegraph* and *Chronicle-Telegraph*, managing editor of the Pittsburgh *Press*, and, after 1904, editor-in-chief of the Pittsburgh *Leader*. In 1912 he married Lillian Russell, American actress, who died in 1922. He was a member of the Republican party, but supported the Roosevelt progressive movement. In 1928 he purchased the Boston *Advertiser* and the New York *Daily Mirror*, selling the latter within a few months. He began his diplomatic service as ambassador to Spain by appointment of President Harding in 1923, serving until 1925. He went to Peru as American ambassador in 1928

and, at the time of his death, was ambassador-designate to Poland, having been appointed by President Hoover in January, 1930, to serve as the first ambassador to that country.

MORAVIANS. A religious denomination comprising, in the United States, three branches: The Moravian Church (Unitas Fratrum); the Evangelical Union of Bohemian and Moravian Brethren in North America; and the Independent Bohemian and Moravian Brethren Churches. It was formed in Bohemia in 1457 under the leadership of John Huss and Jerome of Prague, and opposed the efforts of Austria and the Roman Catholic authorities to suppress it. At the beginning of the Reformation, it had more than 400 churches. In 1741 Moravians, settling at Bethlehem, Pennsylvania, founded the first Moravian Church in the United States. The doctrine is evangelical, without a creed peculiar to itself, and in its polity the denomination follows a modification of the episcopacy, having a ministry of three orders: Bishops, presbyters, and deacons.

THE UNITAS FRATRUM, the largest branch, is organized in two coordinate provinces; the Northern, with a provincial synod meeting every fifth year; and the Southern, of which the provincial synod meets every third year. The church maintains the following four educational institutions: Linden Hall, Lititz, Pa.; Moravian College and Theological Seminary, and Moravian Seminary and College for Women, Bethlehem, Pa.; and Salem Academy and College for Women, Winston-Salem, N. C. Missionary workers are maintained in southern California and Alaska, and in Nicaragua, the West Indies, Jamaica, Labrador, Surinam, South America, the Himalayas, and Unyamwesi, Central Africa. The official periodical, *The Moravian*, is published weekly in Bethlehem, Pa. On Jan. 1, 1930, there were 145 churches; 170 ministers; 27,181 communicant members, although the actual membership was estimated at 37,838; and 137 Sunday schools with 24,033 pupils.

A meeting of the Northern Province was held in Bethlehem, Pa., June 12-20, 1930. Among the important decisions reached were the inauguration of steps toward the actual union of all the spiritual descendants of John Huss and the Bohemian-Moravian Reformation, active in scattered parts of North America. A world conference of Moravians was to be held in Herrnhut, Saxony, in the spring of 1931 for the purpose of reestablishing the International Moravian Church, known as the Unitas Fratrum, on a somewhat different administrative basis than heretofore.

THE EVANGELICAL UNION OF BOHEMIAN AND MORAVIAN BRETHREN IN NORTH AMERICA, of which the first congregation was organized in 1864 in Wesley, Texas, is under the direction of a synod which meets each year on July 6, the day of the death of John Huss.

THE INDEPENDENT BOHEMIAN AND MORAVIAN BRETHREN CHURCHES were founded in 1858 in College Township, Iowa. In 1926 there were three churches with one minister and 356 members and three Sunday schools with 381 scholars.

MORMONS. See LATTER-DAY SAINTS, CHURCH OF JESUS CHRIST OF.

MOROCCO. The largest of the Barbary States, occupying the northwestern corner of the continent of Africa. Morocco is divided into three zones: First and most important, the French

protectorate, including approximately 85 per cent of both area and population, with Rabat as the political capital and Casablanca as the leading port and commercial centre; second, the Spanish protectorate, a narrow strip of land extending for about 300 miles from the Atlantic Ocean along the Mediterranean, with Ceuta, Melilla, and Tetuan as the principal localities; and third, the international Tangier zone ruled in accordance with the terms of the Paris protocol of July 25, 1928, adhered to by France, Great Britain, Spain, and Italy. The total area is about 218,525 square miles, of which the area claimed by Spain for her zone in the north was 8000 square miles; for her southern zone, 95,000 square miles; and for Ifni on the west coast, 800 square miles. In 1930 the area effectively held by the French was estimated at 200,000 square miles.

A census of the French zone taken in March, 1926, placed the population at 4,016,882 native Moslems, 107,552 native Jews, 74,558 French, and 104,712 foreigners, making a total of 4,229,146. That of the Spanish zone was estimated at 1,070,400 and that of the Tangier zone at about 80,000. The largest towns in the French zone, with their populations according to the census of 1926, are Marrakesh, 149,263; Casablanca, 106,608; and Fez, 18,172. In the Spanish zone, the largest town is Tetuan, with a population of 43,000. The population of Tangier is approximately 60,000. The chief languages are French, Spanish, Moorish, Arabic, and Berber dialects. In 1926 there were in the French zone 199 French schools and 92 Moslem schools.

PRODUCTION, ETC. Agriculture is the predominant industry, the cultivated area of the French zone totaling 8,920,000 acres. The chief crops are cereals, beans, chickpeas, cumin and coriander, olives, linseed, almonds, grapes, and other fruits. There are 3,700,000 acres of forests. Livestock in 1928 included 1,813,643 cattle, 8,035,239 sheep, 2,912,167 goats, 283,096 horses and mules, and 114,463 camels. French settlers controlled about 1,780,000 acres of cultivated land in 1927. In that year construction of numerous irrigation projects was begun. Phosphate production in the French Zone reached 1,337,100 tons in 1928 and lead and manganese are produced in exportable quantities. Manganese deposits are sufficient to render France eventually independent of foreign supplies. Fishing is an important industry in both French and Spanish zones.

In 1929, exports of the French territory decreased to 1,231,000,000 francs; imports rose to 2,550,000,000 francs. The bulk of the trade was with France and Algeria. In the Spanish Zone (1927), imports totaled 103,000,000 pesetas, including large military supplies, and exports, 22,000,000 pesetas (1 peseta exchanged for about \$0.17 in 1927). Imports and exports of the Tangier Zone for 1928 were 128,625,862 francs and 37,782,253 francs, respectively.

The 1930 estimates of revenue and expenditure for French Morocco totaled 802,421,620 francs and 802,281,729 francs, respectively. With the help of a subvention from the Spanish Treasury, the budget for the Spanish Zone for 1928 balanced at 55,913,441 pesetas. For the Tangier Zone, the 1930 budget provided for revenues of 25,423,500 francs and expenditures of 25,349,569 francs. In 1928, 1529 vessels of 1,455,204 tons entered the port of Tangier and 1996 vessels of 2,804,249 tons the ports of the French Zone.

Agadir, in French Morocco, became a free port on Jan. 1, 1930. There were about 1500 miles of railway in Morocco in 1929, of which 1427 miles were in the French Zone and about 72 miles in the Spanish Zone. Motor highways extended 2764 miles in the French Zone, 350 miles in the Spanish, and about 65 in Tangier. Airplane lines connect Toulouse, Casablanca, Tangier and Rabat; Casablanca and Dakar; and Seville and Larache.

GOVERNMENT. The Tangier Zone is permanently neutralized and demilitarized and is governed by an international control organization. The French Zone constitutes a protectorate, under a French and native administration. The office of Sultan continues, but the Sultan is obliged to follow the advice of the French Resident General in all matters. The position of War Minister is held by the officer commanding the French troops in Morocco. The Spanish Zone is a protectorate, governed by the Spanish High Commissioner. Sultan in 1930, Sidi Mohammed, succeeded his father Moulay Youssef, Nov. 18, 1927. French Resident General, Lucien Saint (appointed Jan. 2, 1929); Spanish High Commissioner, General Conde de Jordana; Administrator of the Tangier Zone, M. Le Fur.

MORPHOLOGY. See ZOÖLOGY.

MORROW, DWIGHT W. See MEXICO under *History*; NEW JERSEY.

MORTALITY RATES. See VITAL STATISTICS and each country under *Area and Population*.

MOSAIC DISEASES. See BOTANY, under *PATHOLOGY*.

MOSQUITOES AND DISEASE. See ENTOMOLOGY, ECONOMIC.

MOTHERS' PENSIONS. See CHILD WELFARE.

MOTHS. See ENTOMOLOGY, ECONOMIC.

MOTION PICTURES. What artistic progress the cinema made during 1930 was chiefly due to two factors. In the first place, the producers began to realize that their medium was still that of the motion picture, rather than of the photographed stage play, despite the addition of dialogue. Second, the producers gave evidence of increasing their stock of dramatic courage. They seemed more willing than usual to take chances on an occasional work that offered possibilities for distinction, even though it lacked the essentials for box office success. They seemed, in a word, to be beginning to understand their medium and to have an interest in improving the quality of their product.

It cannot be said that this zeal gave any sign of growing into a general cinematic renaissance. The creative average remained low and the general run of the films continued to be commonplace and imitative in quality and uneventful in narrative. In addition, there was, despite the newfound determination to make real motion pictures, a return to the stage for plot material that threatened to turn the cinema from a creative medium to a mere recording instrument. Broadway stage plays, whether successes or failures, were hastily bought up by the screen magnates to be turned into films. Also the producers went to the past of the theatre for material and were to be found presenting photoplays based on such venerable stage works as *Charley's Aunt*, *East Lynne*, *The Girl of the Golden West*, and *Common Clay*.

Yet despite the reliance on the stage for its plot material, the cinema had undeniably, in its

production methods, returned to the old-time cinema values of movement, visual design, atmospheric lighting, and all of the other dynamic pictorial qualities peculiar to the motion picture. The struggle between the two trends in cinema manufacture, between the emphasis on the stage and the emphasis of the screen, had to a certain extent resulted in a compromise. The technique is that of the motion picture and the material is that of the theatre. The tendency, however, was decidedly towards accenting the cinematic qualities, towards providing the camera with all the possibilities for ranging freely and widely.

The picture which was generally conceded to be the most distinguished of the year was Lewis Milestone's production of the Remarque war novel, *All Quiet on the Western Front*. The film was a faithful version of the book, and it possessed powerful and impressive cinematic qualities. It was generally expected that the grimness of the story would keep it from any extensive popularity, but it turned out to be one of the most successful pictures of the year. Late in the year it achieved additional fame when, due to the bitter opposition of the Hitlerites, the film, despite its sympathetic treatment of the German viewpoint, was barred from Germany.

The year's best example of the possibilities for a successful amalgamation of the qualities of stage and screen in a real motion picture was provided in *Laughter*. Here was a photoplay directed with all possible regard for cinematic qualities, which at the same time did not neglect the qualities of good dramatic writing. No work written directly for the screen has possessed such sparkling dialogue. *Laughter* was a good play, as well as a superior motion picture, and it demonstrated that good plays can be written directly for the screen; that the conventions of the cinema in such matters are no more impossible to overcome than are those of the theatre.

Laughter, by the way, was another film which its producers expected to be a critical, rather than a popular success, and yet which turned out to be both. Among the other pictures which rebelled, in one way or another, against the Hollywood conventions were *Men Without Women*, which was not based on the Hemingway short stories, but was a grim tragedy of men trapped in a sunken submarine; a faithful picturization of the stage play, *Journey's End*, which also had no women in the cast; *Seven Days Leave*, an adaptation of Sir James M. Barrie's *The Old Lady Shows Her Medals*, and the English-language version of the German picture, *The Blue Angel*, a morbid tragedy of a romantic old man who fell in love with a cabaret singer.

One of the best of the year's motion pictures was a melodrama called *Her Man*, which was based, with considerable freedom, on the Frankie and Johnnie legend. Filled with the determination to keep the children interested in the films, an adaptation of *Tom Sawyer* was offered, which proved to be one of the most successful attempts to capture the spirit and the letter of an important novel that the cinema had yet devised. Other important works included the typical melodramas, *Street of Chance* and *For the Defense*; D. W. Griffith's production of *Abraham Lincoln*, a picturesque biography of the legendary Emancipator; *The Man from Blankley's*, John Barrymore's first farce since the early days of his career; *The Royal Family*, a romantic comedy said to be based on the Barrymores; the lunatic

comedy, *Animal Crackers*, starring the Marx Brothers, and such works as *Morocco*, *The Playboy of Paris*, *The Devil to Pay*, *The Dawn Patrol*, *Holiday*, *Derelict*, *Outward Bound*, *Raffles*, *Romance*, and *The Social Lion*.

Hell's Angels, the spectacular aviation drama, which took three years to produce and was said to have cost four million dollars was finally presented, where it proved to be an exciting spectacle, marred by a trivial story. It was declared by the financial experts on screen matters that there was little chance for the picture to return its production cost.

The year 1930 marked a decline in the manufacture of pictures in color. Mr. Ziegfeld's musical comedy *Whoopee* was transferred to the screen in that manner, and so were *Follow Thru*, *Song of the West*, *Viennese Nights* and a few others. On the whole, however, the tendency seemed to be to go back to the conventional black and white. Color was chiefly employed in film musical comedies, and there was a decided decline in the presentation of musical shows, also. The producers found that the public was losing interest in such works, and thereupon songs were dropped from pictures, innumerable composers were sent away from Hollywood and theme songs disappeared. It was typical of the revolt against filmed melody that the most recent starring vehicle of Maurice Chevalier, the most popular of the singing stars, contained but two numbers, played casually during the early part of the film. Irving Berlin was brought to Hollywood to write a musical comedy for Douglas Fairbanks, but the film, *Reaching for the Moon*, emerged with but one minor song left. Ernst Lubitsch's *Monte Carlo* was perhaps the most generally admired of the recent singing films.

The larger screen, which was intended to fill the entire proscenium of the bigger theatres, rather than a fraction of it, and which was supposed to provide, also, a suggestion of the third dimension, continued in the experimental stage. Several new processes were offered during the year, but they were presented tentatively and briefly. After a week's use in the New York theatres, the film houses reverted to the conventional-size screen. It was said that the exhibitors in the smaller towns protested against the arrival of the big screen, which meant a new expense to them before they had recovered from the cost of installing their new sound devices.

In August Lon Chaney (q.v.) known in the cinema as "the man with a thousand faces" died, shortly after his first talking picture, *The Unholy Three*, had been released. Chaney, who had been one of the last of the screen stars to hold out against the encroachment of the microphone, was famous for his fantastic and complicated disguises, but he was also recognized as one of the most brilliant actors of the cinema. His gift for grotesque make-up, his genuine pantomimic skill and his preference for macabre characterizations made him an almost legendary figure in Hollywood. With his death, Charles Chaplin, who had not surrendered to sound as Chaney finally had, remained the only screen adherent of silence. Incidentally the only important silent film to be shown in New York during the year was the Russian *Storm over Asia*.

Greta Garbo made her first appearance in dialogue during the year and, although there were those who expressed disappointment at her deep contralto tones, it was generally agreed that she

had lost little of her appeal through the advent of audibility. She was, however, faced with a rival with the coming of a striking German actress, named Marlene Dietrich, who seemed to possess many of the qualities of Miss Garbo. Among the other players who scored successes during 1930 were Fredric March, Ruth Chatterton, Wallace Beery, Mary Astor, Helen Twelvetrees, Nancy Carroll, Stuart Erwin, Jack Oakie, Kay Francis, and William Powell. The successful directors included Lewis Milestone, John Cromwell, Tay Garnett, Harry d'Arrast and Josef von Sternberg. Not the least of the triumphs were those scored by those animated cartoon comedies, *Silly Symphonies* and *Micky Mouse*.

Motion-picture theatres in the United States on Dec. 31, 1930, numbered 22,731, or 35 per cent of the world total of about 62,365. Of the American theatres, 12,500, or 55 per cent, were wired for sound and 10,231 were for silent pictures.

MOTOR BOATING. The popularity of speed-boat racing in 1930 was testified to by the large number of records broken during the year. The highest speed ever attained by a boat of any kind was reached by Sir Henry Segrave (q.v.) in *Miss England II* on Lake Windermere, England, June 13, when he was clocked at 98.76 miles an hour over a mile measured course. In the third lap of the same test, half of the step under the fore part of the hull was torn away, and the boat capsized, killing Sir Henry and one of his two mechanics. The Harmsworth Trophy was successfully defended by Gar Wood at Detroit on September 1 against Miss Marion B. Carstairs, British girl pilot. Wood established a new heat record of 77.39 miles an hour for the 30-nautical mile course in his *Miss America IX*. Two records for the Gold Cup races were smashed at Red Bank, N. J., in August. Richard Loynes of California established a new lap record at a speed of 63.64 miles an hour and in the first heat, Richard Hoyt, defending champion, set a new time of 61.69 miles an hour. The final race was won by Victor Klierath, of Port Washington, L. I., in *Hotsy Totsy*. *Hotsy Totsy*, with Richard Hoyt at the wheel, also took the National Sweepstakes at Red Bank, and the Chesapeake free-for-all.

About 142 outboard motor-boat speed records were established during the year. Ray Pregenzer, with an F-class motor, reached 50.934 miles an hour on Lake Fox, Wis. J. E. Wilkinson of Boston won the Albany to New York outboard marathon with a record average time of 39.13 miles an hour in *The Flash*. Colgate won the intercollegiate outboard championship.

MOTOR CARS, BUSES, TRUCKS, ETC. See AUTOMOBILES; RAILROADS; ROADS AND PAVEMENTS; TAXATION under *Vehicle and Gasoline Taxes*.

MOTON COMMISSION. See HAITI under *History*.

MOTOR FUEL. See CHEMISTRY, INDUSTRIAL. **MOUNTAINS, MOUNTAIN BUILDING, MOUNTAIN CLIMBING.** See GEOLOGY; EXPLORATION.

MOUNT HOLYOKE COLLEGE. An institution for the higher education of women in South Hadley, Mass.; founded in 1837. The registration for the autumn session of 1930 was 1046. For the summer session 24 students were registered, German being the only course given. The faculty, including professors, associate professors, assistant professors, instructors, and chief administrative officers, numbered 131; and there were 48 assistants, graduate assistants, curators, and

secretaries. New appointees numbered 25, including 8 of the rank of professor and lecturer and 17 of the rank of instructor. The productive funds amounted to \$4,237,979 and the income for the year was \$1,213,245. The total amount of gifts and bequests during the year 1929-30 was \$684,047. There were 113,000 volumes in the library. President, Mary Emma Woolley, Litt.D., L.H.D., LL.D.

MOZAMBIQUE. See PORTUGUESE EAST AFRICA.

MUIRHEAD, mür'héd, DAVID. A British painter, died in London, Apr. 21, 1930. He was born in Edinburgh in 1867, and studied art at the Royal Scottish Academy in Edinburgh and at the Westminster Art School in London. His first exhibitions were at the Royal Scottish Academy and in Glasgow. In 1895 he exhibited at the Royal Academy in London; in 1896, at the New English Art Club; and in 1898, at the British Artists' Exhibition. After that time most of his work was exhibited at the New English Art Club. He chose as his medium landscape and figure painting, endowing his subject with poetical feeling and delicate perception. His more notable landscape paintings include: "Autumn"; "The Fen Bridge"; "The Avenue"; "Church in the Fens"; "A Woodland Pool"; "The Windmill at Cley"; "The Ouse near Huntingdon"; "The Cornfield"; and "The Harbour, Stonehaven." Among his figure paintings are: "The Lost Piece of Money"; "The Sisters"; "Night Piece"; "The Letter"; and "Blue and Silver." Examples of his work are found in the Tate Gallery in London, the Luxembourg Gallery in Paris, the National Gallery of Ottawa, and most of the public galleries of the English provincial cities. He was elected an associate of the Royal Academy of Arts in 1928 and was also an associate of the Royal Society of Painters in Water-Colours.

MÜLLER, THERESE. See MALTEN (MÜLLER), THERESE.

MULTIPLE SCLEROSIS. See MEDICINE, PROGRESS OF.

MUNICIPAL GOVERNMENT. Dallas, Texas, adopted the council-manager plan by a popular vote of two to one on October 10, effective May 1, 1931. By size it will stand fifth among American cities having the manager plan. It had had commission government for 23 years. Thirty Texas cities preceded it in becoming a manager city. Hereafter, in place of five commissioners, one designated mayor, it was to have nine councilmen and a manager. Six of the councilors must reside each in a specified district but all nine will be elected at large. The council will designate one of its members as mayor and will appoint an attorney, auditor, supervisor of utilities, judge of the city court, a city planning and zoning commission, a park board and a civil service commission, the latter being a new body in Dallas. Other department heads will be appointed by the manager. There will be a purchasing agent. The initiative, referendum and recall are retained.

Another large city to adopt the manager plan was Oakland, California. Besides these two adoptions, there were 16 others in the United States, including Covington, Lexington, and Newport, Ky., and Mamaroneck, N. Y., and two in Ireland—Dublin and Dun Laoghaire, with populations of about 400,000 and 35,000. At the end of 1930, the number of cities under the plan totaled 425, with 408 in the United States, 14 in Canada, and three in Ireland. At St. Paul, Minn., the manager

plan was defeated for a second time but in both 1929 and 1930 it had a majority although not the requisite 60 per cent. The manager plan was also defeated at Appleton, Wis., and 11 smaller places. Proposals to abandon the manager plan were defeated at Bellows Falls, Brattleboro, and St. Johnsbury, Vt., Kenosha, Wis., and Gainesville, Texas. In New Jersey, long a stronghold of the commission plan and with few manager cities as yet, Teaneck voted for and Metuchen against having a manager, while Union City adopted commission government. For a list of manager cities, with a spot map for those in the United States and a review of the history and status of the manager plan, as of Dec. 1, 1930, see *Public Management*, January, 1931, the official organ of the International City Managers' Association (Chicago).

Among counties, the plan was adopted by a two to one vote in Arlington County, Va., but was defeated in Greene County, Ga., the defeat being partly due to the complicated wording of the ballot. Two articles on "Why Some Cities Have Abandoned Manager Charters," by Arthur W. Bromage, of the University of Michigan, appeared in *National Municipal Review* for September and November. A supplement to the August issue of the same journal presented "A Model County Manager Law," drafted by a committee of the National Municipal League. *Kansas Municipalities* for September contained a list of 62 cities which had changed their form of government (period not stated). Of 59 cities that had given up the mayor-and-council plan, 47 changed to a commission and 12 to a council and manager. Three commission cities also changed to the council-manager plan.

City-County Consolidation, in effect for decades in a few cases, was defeated wherever proposed for several years past (see outline of the Greater Pittsburgh plan and its effect in the 1929 YEAR BOOK). The same fate met the proposed merger of the city and country of St. Louis, when a state constitutional amendment was voted down in November, 1930, 376,000 to 278,000, or by a majority of 98,000.

The recall, not often used in American cities, and rarely in large ones, ousted from office the mayor of Detroit, who had been elected in November, 1929, as a reform candidate and who took office on January 1. It was alleged that he had become the tool of politicians and made appointments and removals against the public good. One of his appointees, as commissioner of public works, displaced an engineer who for many years had served in various engineering positions. The new appointee, who was not an engineer, soon dismissed the city engineer, also long in the service of the city, but the dismissed man was reinstated under a civil service ruling. These and other acts of the mayor, some of which affected police administration, led business men and others to demand his recall. The heat and bitterness of the recall campaign was increased by the mysterious shooting of one of the leading workers for the recall. Court attempts to stop the recall election failed. The majority for recall was 31,000 in a vote of 200,000. This vote, under the law, made a second election necessary, at which the mayor automatically became a candidate. The recall was affirmed by a large majority, the leading candidate receiving 107,000 votes, the defeated mayor 94,000, a recent ex-mayor about 83,000 and a communist 3000. The mayor of Culver City, Okla., was recalled on December 17 by a vote of 824 to 536

after eight months' service on charges of "general inefficiency, incompetency and waste of funds."

Atlanta, Ga., was the scene of unusual municipal interest, including convictions for bribery and graft, a controversy over population, and a reduction in the number of city councilmen. According to an article in the *National Municipal Review* for December, ten persons had already been tried and nine convicted while still others were under indictment. These included members of the city council, the city clerk and other city employees and some persons not in the city government. The population controversy arose because the U. S. Bureau of the Census refused to recognize the Greater Atlanta provided for by State legislation (see 1929 YEAR BOOK) comprising Atlanta and extensive outlying territory, the whole divided into boroughs, but Greater Atlanta having no power of taxation and the council set up having only advisory powers. One or more other Southern cities that would have been outranked by the proposed Greater Atlanta protested against its recognition in the census returns. The controversy was in a Federal court at the close of the year.

The city government scandals centered attention on the desirability of making a change in the government of the city to the extent of reducing the size of the bicameral council and transferring some of its committee functions to the heads of administrative departments. The new plan, devised by the mayor-elect, was approved on December 3 by a popular vote of 5291 to 2086, but must go to the State Legislature. If approved, the number of city wards will be cut from 13 to 6. The bicameral council would consist of 12 councilmen, two elected by each ward, and six aldermen, elected at large. The general council, as now, would vote on all matters except the expenditure of money. All appropriation bills are first acted on by the common council then go to the aldermanic board for concurrence or nonconcurrence. Two-chambered councils were once common in the United States but have been given up by almost every city that once had them.

IRELAND. The Dail enacted a Greater Dublin bill by a majority of 21 and the former town clerk, Gerald J. Sherlock, became city manager. In choosing members of the city council the electorate is divided into classes in accordance with their rate or tax payments.

ECUADOR. A cablegram of December 17 gave the meagre information that by the election of a perfect Guayaquil had become the first South American city under the city manager plan.

CHINA. For recent changes in municipal government of China, including brief summaries of the nationalistic municipal code of 1928 and the municipal act of 1930, consult *National Municipal Review*, December, 1930, article by Ray Chang, secretary to the mayor of Tientsin. Under the new act cities are put in two classes. Each city is divided into four self-governing units, which from greatest to least are: district, precinct, sub-precinct, and neighborhood, the latter comprising only five houses. Each city has a mayor, administrative board and advisory council. The mayor is appointed by the "supervising authority." Under him are departments of social welfare, public safety, finance and public works. Other departments may be created, with the approval of the "higher authority."

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York); MacDonald, *American City Government and Administration* (New York); *Municipal Index for 1930* (New York); Studensky, *Public Borrowing* (New York); Studensky and others, *Government of Metropolitan Areas in the United States* (New York); Sly, *Town Government in Massachusetts* (Cambridge). See TEXAS under *Political and Other Events*.

MUNICIPAL LEAGUE, NATIONAL. See NATIONAL MUNICIPAL LEAGUE.

MUNICIPAL OWNERSHIP. Continuation of construction work on the subway system of New York City and the proposed purchase by the city of all the privately-operated rapid transit systems, the whole to form a unified transit system, was the most outstanding feature of municipal ownership activities during the year. Next in importance came three changes from private to public ownership of waterworks and an increase in toll bridges, both publicly and privately owned. In comparison, changes in the ownership of other municipal utilities were at a standstill, with what may prove to be only temporary setbacks in the extension of municipal electric light and power systems at San Francisco and Los Angeles.

RAPID TRANSIT. At the very end of the year a tentative agreement for the purchase by New York City of such of the rapid transit system as was not already owned by it was announced. If the plan should be officially accepted on both sides and authorized by the Legislature it would result in a unified rapid transit system, with five-cent fare, operated by a public corporation known as the Board of Transit Control. The unified system would include all the subways and elevated lines of the Brooklyn-Manhattan Transit Corporation, the Interborough Rapid Transit Company and the Manhattan Railway Company.

WATERWORKS. The largest privately-owned waterworks in the United States changed to municipal ownership on March 3, when San Francisco paid the Spring Valley Water Company \$41,000,000 for its plant. Two companies built works in 1856-59 and were consolidated in 1865. Official agitation for municipal ownership began as early as 1871 when the mayor of that year made a declaration to that effect. Within a decade one or more engineering reports on municipally-owned works were made. The city charter, adopted by popular vote in 1898, called for municipal ownership of all public utilities—partly fulfilled as regards electric lights and street railways. Twenty years afterwards a bond issue for a city-owned gravity water-supply system was authorized by popular vote, with the understanding that the plant of the water company would be bought by the city. The large impounding reservoir and the hydro-electric plant forming part of the project have been in use for a number of years and portions of the large aqueduct have also been completed. (See earlier YEAR BOOKS.) In 1910, 1915, 1921 and 1927, bond issues for the purchase of the company's distributing system lacked the requisite two-thirds majority, although receiving actual majorities. On May 1, 1928, the bond issue for purchase was carried, but nearly two years passed before the bonds were marketed and other necessities for the transfer were met.

Another change to public ownership in one of the few cities of 100,000 population or more still under private ownership of waterworks was consummated on October 24 when the Passaic Valley Water Commission, representing the cities of Paterson, Passaic, and Clifton, N. J., with 1930 cen-

sus populations of 138,000, 63,000, and 46,000, took over the property of the Passaic Consolidated Water Company. A price of \$14,000,000 had been set by a condemnation board. Each side expressed dissatisfaction with the price and legal proceedings were in view but a compromise on \$13,000,000 was made. Elizabeth, N. J., a third city of over 100,000 population, arranged for municipal ownership, effective on or about April 1, 1931, when just under \$4,000,000 was to be paid to the Elizabethtown Water Company for its property. The city agrees to buy 2,700,000 gallons daily for ten years from the supply works of the company. The bulk of the water needed, which totaled about 19,000,000 gallons a day, was to come from the Wanaque reservoir of the North Jersey Water District, through an extension from the supply mains of the city of Newark.

GAS AND ELECTRIC UTILITIES. In the gas and electrical utilities field there was little change in the general status since earlier YEAR BOOKS (see 1929 issue for details as to electric light plants). At both San Francisco and Los Angeles large bond issues for extensions of municipally-owned electric light and power plants were defeated: at San Francisco, \$65,000,000 by a vote of 2 to 1 on August 6; at Los Angeles, \$13,300,000 on November 4. At San Francisco, most of the money was to be used to buy the local distribution systems of the Pacific Gas & Electric Co. and the Great Western Power Co. The bond issue was opposed by the business interests and a large group of improvement clubs and was supported by the board of supervisors (city council) and labor organizations. At Los Angeles \$11,000,000 was proposed for improvements in the municipal electrical distribution lines and stations and \$2,300,000 for an electric transmission line from Boulder Dam to the city. Crisp County, Georgia, said to be "running the only county-owned power plant in the United States and selling power 10 per cent below previously prevailing private rates," faced a cut of 35 per cent by the private company with which it was competing. The state utility commission comes to its aid by ordering the company to show cause why it did not make the same reduction in rates in the other parts of the state.

TOLL BRIDGES. After long-continued efforts to get rid of toll roads and toll bridges, with almost complete success wherever they had flourished (or languished) demands of motor traffic in excess of readily available public funds were bringing back toll bridges. Many if not most of these were costly structures, some over large streams, like the Philadelphia-Camden bridge over the Delaware, and the Fort Lee bridge over the Hudson River from upper New York to the New Jersey shore. These two and some others were under public ownership. "The trend of late years," says P. K. Schuyler, President, Federal Bridge Company, New York City, in *Engineering News-Record*, Dec. 4, 1930, p. 880, "seems to have been toward public ownership," being most marked in Alabama, Arkansas, California, Kentucky, Louisiana, New York, North and South Carolina, Tennessee, Washington, and West Virginia. Of 296 toll bridges in use on Aug. 1, 1930, says Mr. Schuyler, 90 or 31 per cent are publicly owned. The number of toll bridges increased from 233 on Oct. 1, 1927, to 296 on Aug. 1, 1930, with 51 more under construction.

BIBLIOGRAPHY. Bird and Ryan, *Public Ownership on Trial: A Study of Municipal Light and Power in California* (New York); McGraw Cen-

tral Station Directory, McGraw Street Railway Directory, Brown's Gas Directory (all New York) cover the whole country; The Bonbright Survey (New York) shows by condensed tables of symbols and by maps, ownership of electric light and power systems supplying incorporated places of 2500 and over; *The Municipal Index* (New York) lists municipally-owned plants, only, and gives a few data concerning towns of 4500 population and over.

MUNICIPAL PLANNING. See CITY AND REGIONAL PLANNING.

MUNRO, NEIL. A British novelist, died in Helensburgh, Dumbartonshire, Scotland, Dec. 22, 1930. He was born in Inveraray, Argyllshire, June 3, 1864. After serving as reporter and editor on the *Glasgow Evening News*, he turned to the writing of tales and romances dealing with life in the Scottish Highlands. Among his books are: *The Lost Pibroch* (1896); *John Splendid* (1898); *Gilian the Dreamer* (1899); *Doom Castle* (1901); *The Shoes of Fortune* (1901); *Children of Tempest* (1903); *The Daft Days* (1907); *The Clyde* (1907); *Fancy Farm* (1910); *Ayrshire Idylls* (1913); *The New Road* (1914); *Jaunty Jock* (1918).

MUNROE, KERR. An American writer of books for boys, died in Miami, Fla., June 16, 1930. He was born near Prairie du Chien, Wis., Sept. 15, 1850, and was educated in the public schools of Appleton, Wis., and Cambridge, Mass. Having studied at the engineering school of Harvard University, he assisted in the explorations of routes for the Santa Fe and Northern Pacific railways in 1867-68, there gaining material for many of his tales. He served as the first editor of *Harper's Round Table* during 1879-82. After 1883, he lived in southern Florida, a district that was often reflected in his writing. His books include *The Flamingo Feather* (1887); *Dorymates* (1889; new ed., 1903); *Cab and Caboose* (1892; new ed., 1913); *Canoemates* (1892; new ed., 1903); *Raftmates* (1893, 1903); *The Fur Seal's Tooth* (1893); *At War with Pontiac* (1895); *With Crockett and Bowie* (1897); *Under the Great Bear* (1900); *The Belt of Seven Totems* (1901); *The Outcast Warrior* (1905); *For the Mikado* (1906). He also edited *Eminent Men of Our Time*.

MURDER. See CRIME.

MUSCLE SHOALS. See ALABAMA under Political and Other Events. UNITED STATES under Congress.

MUSEUMS. See ART MUSEUMS.

MUSHROOM DISEASE. See BOTANY, under Pathology.

MUSIC. GENERAL NEWS. With the death of the wife and the son of Richard Wagner, Cosima and Siegfried (qq.v.) and the participation for the first time of Arturo Toscanini as conductor, 1930 was a significant year in the history of the Wagner festivals at Bayreuth. Despite Siegfried Wagner's illness and death, the 1930 festival was held as scheduled. Toscanini conducted the opening performance, *Tannhäuser* on July 22, and *Tristan und Isolde* on July 23, winning high praise and sustaining his reputation as one of the greatest Wagner conductors, although a non-German. He was the first conductor whose musical career was not largely associated with Germany or Austria to hold a Bayreuth baton. Mr. Toscanini conducted the five performances of *Tannhäuser* and the three of *Tristan und Isolde*; Dr. Karl Muck, despite his 71 years, conducted the

five performances of *Parsifal*. The two performances of the *Ring des Nibelungen* cycle were conducted by Karl Elmendorff. Mr. Toscanini accepted an invitation to return to Bayreuth for the 1931 festival.

After the close of the 1930 series on August 21, there was some speculation as to the future artistic direction and management of these festivals. It was rumored that Toscanini might become chief artistic director of Bayreuth, but this was denied, and November brought the definite announcement that the general direction of the 1931 festival would be in the hands of Winifred Wagner, assisted by Dr. Albert Knittel and Herr Fries.

Before going to Bayreuth, Mr. Toscanini took the Philharmonic-Symphony Orchestra of New York, which had become his principal medium of artistic activity since his resignation from the musical direction of La Scala in 1929, on a European tour. The conductor and the players sailed from New York on the *De Grasse* on April 23, and, beginning with two concerts in Paris, gave 23 performances in 15 cities in less than five weeks. Besides Paris, Milan, Rome, Vienna, and Berlin heard two concerts each; one concert each was given in Zurich, Turin, Florence, Munich, Budapest, Prague, Leipzig, Dresden, and Brussels. The tour closed with four concerts in London, June 1-4.

The International Society for Contemporary Music held its eighth festival early in September at Liège, Belgium, presenting, as usual, works chosen by an international jury from entries submitted by the Society's various national branches. The only American work performed was a *Sinfonietta* for orchestra by Bernard Wagenaar.

Even before the onset of the unfavorable economic conditions prevailing through a large part of the year, there had been much unemployment among instrumental musicians in America, which was attributed largely to the lessening of the demand for orchestras in theatres, etc., owing to their replacement by reproducing musical devices. On January 13, the American Federation of Musicians began a nation-wide advertising campaign to organize a protest against the substitution of "canned music" for "living music" in motion picture theatres. The unemployment situation, however, was still serious by the end of the year.

On December 11, it was announced that seven of the principal concert bureaus of the United States were taking part in a merger with the Columbia Broadcasting System, to become effective Jan. 1, 1931, under the collective title of Columbia Concerts Corporation. The seven bureaus had already formed an alliance in October with the title of the Producing Music Managers' Association. The aims of these alliances included coöperation between the radio and the concert fields, the assuring of first-class artists for the radio, and, when it was sufficiently perfected, for television, and, in the concert field itself, a co-ordination of activities eliminating wastes of time and money, and a stimulation and extension of the demand for the best music in the United States.

In April, the discovery was announced of an apparently unrecorded minuet and music for a one act ballet, *Billeting* or *The Love Test* by Mozart, unearthed by Ludwig Satz in the archives of the Steyr Musical Society. On June 5, the discovery was reported at Eisenach of an

unrecorded Bach clavier concerto in C minor.

A number of large philanthropic gifts were made during the course of the year for musical purposes. The family of the late Jacob and Rosa Stern of San Francisco formed a \$100,000 fund, of which the income was to go for the next ten years to the composer Ernest Bloch to afford him freedom and leisure for his creative work. After this period, the fund was to be used for the establishment of a chair of music and musical scholarship in the University of California. The Finnish government appropriated 50,000 marks for the recording of works of the greatest living Finnish composer, Jan Sibelius.

In Great Britain, a project for Government support of opera was announced in November by the Chancellor of the Exchequer, Philip Snowden. The Government proposed to contribute £5000 for the rest of the fiscal year (until Apr. 1, 1931), and £17,500 annually for the next five years. The Government-directed British Broadcasting Corporation was to contribute £7500 annually and His Majesty's Voice Gramophone Company, £5000. Under this project, the "grand" London international season of opera at Covent Garden in the spring was to continue, while there were to be other London seasons and opera for at least two weeks of each year in six of the other chief British cities. The "original language" plan would be continued at least in the international season, but opera in English would be sponsored and all possible aid given to the development of British artists and a British ensemble.

ARTISTS. Ignace Jan Paderewski, whose proposed American tour in the season of 1929-30 had been prevented by illness, landed in New York on October 6 for his seventeenth concert tour of the United States, which was to last six months and include seventy-five recitals. The noted statesman-pianist, who observed his seventieth birthday on November 6, began his tour with a recital in Syracuse on October 21, and gave New York recitals on November 1 and 29, in addition to an appearance as soloist in a young people's concert of the New York Philharmonic-Symphony Orchestra under the direction of his friend, Ernest Schelling. Mr. Paderewski's playing showed no signs of advancing years, as compared with his American appearances in other recent seasons, and he gave cause for admiration not only at his strength and endurance but for his distinct achievements as a great interpretative artist.

On January 24, Amelita Galli-Curci made her last appearance with the Metropolitan Opera Company, intending henceforth to devote herself primarily to concert work. She sailed immediately afterwards on a European tour, which was interrupted in March, but the soprano made a successful tour of Great Britain during the autumn months.

José Iturbi, the Spanish pianist, who had won a sensational success in his first appearance in the United States, returned to Europe on January 17. In the autumn he began his second American tour, which continued the successes of his first American season. Gregor Piatigorsky, Russian cellist, who had made an excellent impression on his first American tour, gave his first New York recital on January 24 and returned to Europe a week later. Another Russian artist who completed his first American tour in January was Nathan Milstein, violinist, who deserves mention, al-

though he won somewhat less acclaim than was accorded the performances of Iturbi or Piatigorsky.

Another cellist who won praise in his first appearance as a recitalist was Alfred Wallenstein, first cellist of the Philharmonic-Symphony who played in New York on October 14. Severin Eisenberger, fifty-one-year-old Polish pianist known in Austria and Germany, made an unheralded New York debut, on April 6, and was highly praised, one critic considering him a musician "of the great line of Reisenauer and d'Albert."

Among artists returning to America after an absence of several years were Artur Schnabel, pianist, who paid a short visit mainly in order to play in the Boston Symphony's Brahms festival in March, and Erika Morini, young Hungarian violinist, who reappeared in America in the autumn for the first time since 1924, and impressed as a matured, able musician. Serge Prokofieff, Russian composer, conductor and pianist, appeared with several American orchestras in all three capacities.

The two remarkable boy violinists, Yehudi Menuhin and Ruggiero Ricci, continued to be subjects for public notice in 1930. Menuhin, who celebrated his thirteenth birthday in January, pursued his career tranquilly, giving as before, a strictly limited number of performances in the winter, sailing for Europe in April to rest and to study with Adolf Busch, playing in various European cities in the autumn, and returning to America in December. A tribute to Menuhin's musicianship was the announcement that several of the foremost orchestras of Europe would be at his disposal to accompany him in concerto programmes.

Young Ricci, ten years old, showed during 1930 that his first successes had been no accident, especially when he played the Beethoven concerto with mature musicianship in New York with the Manhattan Symphony on November 30. But he figured in the news more frequently as the subject of a long legal dispute over his custody, in which his parents tried to recover him from his guardian, Elizabeth Lackey, the assistant of his teacher, Louis Persinger. In December, controversy ended in favor of the parents, and Mr. Persinger issued a statement disclaiming further responsibility for his artistic future.

CHAMBER MUSIC. Mrs. Elizabeth Sprague Coolidge again sponsored an important festival of chamber music, given from October 12 to 16 in the Field Museum in Chicago. As usual, Mrs. Coolidge invited several European musicians especially for this festival, including Harriet Cohen, English pianist; Emma Lubbecke-Job, German pianist, of Frankfurt; and the Brosa Quartet, of London, headed by Antonio Brosa, all appearing in America for the first time.

The Brosa Quartet (Antonio Brosa and David Wise, violins; Leonard Rubens, viola, and Antonio Pini, cello), gave a few concerts in other cities of the United States in October and November, and received praise after a New York concert on November 9 as a group of well-equipped, unusually sensitive and well-matched musicians. Miss Cohen also made a few other American appearances before returning to England.

After Jacques Gordon's resignation as a concertmaster of the Chicago Symphony, the Gordon Quartet moved its headquarters from Chicago to a music centre at Falls Village, near Norfolk, Conn., which was inaugurated with two festival

programmes presented on August 22-23. Mr. Gordon's group went on tour later in the autumn.

CHORAL SOCIETIES. One of the busiest schedules among American choral organizations was pursued in 1930 by the Society of the Friends of Music of New York, which specialized in music for chorus and orchestra under the direction of Artur Bodanzky, a conductor of the Metropolitan Opera Company. While its 1930 programmes were largely devoted to classic and romantic music, it presented the first American performance of an important choral work, the *Festival Mass* by the late Czech composer, Leos Janacek, on October 26.

The Friends of Music also revived three works which had not been heard in New York for some time, giving Cherubini's *Requiem in C minor*, January 12; Handel's oratorio *Alexander's Feast*, February 2; and Carissimi's oratorio *Jephthe* on November 23. Handel's oratorio *Joshua* received what was believed to be its first New York performance on November 30 at the First Presbyterian Church, under the direction of Dr. William C. Carl.

In its concert January 16 the Schola Cantorum of New York, conducted by Hugh Ross, gave the first American performances of Arthur Bliss's pastoral *Lie Struven the White Flocks* and the chorus *Rasga o Coracao* by the Brazilian composer, Hector Villa-Lobos. The latter work was praised for its combination of song based on Brazilian Indian themes over a rhythmically infectious orchestral accompaniment. The Schola also gave the first American performance of a *Requiem in C minor*, believed to be by Haydn.

On March 26, the Schola Cantorum gave the first performance anywhere of a *Concerto Spirituale* by the Russian composer, Arthur Lourie, for piano with double chorus, barytone, bass, and double-bass, preceded by a prologue for barytone solo and brass instruments. The piano was considered as the soloist, rather than the voices. The work, markedly religious in subject and mood, was considered interesting, but it was felt that the composer had not entirely solved the problems of his novel form. New York's senior major chorus, the Oratorio Society, devoted its concert of May 5 to Bach's B minor Mass, under Albert Stoessel's direction, and was one of the many American choruses singing Handel's "Messiah" in the Christmas period.

On the whole, the year probably saw an increase in the number of American choral societies singing masterpieces in this field. There were performances of major works of Bach in various parts of the United States, including one of the *St. Matthew Passion* by the Brahms Chorus of Philadelphia under N. Lindsay Norden on April 16, and of the *B minor Mass* by the Los Angeles Oratorio Society under John Smallman. Among the new choruses organized during the year was the Chicago A Capella Choir, which gave its first concert on April 17 under the leadership of Noble Cain.

The Don Cossack Russian Male Chorus, composed of former officers of the Tsar's armies singing under Serge Jaroff's direction, made a very successful first American tour in November and the first half of December.

Prominent among Negro choruses were the Hall Johnson Choir, which furnished the mainstay of the singing of spirituals which was a feature of New York's most successful play of the year, *The Green Pastures*, and the Hampton Institute

Choir, which toured Europe during May and June.

One of Europe's best-known choruses, the Toonkunst of Amsterdam, celebrated its hundredth anniversary in May with programmes including the winning work in a prize contest, Rudolf Mengelberg's cantata *Weinlese*. Late in the year, the Vienna Society of the Friends of Music gave the first performance of a cantata by Hans Pfitzner, *Das dunkle Reich*.

FESTIVALS. The forty-ninth festival at Lindsborg, Kansas, was held from April 13 to 20, with programmes including, among other features, performances of Handel's *Messiah* and Bach's *St. Matthew Passion* by the Bethany Oratorio Society and recitals by Albert Spalding, Marie Sundelius, and Arthur Hackett. The annual Mozart Festival at Harrisburg, Pa., so named from the fact that Mozart's *C minor Mass* is a set opening feature on the programme, was held under the direction of Ward-Stephens May 8 to 10. Other choral works performed were Pierne's *Children of Bethlehem* and *St. Francis of Assisi*.

The thirty-seventh festival at Ann Arbor, Mich., was held from May 14 to 17 under the general direction of Earl V. Moore; Frederick Stock and the Chicago Symphony also took part. The major choral works performed were Honegger's *King David*, Bach's *Magnificat in D* and the Verdi *Requiem*.

The twenty-fourth Bach Festival at Bethlehem, Pa., was given by the Bach Choir under Dr. J. Fred Wolle on May 16 and 17. On the first day, 10 Bach cantatas were performed; the second, according to custom, was devoted to the *B minor Mass*. In the Mass, the employment of individual soloists was resumed after three years in which the solos had been sung by the corresponding groups in the chorus.

The seventh annual Westchester County Musical Festival, and the first in the new County Centre at White Plains, N.Y., was held on May 22, 23, and 24 with Albert Stoessel as musical director. The three programmes consisted of choral music sung by the festival chorus of 2000 members of county choral societies, vocal solos and orchestral works. Guest artists were Lucrezia Bori, of the Metropolitan Opera Company, Richard Crooks, tenor, Donald Pirnie, barytone, and Percy Grainger, who, besides appearing as piano soloist, conducted two of his orchestral works, *Spoon River* and *To a Nordic Princess*. A children's concert on May 22 was given by over 2000 singers and 180 instrumentalists, pupils of Westchester schools.

Another May event was the twenty-second North Shore Festival at Evanston, Ill., the last under Dean Lutkin's direction, with participants including the Chicago Symphony under Stock, adult, children's, and boys' choruses, and various soloists.

This was an off-year for the biennial Cincinnati May Festival, but late in September the appointment was announced of Eugene Goossens as musical director of this historic series.

Some 3000 singers, representing 46 churches in 35 cities, and 300 instrumentalists took part in the Talbott Musical Festival on June 20 and 21 at Ithaca, N. Y. The festival took its name from Mrs. H. E. Talbott, the principal sponsor of the Westminster Choir, which was transferred from Dayton to the newly-established Westminster Choir School at Ithaca.

The seventy-first annual festival at Worcester, Mass., was held from October 1 to 4 with Albert

Stoessel as musical director. Among important works performed were the Bach *Magnificat*, Delius's *Sea Drift*, Parker's *Hora Novissima*, and Verdi's *Te Deum*. The boy violinist, Ruggiero Ricci, was one of the soloists.

Among Canadian events of this type were the Great West Folksong Festival at Calgary, Alberta, March 19-23, the Highland and Scottish Music Festival at Banff, August 20-September 1, and the Quebec Folksong and Handicraft Festival, October 16-18.

Among the European festivals with the greatest international appeal may be ranked the annual Wagner-Mozart series in Munich, and the Salzburg festival, which includes both musical and dramatic performances. The 1930 Munich festival began on July 26 and closed September 1.

In the Salzburg festival, also in August, Clemens Krauss conducted a restudied production of *The Marriage of Figaro*; Franz Schalk conducted *Fidelio* and *Der Rosenkavalier*. Bruno Walter conducted *Don Pasquale* and *Iphigenia in Aulis*. Symphony concerts by the Vienna Philharmonic, cathedral concerts and "serenades" were also included in the musical part of this festival.

The series of festivals of modern music, formerly held at Donaueschingen, and later moved to Baden-Baden, was transferred this year to Berlin and named *Neue Musik 1930 Berlin*, with programmes including music for home performance and for amateurs, music for teaching and for radio broadcasting and scenic plays with music.

Among the most prominent British festivals of the year were the Three Choirs Festival, held this year in Hereford, and the thirty-third triennial festival at Norwich in October, in which Arthur Bliss's war symphony *Morning Heroes* was one of the principal novelties. In a class by itself is the annual Dolmetsch festival of early music on early instruments, held in 1930 at Haslemere from August 25 to September 6.

In Tokyo, a series of four concerts, October 6-10, celebrated the twenty-fifth anniversary of the career of Koscak Yamada, composer and conductor, who had been prominent in fostering the spread of music of the Occidental type in Japan.

ORCHESTRAS. The Boston Symphony Orchestra began its fiftieth season on October 10. As a part of the semi-centennial celebration, Sir George Henschel, the orchestra's first conductor (1881-84) was invited to direct the opening pair of concerts. Except for the substitution of Wagner's prelude to *Die Meistersinger* for Weber's *Jubilee Overture* at the close, Henschel's programme for October 10 and 11, 1930, was the one offered for the Boston Symphony's first concert, on October 22, 1881, including Beethoven's *Consecration of the House* overture, the air *Che farò* from Gluck's *Orfeo*, Haydn's symphony in B flat (B. & H. 12), a recitative and aria from Bruch's *Odysseys*, and the ballet music from Schubert's *Rosamunde*. The soloist, who had been Annie Louise Cary in 1881, was Margaret Matzenauer. Henschel, warmly received, gave a performance that belied his 80 years, proving still a vigorous, able leader.

With the concerts of October 17-18, Dr. Serge Koussevitsky began the presentation of works composed by prominent American and European musicians especially for the orchestra's anniversary. All these works were heard for the first time anywhere, except for the Stravinsky symphony, whose performance on December 19 had been postponed a week and therefore followed a performance

by the Brussels Philharmonic on December 13. A festival overture presented anonymously on October 31 was revealed to be by Koussevitzky himself.

In contrast with the opening months of 1929, the Philharmonic-Symphony Orchestra of New York pursued its schedule in 1930 according to plan. On January 19, Willem Mengelberg completed his eight weeks as conductor, and was followed for five weeks by Bernardino Molinari, Arturo Toscanini began the second part of his Philharmonic-Symphony season on February 27, when he conducted the world premiere of Ildebrando Pizzetti's *Rondo Veneziano* in the presence of the composer, who was paying his first visit to the United States.

In June, it was announced that Erich Kleiber, general music director of the Berlin State Opera, Unter den Linden, would be the conductor for the first six weeks of the new season, beginning October 2. Mr. Kleiber was received with but moderate enthusiasm at first, but became much better liked as the season went on, and won praise from the critics for presenting, for the first time in America, three excerpts from one of the most important modern operas, Berg's *Wozzeck*, on October 16. Soon after Mr. Kleiber's last concert, on November 10, it was announced that he would return for the corresponding period for 1931.

Mr. Toscanini resumed the leadership of the Philharmonic-Symphony for the next two weeks. On November 24 he began a fortnight as guest conductor of the Philadelphia Orchestra, while Leopold Stokowski took charge of the Philharmonic-Symphony. This exchange helped to vary the repertoire, but did not meet with unanimous approval, as far as New York was concerned. Mr. Toscanini resumed his Philharmonic-Symphony appearances December 15.

The Philharmonic-Symphony gave two series of children's concerts and one for "young people" under the direction of Ernest Schelling, who also conducted children's concerts in Boston and Philadelphia. Its out-of-town concerts were limited to Philadelphia, Baltimore, and Washington.

The Manhattan Symphony Orchestra, conducted by Henry Hadley, gave nine concerts in 1930 in its regular subscription series, in addition to free concerts at St. George's Church, and continued its policy of giving at least one American work on each programme. During the summer, Dr. Hadley appeared in Japan as guest conductor with the Tokyo Symphony. The New York Conductorless Symphony Orchestra, described by its title, gave three concerts and planned a new season beginning in the autumn, but suspended its activities due to unfavorable economic conditions.

The Philadelphia Orchestra began the year under the direction of Ossip Gabrilowitsch, who had become a regular conductor of this, as well as of the Detroit Symphony Orchestra. He remained in charge through March 1. During the next three weeks, the orchestra was led by three guests, Tullio Serafin, and Artur Bodanzky, of the Metropolitan Opera Company, and Emil Mlynarski. Mr. Stokowski resumed charge of the orchestra with the concert of March 28.

On April 11, 12, and 14 in Philadelphia and April 22 and 23 in New York, the Philadelphia Orchestra and the League of Composers, of New York, coöperated in the first stage performance of Stravinsky's *Le Sacre du Printemps* and the

American premiere of Schonberg's one-act opera *Die Gluckliche Hand*, with Mr. Stokowski conducting. These productions aroused intense interest, although Schonberg's "drama with music" did not prove, on the whole, convincing—Lawrence Gilman described it as "a wholly sincere and tragically futile work." The mimed production of *Le Sacre* was very creditable, but there were those who felt that, although originally a ballet, is still found its most effective interpretation as a purely symphonic work.

In the new season, Mr. Stokowski conducted the orchestra from the beginning of October to November 22, then, after the five warmly acclaimed concerts under Toscanini, returned to conduct from December 12 to 22. On December 12, he presented the first American public performance by the French inventor-musician, Maurice Martenot, on an electrical instrument named "ondes musicales," somewhat analogous in its principle to Theremin's "ether wave" instruments, although independently devised. The programme included a symphonic poem written for this instrument and orchestra by a Greek composer, Dimitri Levidis. Alexander Smallens, assistant conductor, directed the year's last pair of concerts.

During Mr. Gabrilowitsch's absence in Philadelphia, the Detroit Symphony was conducted by Victor Kolar, associate conductor, and Eugene Goossens and Bernardino Molinari as guests. Mr. Gabrilowitsch conducted the early spring concerts and those in the autumn.

The Cleveland Orchestra played mainly under its regular conductor, Nikolai Sokoloff, except in January, when the associate conductor, Rudolph Ringwall, and E. Fernandez Arbos held the baton, and a pair of April concerts under Victor Kolar. On February 20, 21, and 22, the Cleveland Orchestra and the Neighborhood Playhouse gave their third annual series of New York performances of mimed interpretations of symphonic music. The works "visualized" by a company of mimes and dancers were Loeffler's *A Pagan Poem*, Rabaud's *La Procession Nocturne* and Werner Janssen's *New Year's Eve in New York*. The orchestra gave a New York concert on December 2.

Among novelties given by the Cincinnati Symphony in 1930 under Fritz Reiner were Daniel Gregory Mason's *Third Symphony*, in its world premiere, and Ravel's *Musnet Antique*, both on November 7, and Lazar's *Tziganes* November 28.

The Chicago Symphony Orchestra continued throughout the year under Frederick A. Stock, the St. Louis Symphony continued its régime of guest conductors, including Bernardino Molinari, Eugene Goossens, Georg Szell and E. F. Arbos. On the Pacific Coast, the Seattle Symphony played under Karl Krueger, The Portland Symphony under Willem van Hoogstraten, and the Los Angeles Philharmonic under Artur Rodzinski. In the spring, Alfred Hertz closed his 15 years' career as conductor of the San Francisco Symphony, and was succeeded in the autumn by the English conductor, Basil Cameron. Late in the fall, for reasons of economy, the orchestra was somewhat reduced in numbers.

Other changes of conductors took place in the Omaha Symphony, where Sándor Harmati was succeeded by an American conductor, Joseph Littau, and in the Baltimore Civic Orchestra, where George Siemonn succeeded Gustav Strube. The twelfth season of summer concerts at the

Lewisohn Stadium in New York took place from July 7 to August 31, Willem van Hoogstraten conducting the Philharmonic-Symphony for five weeks and Albert Coates for three. Special features included two performances of Beethoven's *Ninth Symphony* and two of Verdi's *Requiem*, two of a Wagner programme with soloists, two partly devoted to singing by the Hall Johnson Negro Choir and two in part to dancing by Anna Duncan; three full evenings devoted to the Denishawn Dancers, and one to the appearance of George Gershwin as pianist and conductor in his own works.

The Hollywood Bowl summer concerts, near Los Angeles, were conducted by Alfred Hertz, Willem van Hoogstraten, Karl Krueger, Pietro Cimini, Bernardino Molinari and E. Fernandez Arbos. The San Francisco Symphony played in summer concerts in the city and the nearby town of San Mateo, under Molinari, Van Hoogstraten, Rodzinski, Arbos, Gaetano Merola, Antonia Brico and Mr. Hertz, who bade farewell to San Francisco in this series with Beethoven's *Ninth Symphony*.

A new series of summer concerts had a successful first season in Philadelphia, with Alexander Smallens as regular conductor and Coates, Van Hoogstraten, Eugene Ormandy, Josef Pasternack, and Karl Krueger as guests.

London's orchestras more than held their own during the year. The principal resident London organizations were the British Broadcasting Corporation orchestras, of which Adrian Boult had become musical director, numbering 119 men; the London Symphony, which engaged Mengelberg as a semi-permanent conductor, beginning with the autumn; and the Lincoln Philharmonic under various guests. Besides these London had an unusual wealth of foreign visitors, including the New York Philharmonic-Symphony, the Vienna Philharmonic under Furtwangler, and the Amsterdam Concertgebouw under Mengelberg. The earlier part of the year brought Londoners an unusual amount of music by Mahler, whose *Symphony of a Thousand*, his eighth was played by the B. B. C. orchestra on April 15. The annual series of London Promenade concerts were given by the B. B. C. orchestra under Sir Henry Wood for eight weeks beginning August 8. The B. B. C., in cooperation with the Halle Orchestra of Manchester, under Sir Hamilton Harty, inaugurated a June series of promenade concerts in Manchester, Liverpool, and Leeds.

OPERA. During 1930, the Metropolitan Opera Company of New York gave 182 performances of 46 works by 26 composers, 20 operas by 10 Italian composers were heard 74 times; 10 operas by 9 French composers, 38 times; 14 operas by 5 German and Austrian composers, 58 times; and two operas by Russian composers, 12 times.

Three operas were produced for the first time in the United States. Rimsky-Korsakoff's *Sadko* was introduced on January 25, in French, and had been given eight times by the close of the season.

On November 29, a less-known Russian work, Moussorgsky's comic opera *The Fair at Sorochintzy*, as edited, completed, and orchestrated by Nikolai Tcherepnine, who came to New York to supervise the production, was performed. The *Fair at Sorochintzy* was given in Italian, with a ballet performance based on Moussorgsky's symphonic poem, *A Night on the Bald Mountain*.

The only modern novelty of the year was *Le Preziose Ridicole*, a one-act opera by Felice Latuada, an Italian composer previously unknown in America, with a book based on Molière's classic play, *Les Precieuses Ridicules*. *Le Preziose Ridicole* had not found favor in Berlin earlier in the autumn, but was unexpectedly well received in New York.

The most significant revival of the year was that of Wagner's *Der Fliegende Holländer* on November 2, with Maria Jeritza, Friedrich Schorr, Ivar Andresen, and Rudolf Laubenthal in the leading rôles. This work had not been given at the Metropolitan for 22 years, although it was performed in New York by the late Wagnerian Opera Company in 1923 and 1924.

Beethoven's *Fidelio* was restored to the Metropolitan's active list on January 29, after a season's absence. Charpentier's *Louise*, which had left the Metropolitan in 1922 with Geraldine Farrar, returned to it on March 1 with Lucrezia Bori as the heroine, but the work proved to have aged considerably in the intervening years. Donizetti's *L'Elisir d'Amore* was successfully revived on March 21, after a lapse of 10 years. Verdi's *La Forza del Destino* was restored to the active list on November 22, after an absence of two seasons.

Among the Metropolitan's débutantes of 1930 was Elisabeth Ohms, a dramatic soprano of Dutch origin, who came from the Munich opera to sing leading Wagnerian rôles, as well as Leonore in *Fidelio*. She proved to be a well qualified, if not a remarkably great singing-actress, and was a useful acquisition to the company. The Metropolitan's Wagnerian forces also profited by the arrival in the autumn of Ivar Andresen, basso, of the Dresden Opera, who had been a notable member of the Bayreuth roster in 1927 and 1928. Antonin Trantoul, French tenor, sang several leading rôles in the late winter and early spring, but, while an artistic operatic actor, his voice did not have the calibre required for the Metropolitan's vast spaces, and he did not return for the new season. Siegfried Tappolet, Swiss basso, was engaged in March to fill the gap left by the early departure of Michael Bohnen, and was reëngaged for 1930-31.

Outside of its home auditorium, the Metropolitan gave 11 performances in Brooklyn, 23 in Philadelphia, and 28 in other cities, making a total of 234 performances for the year (considering a double bill as a single performance). Adding 25 "opera concerts" gives a sum of 259 for the company's public offerings in 1930. The home season was the longest so far, lasting 25 weeks, including one added to the subscription season of twenty-four in order to avoid beginning the annual spring tour in Holy Week.

In the autumn, the Metropolitan began an experiment in suburban opera, giving *La Bohème* and *Tosca* on December 2 and 16 in the new County Centre in White Plains, with a success that led to the probability of two more performances in the spring. Another city visited by the Metropolitan for the first time was Hartford, Conn., where *Tosca* was presented November 25.

In its new opera house on Wacker Drive, the Chicago Civic Opera Company gave 95 performances of 41 operas by 23 composers; 21 operas by Italian composers were given 52 times; 10 operas by six French composers, 16 times; eight operas by four German composers, 23 times; one opera by a Czech composer (in German), once; and one

by an American composer (in French) three times. Verdi was the most represented composer, with 18 performances of six works, followed by Wagner with 10 performances of five works. The most spectacular novelty of the season was *Camille* by Hamilton Forrest, a young Chicago composer, the libretto in French being based upon the novel by Dumas. This was first performed on December 10, with Mary Garden in the title rôle.

Ernest Moret's *Lorenzaccio*, in French, opened the season on October 27, with Vanni-Marcoux in the title rôle. The book is based on a play by Musset, with Lorenzo de' Medici as a protagonist.

The third novelty of the year was Smetana's *The Bartered Bride*, given on Christmas Day in German, with Maria Rajdl, Theodore Strack and Alexander Kipnis as principals, and Emil Cooper conducting. The principal revival of the year was Wagner's *Die Meistersinger*, given on November 20 in a highly-praised performance under Egon Pollak's direction. Manuel de Falla's ballet *El Amor Brujo* was mimed for the first time in Chicago on November 22. The company made several additions to its German wing, whose development had been a feature of recent seasons, with Lotte Lehmann and Maria Rajdl, sopranos; Eduard Habisch and Hans Herrmann Nissen, barytones. Two well-known American singers, Paul Althouse, tenor and John Charles Thomas, barytone, made their Chicago Opera débuts in the autumn.

The German Grand Opera Company began its second tour in Washington on January 6 and closed it in Denver on March 2 after traveling as far as the Pacific Coast and appearing in eighteen cities. A new York engagement was to follow, but this was given up, it was announced, owing to inability to obtain a suitable theatre.

The Philadelphia Civic Opera Company, under the musical direction of Alexander Smallens, closed in the spring after a season which had included its second presentation of Wagner's *Ring* cycle. It was decided to disband, owing to inability to continue without incurring a deficit, or asking for an unfeasibly large amount of contributions. This left as the only resident Philadelphia operatic organization the Philadelphia Grand Opera Company, which is affiliated with the Curtis Institute of Music. Emil Mlynarski is the regular conductor, and Eugene Goossens, as guest, conducted four performances.

After completing its third tour in January, the American Opera Company, presenting operas in English, among them a recent American work, Clarence Loomis's *Yolanda of Cyprus*, planned for a fourth season, but later decided to suspend operations for the time being until business conditions should improve. San Francisco again had a two weeks' season, beginning September 11th, with the appearance of Maria Jeritza in Strauss's *Salome* as one of its features. Two weeks of opera followed in Los Angeles.

The principal American summer operatic activity again was the series at Ravinia, Ill., near Chicago, under the management of Louis Eckstein; 35 works were presented in 10 weeks, including Vittadini's *Anima Allegra* and Smetana's *The Bartered Bride* as novelties in a repertoire in Italian, French, German, and Spanish. In the "Zoo" summer opera at Cincinnati, Wagner, including *Tannhäuser* and *Parzifal*, was heard as well as works of the familiar Italian list. In St. Louis, the outdoor municipal summer

series had a repertoire of popular light operas or operettas.

The London season of opera at Covent Garden began on April 28 and continued into July. The repertoire offered German opera, including Wagner and Johann Strauss's *Die Fledermaus* and Italian opera.

Besides the Opera and Opera-Comique, Paris had an unusual amount of foreign opera in 1930, such as a Russian season from May to July at the Champs Elysses Theatre and another beginning in November, and a visit by a German company including well-known singers in the spring at the Opera.

The three Berlin opera houses took part in their second festival weeks, or *Kunstwochen*, in May and June, with features including a Wagner series, a Richard Strauss series, and the first performance of Berlioz's *The Trojans* with an abridged and revised book by Dr. Julius Kapp.

Germany outstripped other European countries in its offerings of new works, both German and foreign. At the Berlin State Opera, Unter den Linden, the first public performance of *Columbus*, book by Paul Claudel, French Ambassador to the United States, and music by Darius Milhaud, met a mixed reception on May 3, hoots and jeers mingling with applause. It was more quietly received, however, in later performances. The work was hardly an opera in the usual sense, but rather an allegorical play with music playing a subordinate part. *Transatlantic* by the American composer, George Antheil, was first produced at Frankfurt-am-Main on May 25, becoming the first American work to be given in a German state opera house. A majority of the audience received it enthusiastically, although there were dissenters. The scene was distinctly American in atmosphere, with modern American paraphernalia as a background, the music, described as "uncompromisingly American," made use of jazz motifs and took advantage of modern technical possibilities. Another German première receiving international attention was that of *Fremde Erde* by the Austrian composer, Karol Rathaus, given under Kleiber's direction of December 10 at the Berlin State Opera, Unter den Linden. Its latter scenes were laid in New York.

La Scala at Milan began its new season on December 7 under a woman general manager, Anita Colomba, whose first presentation was Verdi's nearly forgotten opera *I Lombardi*. Signorina Colomba succeeded to the control of La Scala after the death of Angelo Scandiani in June. The Scala was to coöperate with other leading Italian opera houses, such as the Royal Opera of Rome, the San Carlo of Naples and Carlo Felice of Genoa through the exchange of artists and scenery. Among the Italian operas first produced during the year was Pizzetti's *Lo Straniero*, given in Rome on April 30 with Gino Marinuzzi conducting. Its musical style was described as resembling that of *Fra Gherardo*, with music closely wedded to the text with a prevailing effect of dramatic recitative.

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MUSSOLINI, BENITO. See ITALY, under *History*.

MUTATION OF SPECIES. See ZOOLOGY.

MUTTON. See LIVESTOCK.

NANSEN, nän'sen, FRIDTJOF. A Norwegian explorer, scientist, author, and statesman, died in Oslo, May 13, 1930. He was born in Store Frøen, Oct. 10, 1861, and was educated at the University of Christiania (later Oslo). In 1882 he visited the eastern part of Greenland to obtain zoölogical specimens, and in the same year was appointed curator of the Natural History Museum in Bergen. In 1888 he returned to Greenland and, with five companions, crossed the ice-capped interior on skis from the east to the west coast. As a result of this experience he wrote *The First Crossing of Greenland* (1890) and *Ekimo Life* (1891). In 1890 he became curator of the Museum of Comparative Anatomy at the University of Christiania, and during 1893-96 carried out his memorable Arctic expedition in an attempt to reach the North Pole. His ship *Fram* had been especially built to withstand the terrific pressure of colliding ice-floes, and after it had drifted with the Poleward current as far north as possible he and a single companion, Lieut. F. H. Johansen, started on their long trek with dog sledges, reaching 86° 14' N., the farthest latitude until then attained. They came within 272 statute miles of the North Pole and 184 miles nearer to it than any explorers had been before. This adventure he described in *Farthest North* (2 vols., 1897) and *The Norwegian North Polar Expedition, 1893-96: Scientific Results* (6 vols., 1900-06).

In 1897 Dr. Nansen became professor of zoology at the University of Christiania, and in 1901 director of the central laboratory of the International Commission for Systematic Study of the Ocean, which had been organized on his initiative in 1892. His researches in the latter field

were recorded in *The Oceanography of the North Polar Basin* (1902) and *The Bathymetrical Features of the North Polar Seas* (1904). He also took an active part at this time in the movement which led to the peaceful separation of Norway and Sweden, setting forth his views in *Norway and the Union with Sweden* (1905). He served as first minister of his country to Great Britain from 1906 to 1908. He then became professor of oceanography at the University of Christiania, and until the outbreak of the World War was engaged in conducting oceanographic expeditions. In 1910 he visited the northeastern North Atlantic Ocean from Ireland to Iceland; in 1912, the North Atlantic around Spitzbergen; in 1913, the Arctic Ocean and Siberia; and in 1914, the eastern North Atlantic Ocean, touching Portugal, Madeira, and the Azores. During this period he published *In Northern Mists: Arctic Exploration in Early Times* (2 vols., 1911) and *Through Siberia, the Land of the Future* (1914).

In 1917 Dr. Nansen headed a commission which visited the United States to conclude a commercial agreement by which Norway might be assured of essential imports. In 1918 he was appointed chairman of the Norwegian Association for the League of Nations and later was chosen delegate for Norway to the League's Assembly. In 1920 he was requested by the first Council of the League to investigate problems in connection with the repatriation of prisoners of war, and under his supervision 450,000 prisoners were returned to their homes from Russia, Siberia, central Europe, and the Balkan States. During 1921-23 he had general charge of the Russian famine relief sponsored by European Red Cross societies in the Volga Valley and South Ukraine region, for which in 1922 he received the Nobel Peace Prize. He also supervised the relief work of the League of Nations among Russian, Greek, and Armenian refugees.

Dr. Nansen was an ardent advocate of international arbitration, and in 1927 became Norway's representative on the disarmament committee of the League of Nations. Prior to his death he had again become interested in exploration and was planning a survey of the North Polar Basin from a dirigible. He was the recipient of honorary degrees from the Universities of Christiania, Oxford, Cambridge, and St. Andrews. In 1918 he was elected rector magnificus of the University of Christiania, and in 1925 lord rector of St. Andrews University, Scotland. He also was decorated by Great Britain with the Grand Cross of the Royal Victorian Order and was a fellow of the Royal Geographical Society. In addition to the works mentioned he wrote: *Spitzbergen* (1922); *Russia and Peace* (1923); *Sporting Days in Wild Norway* (1925); *Hunting and Adventure in the Arctic* (1925); *Adventure and Other Papers* (1927); and *Armenia and the Near East* (1928), the result of his study of the Armenian problem for the League of Nations.

NANTES AGRICULTURAL FAIR. See EXPOSITIONS.

NATAL, ná-tál'. An original province of the Union of South Africa. See SOUTH AFRICA, UNION OF.

NATIONAL ACADEMY OF DESIGN. An institution in New York City; established in 1825 and incorporated in 1828 for the purpose of "the cultivation and extension of the arts of design." The academy holds two exhibitions of contemporary art each year, to which an artist of

any country may submit his work. The works which are accepted by the jury of selection are exhibited without charge to the artists; members of the academy may exhibit one work without approval by the jury. The total number of associate members in 1930 was 158; the number of academicians was 145, including 109 painters, 26 sculptors, 6 architects, and 2 engravers. The following academicians were elected in 1930: Gertrude Fiske, Bryson Burroughs, Cyrus E. Dallin, Harvey Wiley Corbett, Sherry E. Fry. The associate members elected were: D. Putnam Brinley, Alphaeus P. Cole, Arthur Hill Gilbert, Harry Hoffman, Roy Mason, Emma Fordyce MacKae, Herman Dudley Murphy, Bonnie MacLeary, William Mitchell Kendall, Kerr Eby, John Taylor Arms, George Wharton Edwards. The officers in 1930 were: President, Cass Gilbert; first vice president, H. W. Watrous; second vice president, Robert Aitken; corresponding secretary, Charles C. Curran; assistant corresponding secretary, Albert P. Lucas; recording secretary, Hobart Nichols; and treasurer, Henry Prellwitz. The council members were: Louis Betts, Ernest L. Ipsen, Sidney Dickinson, Chauncey F. Ryder, Eugene Savage, and James Earle Fraser. Headquarters are at Amsterdam Avenue and 109th Street, New York City.

NATIONAL ACADEMY OF SCIENCES. A body of American scientists incorporated by act of Congress, approved by President Lincoln in 1863, for the purpose of investigating, examining, experimenting, and reporting upon any subject of science or art when called upon by any department of the government. The actual expense of such investigations, examinations, experiments, and reports are met from appropriations made for the purpose, without compensation for any services to the government. Membership in the academy is limited to 300 active members and 50 foreign associates. New members are elected on nominations from the 10 sections: Mathematics, astronomy, physics, engineering, chemistry, geology and palæontology, botany, zoology and anatomy, physiology and pathology, anthropology, and psychology. The following new members were elected in 1930: Comfort Avery Adams; James Waddell Alexander; Eugene Thomas Allen; Harry Bateman; Isaiah Bowman; George Perkins Clinton; William Weber Coblentz; Paul Sophus Epstein; Vernon Lyman Kellogg; Frederick George Keyes; Karl Spencer Lashley; Berthold Laufer; Samuel Colville Lind; Frank Elmore Ross; and Alfred Henry Sturtevant.

The academy's annual meeting was held in Washington Apr. 28-30, 1930, and its autumn meeting in Berkeley, Palo Alto, and Pasadena, Calif., September 18-23. These meetings were devoted to the transaction of business and the presentation of scientific papers by academicians or persons introduced by them. At the annual dinner held in the academy building on Apr. 29, 1930, presentation was made of five medals for outstanding contributions to scientific research. The Agassiz Medal for Oceanography was awarded to Johannes Schmidt of the physiological department of Carlsberg Laboratory, Copenhagen, Denmark, in recognition of his contributions to oceanography; the Public Welfare Medal was awarded posthumously to Stephen Tyng Mather (q.v.) for his distinguished service in connection with the development of the National Park System; the Daniel Giraud Elliot Medal

for 1927 was awarded to Erik A. Son Stensio of the Naturhistorika Riksmuseum, Stockholm, Sweden, for his work, *The Downtonian and Devonian Vertebrates of Spitzbergen, part i, Family Cephalaspidae*; the Elliot Medal for 1928 was presented to Ernest Thompson Seton for his work, *Lives of Games Animals*, (vol. iv); and the Mary Clark Thompson Medal was presented to William Berryman Scott in recognition of his distinguished work in palæontological research.

The academy publishes a series of *Memoirs*, consisting of monographs by academicians or sponsored by them and reports of investigations conducted for the Government. The *Proceedings*, issued monthly, are devoted to condensed reports of the most recent scientific discoveries. The officers in 1930 were: T. H. Morgan, president; Frederick E. Wright, vice-president; R. A. Millikan, foreign secretary; David White, home secretary; Joseph S. Ames, treasurer. Headquarters are at B and 21st Streets, Washington.

NATIONAL BANKS. See BANKS AND BANKING.

NATIONAL CIVIC FEDERATION, THE. This movement was organized in 1900 to seek the solution of some of the great problems related to social and industrial progress. It provides especially for the discussion of questions of national import, aids in the crystallization of enlightened public opinion, and promotes legislation when desirable. The 45 members of the executive committee represent the public, employers, and wage earners. The various committees and departments are organized to conduct the activities of the federation.

The organization's active departments and committees in 1930 included the following: Commission on industrial inquiry, composed of four committees on plan and scope, study of anti-trust legislation, study of injunctions in industrial disputes, and study of forms of employee organization and of employment contracts; department on subversive activities, which carried on its programme of opposition to recognition of the Soviet Government, making a study of subversive propaganda promoted by that government in American colleges and universities, public schools, churches, and other institutions; department on industrial relations, which seeks a *modus vivendi* between employers and wage earners; industrial welfare department, whose object is to secure improvements in working and living conditions of wage earners voluntarily by employers; woman's department; and department on active citizenship, which aims to interest citizens in participating actively in their political party organizations. As a result of replies received to a questionnaire sent to 25,000 individuals and organizations, the committee on study of anti-trust legislation of the commission on industrial inquiry recommended the amendment of the anti-trust laws, including the Sherman Act, Clayton Act, and Federal Trade Commission Act, and drafted such amendments for early submission to Congress. There also was drafted by the committee on study of injunctions in industrial disputes a bill restricting the use of injunctions in industrial disputes wherein employers have been coöperating with labor.

The executive council of the federation for 1930 included the following: Elihu Root, honorary president; W. N. Doak, honorary secretary; Matthew Woll, acting president; Samuel McRoberts, treasurer; Ralph M. Easley, chairman,

executive council; Wheeler P. Bloodgood, chairman, commission on industrial inquiry; Maude Wetmore, chairman, woman's department; Charles L. Edgar, chairman, industrial welfare department; John Hays Hammond, chairman, department on active citizenship; Marcus M. Marks, chairman, industrial round table department; Peter J. Brady, chairman, committee on Russian affairs; Gertrude Beeks Easley, secretary, executive council; and Mrs. Coffin Van Rensselaer, executive secretary, woman's department. Headquarters, 1 Madison Avenue, New York City.

NATIONAL DEBTS. See FRANCE under *Finance* for comparative debts of the major Powers; also articles on each country.

NATIONAL DEFENSE. See MILITARY PROGRESS; NAVAL PROGRESS.

NATIONAL EDUCATION ASSOCIATION OF THE UNITED STATES. An organization of persons actively engaged in educational work and others interested in education; organized Aug. 26, 1857, at Philadelphia under the name of the National Teachers' Association and on June 30, 1907, incorporated by Congress under its present name. In July, 1920, at the annual meeting the association was reorganized, and provision was made for a representative assembly composed of delegates from State and local educational associations. The other governing bodies are a board of directors, an executive committee of five, a board of trustees, departmental organizations, standing and special committees, and a staff at headquarters which is held responsible for carrying out the decisions of the governing bodies. In 1930 there were 19 departments, each having its own officers, as follows: Adult education, business education, classroom teachers, deans of women, educational research, elementary school principals, kindergarten-primary education, lip reading, rural education, school health and physical education, science instruction, secondary school principals, social studies, superintendence, supervisors and directors of instruction, supervisors and teachers of home economics, teachers colleges, visual instruction, and vocational education. There were also more than 15 standing and special committees actively at work on professional problems.

The association's sixty-eighth annual meeting was held in Columbus, Ohio, June 28-July 4, 1930, with an estimated total attendance of more than 10,000. There were held, in addition to the general session, meetings of the representative assembly, the departments of the association, and a number of allied organizations, at which the progress of the year in education was reviewed. Among the important resolutions adopted on this occasion was that urging the establishment of a department of education, with a secretary in the President's cabinet, and the efficient integration in this department of the educational activities of the Federal Government. The 1931 convention was scheduled to be held the first week in July in Los Angeles, Calif. The association's department of superintendence held its winter convention in Atlantic City, N. J., the last week in February. The subject of the year book, prepared for presentation at this meeting, was "Supervision," while "Articulation of the Units of American Education" had been selected as the theme of the 1931 year book. *The Journal of the National Education Association* is the organization's monthly publication. It also pub-

lishes an annual volume, *Proceedings*, and numerous reports on its activities. Research bulletins containing statistical information on educational subjects are issued regularly. The enrollment of the association on Jan. 1, 1930, was 205,681. Officers elected for 1930-31 were: President, Willis A. Sutton, Atlanta, Ga.; secretary, J. W. Crabtree, Washington; and treasurer, Henry Lester Smith, Bloomington, Ind. Headquarters for the association are maintained at 1201 Sixteenth Street, N. W., Washington.

NATIONAL FORESTS. See FORESTRY.

NATIONAL GALLERY, LONDON. See ART MUSEUMS.

NATIONAL GUARD. See MILITARY PROGRESS.

NATIONAL KINDERGARTEN ASSOCIATION. An organization founded and incorporated in New York City in 1909, with the object of helping to secure the advantages of kindergarten education for all of the children of the United States. The association is supported entirely by private subscriptions which amount annually to approximately \$45,000. These funds are used for the purpose of promoting a knowledge of, and an interest in the value of the kindergarten as an integral part of the public-school system. By the end of 1930 the association had been instrumental in securing the establishment of 1636 kindergartens. Where no adequate provision has been made in the school laws for the maintenance of kindergartens, the association has worked to stimulate an effort to secure the enactment of improved laws and has been instrumental in obtaining their passage in 16 States.

The association has secured kindergarten training for one child for each dollar that it has ever received. It supports no classes but arouses communities to support them for their own children, and during 1928, 1929, and 1930, through the generosity of its members, it was able to set aside a fund from which to aid in the purchase of equipment of 48 classes which otherwise could not have been opened. The officers in 1930 were: President, Maj. Bradley Martin; honorary president, Hon. P. P. Claxton; first vice-president, Mrs. Henry Phipps; second vice-president, Mrs. Charles Cary Rumsey; secretary, Mrs. Roger C. Aldrich; executive secretary, Miss Bessie Locke; and treasurer, Julian M. Gerard. Headquarters are at 8 West Fortieth Street, New York City.

NATIONAL MUNICIPAL LEAGUE. An organization which acts as a central clearing house for current information on improvements in State and local government throughout the United States; founded in 1894 and incorporated in 1923. Its aim is to promote efficient and democratic government in city, county, State, and nation. Under its direction, committees of experts are constantly at work developing sound principles of governmental methods and administration. Those active in 1930 were as follows: Committee on government of metropolitan areas; national committee on municipal standards; national committee on municipal reporting; committee on park and playground administration; committee on election administration; committee on organized citizens' participation in city government; citizen organization for municipal activity; committee on county-manager plan; and committee on model administrative code. During the year the committee on government of metropolitan areas published its report of a nation-wide survey of metropolitan government.

financed through a grant of \$10,000 from the Russell Sage Foundation. The committee on election administration, headed by Prof. Charles E. Merriam of the University of Chicago as chairman, also prepared a report which was published in 1930 as the *Model Election Administration System*, and the committee on county-manager plan, of which Prof. John A. Fairlie of the University of Illinois was chairman, prepared a *Model County Manager Law*.

The thirty-sixth annual meeting of the league was held in Cleveland Nov. 10-12, 1930, under the general title of the National Conference on Government. The Governmental Research Association, the National Association of Civic Secretaries, the Proportional Representation League, the American Legislators' Association, the Ohio Municipal League, and the Ohio State Conference on City Planning cooperated in this conference. The league publishes the *National Municipal Review*, which records from month to month the current improvements in State and local governments, and various reference pamphlets and books such as *Public Borrowing* and *The Government of Metropolitan Areas*. The officers of the league elected for 1931 were: President, Richard S. Childs of New York; first vice president, Louis Brownlow of Fair Lawn, N. J.; honorary vice presidents, H. L. Brittain of Toronto, Harry F. Byrd of Winchester, Va., Samuel S. Fels of Philadelphia, John M. Gries of Washington, D. C., A. R. Hatton of Northwestern University, John R. Haynes of Los Angeles, A. Lawrence Lowell of Harvard University, C. E. Merriam of the University of Chicago, W. M. Munro of Pasadena, Calif., J. C. Nichols of Kansas City, Mo., Frank L. Polk of New York, Thos. H. Reed of the University of Michigan, Chester H. Rowell of Berkeley, Calif., Miss Belle Sherwin of Washington, D. C., Mrs. F. Louis Slade of New York, and A. Leo Weil of Pittsburgh; treasurer, Carl H. Pforzheimer; secretary, Russell Forbes; honorary secretary, Clinton Rogers Woodruff; editor of the *National Municipal Review*, H. W. Dodds; and public relations secretary, Howard P. Jones. Headquarters are at 261 Broadway, New York City.

NATIONAL RECREATION ASSOCIATION (formerly named PLAYGROUND AND RECREATION ASSOCIATION OF AMERICA). An association organized in 1906 by Theodore Roosevelt, Jacob A. Riis, Luther H. Gulick, and others for the purpose of binding together in a national movement the efforts growing up in various parts of the country to provide safe and adequate areas where children might play under experienced leadership. A staff of field workers is maintained to assist cities in organizing year-round recreation programmes for children, adults, and the community as a whole, to strengthen existing programmes, and to help secure State legislation for facilitating the development of municipal recreation. The association publishes a monthly magazine, *Playground and Recreation*, maintains a bulletin service, and publishes pamphlets and books pertaining to recreation.

The community drama service of the association supplies practical suggestions and literature to amateur dramatic groups and prepares programmes for holiday and special-day celebrations. The community music service promotes this form of recreation and provides an exchange for community music information. The national physical education service is active in sponsoring

physical education legislation. The association maintains a bureau which gives assistance to Negro groups in securing recreation opportunities and, in cooperation with the U. S. Department of Agriculture, has assigned three full-time workers to help in the training of rural leaders for recreation. The officers of the association for 1930 were: President, Joseph Lee; treasurer, Gustavus T. Kirby; secretary, Howard S. Braucher. Headquarters are at 315 Fourth Avenue, New York City.

NATIONAL RESEARCH COUNCIL. A co-operative organization of American scientists interested in pure and applied science, including engineering and industry. It was established in 1916 by the National Academy of Sciences, at the request of President Wilson, for the purpose of coordinating the research facilities of the United States for work on war problems involving scientific knowledge. By executive order of the President the council was reorganized by the academy in 1918 as a permanent body, its essential purpose being to promote scientific research and the application and dissemination of scientific knowledge for the benefit of the national strength and well-being. The council maintains close cooperation with governmental scientific bureaus and has the formal recognition and cooperation of 77 national scientific and technical societies, its membership being composed in large part of appointed representatives of these societies.

The activities of the council are conducted by 11 divisions, each of which has a chairman and from 20 to 25 members. These divisions fall into two groups. One group comprises seven divisions of science and technology, representing physics, mathematics, and astronomy; engineering and industrial research; chemistry and chemical technology; geology and geography; the medical sciences; biology and agriculture; and anthropology and psychology. The other group is of four divisions of general relationships: government relations; foreign relations; States relations; and educational relations. Each of these divisions maintains a number of administrative and technical committees which have immediate charge of the work of the division. The council also maintains a special research information service.

The financial support of the council is derived, first, from a gift of \$5,000,000 from the Carnegie Corporation of New York to the National Academy of Sciences, part of which sum has been devoted to the erection of a building in Washington, D. C., to house the academy and the council, the income from the remainder being used for the purposes of the council; and second, from other gifts from various sources mostly made for the specific support of particular undertakings. These sources include the Rockefeller Foundation, General Education Board, the Spelman Fund, Commonwealth Fund, Bureau of Social Hygiene, and numerous individuals and industrial concerns. The council maintains two regular series of publications: bulletins, of which 81 had been issued up to the end of 1930, and the reprint and circular series, of which 97 had appeared. It issues, in addition, miscellaneous publications and an annual report.

The general administrative officers of the council for 1930-31 were: Chairman, George K. Burgess, director, United States Bureau of Standards; first vice-chairman, T. H. Morgan, presi-

dent, National Academy of Sciences, and professor of biology, California Institute of Technology, Pasadena, Calif.; second vice-chairman, John C. Merriam, president, Carnegie Institution of Washington, Washington, D. C.; third vice-chairman, Simon Flexner, director, Rockefeller Institute for Medical Research, New York City; permanent secretary, Vernon Kellogg, National Research Council, Washington, D. C.; treasurer, J. S. Ames, treasurer, National Academy of Sciences, and president, Johns Hopkins University, Baltimore, Md. George E. Hale, honorary director of the Mount Wilson Observatory, Pasadena, Calif., was honorary chairman. Headquarters of the council are on B Street, between 21st and 22nd Streets, Washington, D. C.

NATIONAL SAFETY COUNCIL. A non-profit cooperative association, not only national but international in scope, devoted to the conservation of human life through a continuous campaign of accident prevention. In 1930, there were 5500 members including industrial corporations, firms, individuals, public officials, schools, Chambers of Commerce, clubs, and civic organizations; about 70 per cent of the memberships were industrial concerns. Allied to accident prevention is the council's work in improving health conditions and preventing vocational diseases in industry. The organization was formed as a result of a meeting of the Association of Iron and Steel Electrical Engineers in Milwaukee in 1912.

Affiliated with the National Safety Council are 60 local councils in as many communities throughout the United States. They carry on intensive safety work in approximately 12,000 plants in 150 different lines of industry, reaching more than 10,000,000 people. Safety campaigns are also carried on in the schools under the auspices of the education division of the council, which receives financial support from the National Bureau of Casualty and Surety Underwriters and maintains a trained staff devoting its entire time to teaching accident prevention fundamentals.

The council publishes *The National Safety News*, for industries; *Public Safety*, for public officials, police chiefs, etc.; *Safety Education*, for schools; and *The Safe Worker*, which is distributed each month to 200,000 workers. It also issues *Safe Practices and Health Practices* pamphlets for industry and carries on extensive work through 27 sections represented in the industrial division, for the exchange of new ideas, new plans and new practices among members. During 1930 more than 750,000 copies of the Annual Safety Calendar were distributed; and each month 47 different posters were distributed, the poster circulation for the year being around 2,225,000 copies.

The nineteenth annual safety congress was held in Pittsburgh in October, 1930, with an attendance of approximately 7000 delegates and visitors. The officers elected for 1931 were: President, C. W. Bergquist, Chicago; managing director, W. H. Cameron, Chicago; treasurer, Harvey Ellerd, Chicago; vice-president for industrial safety, C. L. Close, New York City; vice-president for membership, George Opp, Detroit; vice-president for business administration, G. T. Hellmuth, Chicago; vice-president for public safety, Edward Dana, Boston; vice-president for territorial councils, John E. Long, Albany; vice-president of education, A. W. Whitney, New York City; vice-president for health, Dr. C. E. A.

Winslow, New Haven, Conn.; and vice-president for finance, J. L. Banash, Chicago. Executive offices of the council are at 20 North Wacker Drive, Chicago.

NATURAL GAS. See GAS, NATURAL.

NAVAL PROGRESS. The most important feature of the year 1930 was the Naval Treaty of London for the further limitation of naval armaments. Among the most notable points of the treaty are those that concern:—The reduction in total tonnage of capital ships and submarines; the limitation of cruiser, destroyer leader, and destroyer tonnage; definite rules for replacements, and disposal of surplus vessels; definitions of aircraft carriers, cruisers, destroyer leaders, and destroyers; limitation of sizes of destroyers and submarines; and amendments to international law as regards the operation of submarines.

In the large light cruisers laid down during the year there was seen a general tendency to increase armor protection at the expense of very high speed; and to improve their anti-aircraft defense as regards anti-aircraft guns, deck protection, and protection against the effects of gas bombs. One result of the new treaty was the flying-deck cruiser which was being carefully studied. Much was done, especially in the United States, to improve the safety of submarines and of their crews. Naval aviation was receiving increased attention—especially in the navies of the United States and Japan.

In the following condensation of the London Treaty an attempt is made to follow the text closely enough to give fully all the features of importance, omitting details that are of minor importance or of interest only to the naval authorities and not to the general public. All tonnages are expressed in standard tons of 2240 pounds (1016 kilos), the metric equivalent in tons of 1000 kilos being omitted for brevity.

The Treaty of London, between the United States, Great Britain, Japan, Italy, and France, for the limitation and reduction of naval armaments, was signed at London, Apr. 22, 1930; and was a few weeks later approved by the governments of the United States, Great Britain, and Japan. It consists of five parts. Parts 1, 2, 4, and 5 concern all five nations; Part 3 concerns only the United States, Great Britain and Japan, which agreed, among themselves, to the provisions of this part. When ratified by the governments of the United States, Great Britain, and Japan, the Treaty was to come into force as respects these nations. When ratified by the governments of France and Italy, Parts 1, 2, 4 and 5 were to come into force as respects these two nations.

PART I

Article I. Defers the laying down of capital ships as replacements of existing ships (except ships accidentally lost or destroyed) in the years 1931–36 as provided in the Treaty of Washington; France and Italy are permitted to lay down the capital ships authorized for the years 1927 and 1929.

Article II. The United States, Great Britain, and Japan agree to dispose, by scrapping or other approved method (see Part II, Annex 2), capital ships as follows: United States—*Florida, Utah, and Arkansas* (or *Wyoming*); Great Britain—*Benbow, Iron Duke, Marlborough, Emperor of India, and Tiger*; Japan—*Hiei*. The following ships may be retained by their respective owners for training purposes after being reduced to the condition described in Part II, Annex 2, Sect. V:—*Arkansas* (or *Wyoming*), *Iron Duke, Hiei*. Subject to the conditions of the Washington treaty, other capital ships may be retained. The right of replacement is not lost by delay in exercising that right.

Article III. The expression, "aircraft carrier," is newly



Photo by Keystone View Co., N. Y.

THE LONDON NAVAL CONFERENCE—A GROUP OF DELEGATES

The Figures Standing Include Dwight W. Morrow, Secretary of the Navy Charles Francis Adams, Hugh S. Gibson, and Ambassador Charles G. Dawes of the United States Delegation. Those Seated Include Senator David A. Reed, Senator Joseph T. Robinson, and Secretary of State Henry L. Stimson of the United States Delegation; Prime Minister Ramsay MacDonald and Foreign Minister Arthur Henderson of Great Britain; Foreign Minister Aristide Briand and Ambassador Aimé de Fleuriau from France

defined, so as to "include any surface vessel of war, whatever its displacement, designed for the specific and exclusive purpose of carrying aircraft and so constructed that aircraft can be launched therefrom and landed thereon." The fitting of landing-on or flying-off decks on capital ships, cruisers, or destroyers, that are not designed or fitted exclusively as aircraft carriers, shall not cause them to be classified as aircraft carriers. No existing capital ship shall be fitted with a landing-on platform or deck.

Article IV. No aircraft carrier of 10,000 tons or less, mounting a gun of greater calibre than 6.1 inches, shall be acquired by, or constructed by or for any of the signatory nations. From the coming into force of this treaty no aircraft carrier of 10,000 tons or less, mounting a gun in excess of 6.1-inch calibre, shall be constructed within the jurisdiction of any of the high contracting parties.

Article V. An aircraft carrier must not be constructed for carrying a more powerful armament than is provided in Art. IV of this treaty or in Art. IX-X, of the Washington treaty except that, in the said Art. IX-X, the calibre of 6-inch guns may be increased to 6.1 inches.

PART II

Article VI. 1. The rules of the Washington treaty (Ch. 2, Part 4) for determining standard displacement shall apply to all surface vessels of each of the signatory nations.

2. "The standard displacement of a submarine is the surface displacement of the vessel complete (exclusive of water in the non-water-tight structure) fully manned, engined, and equipped ready for sea, including all armament and ammunition, equipment, outfit, provisions for crew, miscellaneous stores, and implements of every description that are intended to be carried in war, but without fuel, lubricating oil, fresh water, or ballast water of any kind on board."

3. "Each naval combatant vessel shall be rated at its displacement tonnage when in standard condition. The word 'ton' except in the expression 'metric tons' shall be understood to be the ton of 2240 pounds (1016 kilos)."

Article VII. No submarine which exceeds 2000 tons displacement or carrying a gun of over 5.1 inches calibre may be constructed by or for any signatory nation. Any such nation may retain, buy, or build not more than three submarines of over 2000 tons. France may retain as one of these a submarine of 2880 tons, already launched, carrying 8-inch guns. Submarines possessed on Apr. 1, 1930, carrying guns of over 5.1 inches, if the displacement is not over 2000 tons, may be retained. After the coming into force of this treaty, no submarine of over 2000 tons or carrying a gun of over 5.1 inches calibre shall be constructed within the jurisdiction of any signatory government except as provided in this article.

Article VIII. Subject to any special agreements which may submit them to limitation, the following vessels are exempt from limitation:

(a) Naval surface combatant vessels of 600 tons or less.

(b) Naval surface combatant vessels exceeding 600 tons but not exceeding 2000 tons, provided they have none of the following characteristics: (1) Mount a gun of over 6.1 inches; (2) or more than 4 guns of over 3 inches; (3) or are designed or fitted to launch torpedoes; (4) or are designed for a speed of more than 20 knots.

(c) Naval surface vessels, not specifically built as fighting ships, which are employed on fleet duties, or as transports, or in some other way than as fighting ships, provided they have none of the characteristics listed in the foregoing paragraph (b) nor any of the following: (5) are protected by armor plate; (6) are designed or fitted to launch mines; (7) are fitted to receive airplanes on board from the air; (8) mount more than one catapult (or similar apparatus) on the centre line, or more than two—one each side; (9) or, if fitted within the restrictions of (8), are designed or adapted to operate at sea more than three airplanes.

Article IX. Rules for replacement in Annex I (following Art. XIII) are for vessels of war of 10,000 tons or less except airplane carriers whose replacement is governed by the provisions of the Washington treaty.

Article X. Within one month after the laying down or completing of vessels (except capital ships, aircraft carriers, and vessels exempt from limitation by Article VIII) for any party to this treaty, that party shall furnish to each of the other parties to this treaty the following information:

(a) Date of laying the keel; classification of vessel; standard displacement in tons; length at water line; extreme beam at or below water; mean draft at standard displacement; calibre of largest gun.

(b) Date of completion and particulars of foregoing paragraph (a) as for that date. The information to be given for capital ships and aircraft carriers is governed by the Washington treaty.

Article XI. Subject to the provisions of Article II of this treaty the rules for disposal contained in Annex 2,

Part II of this treaty shall be applied to all vessels of war to be disposed of under this treaty and to the aircraft carriers as defined in Article III.

Article XII. 1. Subject to supplementary agreements, the special vessels of the lists given in Annex 3 may be retained and their tonnage shall not be included in tonnage subject to limitation.

2. Any other vessel built, acquired, or adapted to serve the purpose for which these vessels are retained shall be charged to the appropriate combatant category unless exempt from limitation under the terms of Article VIII.

3 and 4. Special arrangement for replacement of Japanese vessels retained.

Article XIII. Existing ships of various types which, prior to Apr. 1, 1930, have been used as stationary training establishments or hulks, may be retained in a non-seagoing condition.

ANNEX 1

RULES FOR REPLACEMENT

Section I. Except as provided in Section III and in Annex 3, a vessel shall not be replaced until it becomes "over age." A vessel shall be deemed over age when the following number of years have elapsed since the date of its completion:

(a) For a surface vessel exceeding 3000 tons but not exceeding 10,000 tons standard displacement: (1) if laid down before Jan. 1, 1920,—16 years; (2) if laid down after Dec. 31, 1919,—20 years.

(b) For a surface vessel not exceeding 3000 tons: (1) if laid down before Jan. 1, 1921,—12 years; (2) if laid down after Dec. 31, 1920,—16 years.

(c) For a submarine—13 years.

The keels of replacement tonnage shall not be laid down more than three years before the year in which a vessel to be replaced becomes "over age," but this is reduced to two years for a vessel not exceeding 3000 tons. The right of replacement is not lost by delay in laying down replacement tonnage.

Section II. Except as otherwise provided in this treaty, a vessel or vessels whose retention would cause the maximum tonnage permitted in the category to be exceeded shall, on the completion or acquisition of the replacement tonnage, be disposed of in accordance with Annex 2.

Section III. In the event of loss or accidental destruction, a vessel may be immediately replaced.

ANNEX 2

RULES FOR DISPOSAL OF VESSELS OF WAR

[These rules are of such length and detail that they have been omitted in this summary. In general terms they are supposed to render the vessel valueless for war purposes.]

ANNEX 3

SPECIAL VESSELS THAT ARE RETAINED (SEE ART. XII).

United States may retain the minelayers *Aroostook* and *Oglala* (4,950 tons), *Baltimore* (4,413), *San Francisco* (4,083), monitor *Cheyenne* (2,800), gunboat *Helena* (1,392), yachts *Isabel* (938) and *Niagara* (2,600), destroyer tenders *Bridgeport* (11,750), *Dobbin* (12,450), *Melville* (7,150), and *Whitney* (12,450), submarine tender *Holland* (11,570), and naval transport *Henderson* (10,000). Total tonnage 91,496.

France may retain the minelayers *Castor* (3,150 tons), *Pollux* (2,461), seaplane carrier *Commandant Teste* (10,000), a net layer (2,293), and 17 dispatch vessels of 600 to 644 tons. Total tonnage, 28,644.

British Commonwealth of Nations may retain the mine layer *Adventure* (6,740), Australian seaplane carrier *Albatross* (5,000), monitors *Erebus* (7,200), *Terror* (7,200), *Marshal Soult* (6,400), Indian marine sloop *Olive* (2,021), and submarine depot ship *Medway* (15,000). Total tonnage 49,561.

Italy may retain the seaplane carrier *Miraglia* (4,880 tons), monitors *Faa di Bruno* (2,800), *Monte Grapha* (605), *Montello* (605), ex-monitors *Monte Cengio* (500), *Monte Novoglio* (500), and sloop *Campania* (2,070). Total tonnage 11,960.

Japan may retain the minelayers *Aso* (7,180), *Tokima* (9,240), old cruisers *Asama* (9,240), *Yakumo* (9,010), *Idzumo* (9,240), *Iwate* (9,240), *Kasuga* (7,080), and gunboat *Yodo* (1,320). Total tonnage 61,430.

PART III

The provisions of this part are agreed to, as among themselves, by the United States, Great Britain and Japan.

Article XIV. The naval combatant vessels of the agreeing nations (other than capital ships, aircraft carriers, and all vessels exempt from limitations under Article VIII) shall be limited, during the term of this treaty, as

provided in this Part III and, in the case of special vessels, as provided in Article XXII.

Article XV. For the purposes of this Part III, the definition of cruiser and destroyer categories shall be as follows:

Cruisers are defined as surface vessels of war, other than capital ships or aircraft carriers, the standard displacement of which exceeds 1850 tons (1880 metric tons) or with a gun above 5.1 inches (130 m.m.) in calibre. The cruiser category is divided into the following sub-categories: (a) cruisers carrying a gun above 6.1 inches calibre; (b) cruisers carrying a gun not above 6.1 inches. Destroyers are defined as surface vessels of war of which the standard displacement does not exceed 1850 tons and with a gun not above 5.1 inches calibre.

Article XVI. 1. The completed tonnage in the cruiser, destroyer, and submarine categories, which is not to be exceeded on Dec. 31, 1936, is given in the following table:

| Categories | United States | Great Britain | Japan |
|---------------------------|---------------|---------------|---------|
| Cruisers: | | | |
| (a) guns over 6.1 in. . . | 180,000 | 146,800 | 108,400 |
| (b) guns 6.1 in. or less | 143,500 | 192,200 | 100,450 |
| Destroyers | 150,000 | 150,000 | 105,450 |
| Submarines | 52,700 | 52,700 | 52,700 |

2. Vessels which cause an excess tonnage in any category of this table shall be disposed of gradually during the period ending Dec. 31, 1936.

3. The maximum number of cruisers in sub-category (a) shall be as follows: For the United States, 18; for Great Britain, 15; for Japan, 12.

4. Only 16 per cent of destroyer categories shall exceed 1500 tons. Destroyers completed or building on April 1, 1930, in excess of this percentage may be retained, but no other destroyers exceeding 1500 tons shall be constructed or acquired until reduction to 16 per cent is effected.

5. Not more than 25 per cent of the total tonnage in the cruiser categories may be fitted with a landing-on deck or platform for aircraft.

6. The submarines referred to in Art. VIII, par. 2 and 3, will be counted as part of the submarine tonnage of the nations concerned.

7. The tonnage of any vessels retained under Art. XIII or Annex 2, Part II of this treaty shall not be included in the tonnage subject to limitation.

Article XVII. A transfer of tonnage may be made between destroyers and cruisers of sub-category (b), not to exceed 10 per cent of the tonnage of the category or sub-category into which the transfer is made.

Article XVIII. The United States contemplates the completion of 15 cruisers of sub-category (a) by 1935. For each of the remaining three she may substitute 15,166 tons of cruisers in sub-category (b). Subject to this, the sixteenth, seventeenth, and eighteenth cruiser will not be laid down before 1933, 1934, and 1935 respectively nor completed before 1936, 1937, 1938.

Article XIX. Except as provided in Art. XX, the tonnage laid down in any category subject to limitation in accordance with Art. XVI shall not exceed the amount necessary to reach the maximum allowed tonnage of the category, or to replace vessels that become "over age" before Dec. 31, 1936. But replacement tonnage may be laid down for cruisers and submarines that become over age in 1937, 1938 and 1939 and for destroyers that become over age in 1937 and 1938.

Article XX. Describes special concessions to Great Britain in replacing undesirable cruisers and to Japan in replacing submarines, destroyers and cruisers.

Article XXI. If, during the term of the present treaty, the requirements of the national security of one of the three nations signatory to Part III are, in the opinion of its government, materially affected by new construction of any power other than those signatory to Part III of this treaty, with respect to vessels limited by Part III, this signatory power will notify the other parties to Part III as to the increase required in its own tonnages, specifying the proposed increases and the reasons therefor and shall be intitled to make such increase. The remaining signatories may make a proportional increase in their own fleets and promptly advise with each other as to the situation thus presented.

PART IV

"Article XII. The following are accepted as established rules of international law.

"1. In their action with regard to merchant ships, submarines must conform to the rules of international law to which surface vessels are subject.

"2. In particular, except in case of persistent refusal to stop on being duly summoned, or of active resistance to visit or search, a warship—whether surface vessel or submarine boat may not sink or render incapable of navigation a merchant vessel without having first placed passengers, crew, and ship's papers in a place of safety.

For this purpose the ship's boats are not regarded as a place of safety unless the safety of the passengers and crew is assured, in the existing sea and weather conditions, by the proximity of land, or the presence of another vessel which is in a position to take them on board.

"The high contracting parties invite all other powers to express their assent to the above rules."

PART V

"Article XXIII. The present treaty shall remain in force until Dec. 31, 1936, subject to the following exceptions: (1) Part IV shall remain in force without any limit of duration. (2) The provisions of Art. III, IV, and V and Art. II, so far as may relate to aircraft carriers, shall remain in force for the same period as the Washington treaty.

"Unless the high contracting parties should agree otherwise by reason of a more generally known agreement limiting naval armaments, to which they all become parties, they shall meet in conference in 1935 to frame a new treaty to replace and carry out the purposes of the present treaty, it being understood that none of the provisions of the present treaty shall prejudice the attitude of any of the high contracting parties at the conference agreed to."

Articles XXIV, XXV, and XXVI refer to details of ratification. The treaty comes into force as regards the United States, Great Britain, and Japan when ratified by them; and into force—except Part III—as regards France and Italy, when ratified by them. (The Treaty was ratified by the governments of the United States, Great Britain, and Japan in 1930. See each country under *History*.)

NOTE—Paragraphs and lesser parts enclosed in quotation marks are quoted verbatim from the text of the treaty.

NAVIES OF THE WORLD IN 1930

ARGENTINA. The light cruisers *Veinticinco de Mayo* and *Almirante Brown*, sister ships of 6800 tons (standard), were completed in 1930. The former was reported to have made a maximum speed of 33.5 knots. Three submarines, the *Salta*, *Santa Fé*, and *Santiago del Estero*, were laid down at the Tosi yard at Taranto in 1928 and were nearing completion at the end of 1930. The displacements are 775/920 tons; speeds, 17.5/9 knots; armament: one 4-inch gun, six 21-inch torpedo tubes.

AUSTRALIA. The naval budget was being reduced. The destroyers *Paramatta*, *Warrego*, *Yarra*, and *Swan*, and the depot ship *Penguin* were ordered to be sold. The officers of the navy were reduced in number by about twelve; and as a further measure of economy the Commonwealth Naval College at Jervis Bay, N. S. W., was closed and the cadets transferred to Flinders Naval Depot, Victoria. The consolidation effected a saving of \$150,000 per year but there was no change in the educational course.

BRAZIL. Late in 1929, the Brazilian government approved the proposal for a new schoolship and the necessary credits were voted. The vessel was to be a four-masted sailing ship fitted with auxiliary propulsion by Diesel engines. The principal details are approximately as follows: length, 295 feet; beam, 42.5 feet; draft, 22 feet; speed with motors, 10.5 knots; armament: four 4-inch guns and four 3-pounder anti-aircraft guns.

CANADA. The destroyers *Saguenay* and *Skeena* were under construction at the Woolston yard of John I. Thornycroft & Co., near Southampton, England. Both were launched in 1930 and were to be completed in 1931. The principal details are: length between perpendiculars, 309 feet; beam, 32.5 feet; displacement, 1320 tons; armament: four 4.7-inch guns, two 2-pounders, five machine guns, and eight 21-inch torpedo tubes on quadruple mounts.

CHILE. It was reported that the Chilean government had decided to order a 10,000-ton light cruiser in England. The vessels under construction for the Chilean navy during 1930 were the submarine tender *Araucano* and the oil-fuel

ships *Maipo* and *Rancagua* of 7715 tons displacement—all built in England and were completed, or very nearly so, at the end of the year. The *Araucano* is a coal-burning steamer of 9000 tons and was launched at the Vickers-Armstrong Works, Barrow, late in 1929. Her principal details are: length, 390 feet; beam, 55 feet; mean draft, 16.5 feet; armament: two 4.7-inch guns, two small anti-aircraft guns; speed, 13 knots. She is fully equipped for the repair and maintenance of a squadron of submarines and has excellent accommodation for their officers and crew. The battleship *Almirante Latorre* was being modernized in England during the year.

CHINA. The Chinese building programme, published late in 1929, differed materially from the one reported about a year before and given in the YEAR BOOK for 1929, p. 550. It consisted of two battleships of 12,000 tons, four light cruisers of 5000 tons, two auxiliary vessels (type not stated), twelve river gunboats, two transports, two mine-layers, two hospital ships. If the battleships were designed to operate in the rivers and the cruisers to chase piratical craft, the programme seemed to be a very practical one. Only gunboats had been laid down. The river gunboat *Min Chuan* was completed early in 1930 at the Kiangnan Dock and Engineering Works near Shanghai. The principal details are: length over all, 106.7 feet; breadth (molded), 26 feet; draft, 6 feet; displacement, 460 tons; horsepower, 2000; speed, 18 knots; armament: two 4.7-inch guns—one forward and one aft, three 6-pounders, six machine guns. Other boats of similar type were built in 1928-29. A larger boat, the *Yat Sen*, of about 900 tons, was laid down early in 1930.

COLOMBIA. Three gunboats, designed for service on the Magdalena River, were completed by Yarrow and Company in England early in 1930. Their names are *Cartagena*, *Santa Marta*, and *Baranguilla*, and the principal details are: length, 137.75 feet; beam, 23.5 feet; armament: one 3-inch and four machine guns; speed, 16 miles per hour (14 knots).

DENMARK. The Socialist government of Denmark had taken up the question of naval armament and was making drastic changes. Believing that so small and poor a country could not afford to support an adequate naval armament to insure its defense, the government decided to reduce and reorganize its naval force. According to the proposed plans, the reorganized force was to consist of: 6 ships of surveillance and inspection (total tonnage, 8000); 18 to 24 smaller units (total tonnage, 3000) with the same duties; 2 depot ships; 12 seaplanes; and some small torpedo boats and mining craft. The personnel of the navy was to be reduced by the retirement or discharge of 10 deck officers, 30 warrant and petty officers, and 100 men. This would effect a reduction of 250,000 crowns. The coast-defense battleship *Niels Juel* (4200 tons) and the small cruiser *Hejmdal* (1313 tons) were to be sold as well as some older vessels. The small destroyer *Hvalen* was launched at the royal dockyard, Copenhagen, during 1930. It had a displacement of 300 tons, a speed of 30 knots, and was to be armed with two 3-inch guns and eight torpedo tubes.

FINLAND. The vessels of the naval building programme, which consists of four armored coast-defense ships of about 4000 tons, three submarines of 450 tons, one submarine of about 100 tons, and four small, fast torpedo boats, were be-

ing constructed as rapidly as practicable. The two coast-defense ships, two of the 450-ton submarines, the smaller submarine, and some of the small torpedo boats had been laid down. One of the larger submarines was launched at Abo, Finland, in 1930.

FRANCE. The French naval budget for 1930-31, as approved by the parliament, provided for the expenditure of 2,722,741,389 francs (1 franc = \$0.039179), an increase of nearly 40 million francs upon the figures of the previous budget. To this should be added a supplementary credit of 120 millions and part of the special credit of 300 millions, which was designed to be used in anticipating work on future programmes of construction already planned, and the building of coast-defense submarines and of oil-storage tanks.

The budget for 1930-31 provided for 3487 deck officers, 672 other officers, 244 flying officers, and 12 non-flying officers of the navy air force. An enlisted force of 57,500 men was authorized.

The complete list of vessels to be laid down in 1931 had not been published at the end of 1930. There was considerable discussion in the French press as to vessels of the large cruiser class and it was possible that no definite decision had been reached by the naval authorities. The 10,000-ton light cruiser *Algérie*, which was commenced at Brest in December, 1930, differed greatly from all previous French light cruisers of the 10,000-ton class. The protection had been notably increased. Special armor, 3.5 to 5.5 inches thick, was to protect the vitals and the decks were armored against air attack. Her 8-inch guns, of a new and more powerful type, are mounted in pairs in four turrets as are those of her predecessors. The anti-aircraft guns are of 4-inch calibre and are eight in number. The increase in weights due to armor and armament forced a decrease in speed to 32 knots—3 knots less than the speed of the almost wholly unprotected vessels of the *Tourville* class. The battleships of the *Jean Bart* (23,467 tons) class have been thoroughly modernized; work on the last to be completed was finished in 1930. Similar repairs and modifications were being made on the three ships of the *Lorraine* (23,550 tons) class.

The vessels completed in 1930 were: the light cruiser *Colbert* (10,000 tons), aircraft tender *Comdt. Teste* (10,000), cruiser mine-layer *Pluton* (5600), oil-fuel ship *Niger* (15,500), the destroyer leaders, *Bison* and *Lion* (2780), the destroyers *Frondeur*, *Foudroyant*, and *Fougucux* (1600), the submarines *Pascal*, *Pastcur*, *Henri Poincaré*, and *Poncellet* (1550/2000), and the submarines *Monge* and *Actéon* (1570/2000). The vessels under construction in 1930 and those of which the construction was authorized, but probably not commenced, are listed in the following table.

FRANCE: WARSHIPS BUILDING IN 1930

| Class and name | Tons | Reported condition on Dec. 31, 1930 |
|---------------------|--------|-------------------------------------|
| Light cruisers: | | |
| <i>Colbert</i> | 10,000 | Completed 1930 |
| <i>Foch</i> | 10,000 | Trials in progress |
| <i>Dupleix</i> | 10,000 | Launched Oct. 1930 |
| <i>Algérie</i> | 10,000 | Laid down 1930 |
| ⌘ | † | Proposed |
| Aircraft tenders: | | |
| <i>Comdt. Teste</i> | 10,000 | Completed 1930 |
| ⌘ | † | Authorized |
| Mine-layers: | | |
| <i>Pluton</i> | 5,600 | Completed 1930 |
| <i>Emile Bertin</i> | † | Authorized |
| Net-layer: | | |
| ⌘ | † | Authorized |

FRANCE: WARSHIPS BUILDING IN 1930
(Continued)

| Class and name | Tons | Reported condition on Dec. 31, 1930 |
|---|-------------|--|
| Submarine tender: <i>Jules Verne</i> | 6,000 | Laid down 1929 |
| Fuel ships: | | |
| <i>Niger</i> | 15,500 | Completed 1930 |
| <i>Var</i> | " | Ordered |
| <i>Elorn</i> | " | " |
| School ship: <i>Jeanne d'Arc</i> | 6,600 | Launched Feb., 1930 |
| Small cruisers: | | |
| <i>Rougainville</i> | 2,030 | Laid down 1928 |
| <i>Dumont d'Urville</i> | " | " |
| <i>Savorgnan de Brazza</i> | " | Ordered |
| <i>D'Entrecasteaux</i> | " | " |
| <i>A-5</i> | " | Authorized |
| <i>A-6</i> | " | " |
| Destroyer leaders: | | |
| <i>Vauban</i> | 2,780 | Nearly complete |
| <i>Bison</i> | 2,460 | Completed 1930 |
| <i>Lion</i> | " | " |
| <i>Aigle</i> | 2,480 | Laid down 1929 |
| <i>Vautour</i> | " | Launched June, 1930 |
| <i>Albatros</i> | " | " |
| <i>Gerfaut</i> | " | " |
| <i>Milan</i> | " | Laid down 1930 |
| <i>Epervier</i> | " | " |
| <i>Vauquelin</i> | 2,441 | Ordered |
| <i>Kersaint</i> | " | " |
| <i>Cassard</i> | " | " |
| <i>Tartu</i> | " | " |
| <i>Brézé</i> | " | " |
| <i>Chevalier Paul</i> | " | " |
| <i>D-16</i> | 2,569 | Authorized |
| <i>D-17</i> | " | " |
| <i>D-18</i> | " | " |
| <i>D-19</i> | " | " |
| <i>D-20</i> | " | " |
| <i>D-21</i> | " | " |
| Destroyers: | | |
| <i>Fougueux</i> | 1,600 | Completed 1930 |
| <i>Foudroyant</i> | " | " |
| <i>Frondeur</i> | " | " |
| Submarines: | | |
| <i>Surcouf</i> | 2,880/4,304 | Trials in progress |
| <i>Pascal</i> | 1,550/2,000 | Completed 1930 |
| <i>Pasteur</i> | " | " |
| <i>H. Poincaré</i> | " | " |
| <i>Poncelet</i> | " | " |
| <i>Frénel</i> | 1,379/2,060 | Launched June, 1929 |
| <i>Archimède</i> | " | Launched Sept., 1930 |
| <i>Monge</i> | " | Completed 1930 |
| <i>Actéon</i> | " | " |
| <i>Achéron</i> | " | " |
| <i>Argo</i> | " | Launched Apr., 1929 |
| <i>Achille</i> | " | Launched May, 1930 |
| <i>Ajax</i> | " | " |
| <i>Prométhée</i> | " | Launched Oct., 1930 |
| <i>Persée</i> | " | Laid down 1928 |
| <i>Protée</i> | " | Launched July, 1930 |
| <i>Pégase</i> | " | Trials in progress |
| <i>Phénix</i> | " | Trials in progress |
| <i>Glorieux</i> | " | Ordered 1930 |
| <i>Centaure</i> | " | " |
| <i>Héros</i> | " | " |
| <i>Conquérant</i> | " | " |
| <i>Tonnant</i> | " | " |
| <i>Espoir</i> | " | " |
| <i>Saphir</i> | 760/925 | Completed 1930 |
| <i>Turquoise</i> | " | Nearly complete |
| <i>Nautilus</i> | " | Launched Mar., 1930 |
| <i>Rubis</i> | " | Laid down 1929 |
| <i>Diamant</i> | " | " |
| <i>Q-174</i> | " | " |
| <i>Arctique</i> | 635/809 | Launched Aug., 1929 |
| <i>Argonaute</i> | " | Trials in progress |
| <i>Diane</i> | " | Launched May, 1930 |
| <i>Méduse</i> | " | Launched Aug., 1930 |
| <i>Amphitrite</i> | " | Launched Dec., 1930 |
| <i>Antiope</i> | " | " |
| <i>Atalante</i> | " | " |
| <i>Amazone</i> | " | " |
| <i>Orphée</i> | " | " |
| <i>Oréade</i> | " | " |
| <i>Orion</i> | " | " |
| <i>Ondine</i> | " | " |
| <i>Payoté</i> | " | Ordered 1930 |
| <i>Sybille</i> | " | " |
| <i>Vestale</i> | " | " |
| <i>Sultane</i> | " | " |
| <i>Q-185</i> | " | " |
| <i>Q-186</i> | " | Authorized |
| <i>Q-187</i> | " | " |
| <i>Q-188</i> | " | " |

GERMANY. The naval budget for 1930-31 amounted to 194 million marks (1 mark = \$0.2382). It provided a credit of 9,700,000 marks for continuing the construction of the hull of the armored cruiser *Admiral Scheer*, 8,100,000 marks for her guns, and 400,000 for her torpedoes. The budget proposals called for a first installment on the construction of *Ship B* (similar to the *Admiral Scheer*), but the request was refused by the Reichstag. A fourth installment of 4,700,000 marks was made for the construction of the cruiser *Leipzig*, 4,700,000 marks toward completing her guns, and 400,000 for her torpedoes. The sum of 4,800,000 marks is allotted to the gunnery school ship *Ersatz-Drache*; this vessel appeared as a tender (type not stated) in the budget of 1929-30 and a first installment of 1 million marks was allotted for commencing construction. The usual amounts for personnel, general maintenance, repairs, etc., were approved. Aside from the request for laying down *Ship B*, the budget as presented was voted without modification. The light cruiser *Köln*, of 6000 tons displacement, was completed in 1930.

There were building for the German navy in 1930: the *Admiral Scheer* (10,000 tons—fully described in the YEAR BOOK for 1929, p. 551), the light cruiser *Leipzig*, the gunnery school ship *Ersatz-Drache*, and some small craft. The *Leipzig*, which was launched in October, 1929, probably would be completed in 1931. She was the latest of five 6000-ton cruisers built by the German navy under the restrictions of the Versailles treaty which limited the tonnage of new German cruisers to 6000 and their number to eight. These vessels, the *Emden* (launched, 1925), *Königsberg* (1927), *Karlsruhe* (1927), *Köln* (1928), and *Leipzig* (1929), while of the same general type, differ materially in details—each being an improvement upon its predecessor. In the *Emden*, some gain in weight was effected by electric welding; in other respects her structural features were mostly of the usual type. Her length on the water line is 493.75 ft.; beam, 46.75 ft.; mean draft, 17.5 ft. The battery consists of: eight 6-inch, 45 calibre guns in pairs in four turrets—two forward, two aft—on the midship line, turrets No. and No. 3 being elevated to fire over Nos. 1 and 4; two 3.46-inch anti-aircraft guns; 18 machine guns; four 19.7-inch, above-water torpedo tubes. The engines are geared turbines developing about 46,500 horse power and a speed of 29 knots. The boilers use coal and oil. The *Königsberg*, *Karlsruhe*, and *Köln* differ from the *Emden* in many respects. The water-line length is 554.5 ft.; the beam is 49.9 ft.; and the maximum draft, at 6000 tons displacement, is 17.9 ft. The armament consists of: nine 6-inch, 50 cal. guns in three triple-gun turrets,—one forward, two aft—the latter placed in echelon; four 3.46-inch anti-aircraft guns mounted singly on the superstructure; 12 19.7-inch, above-water torpedo tubes in triple mounts. The weight of the hull was further reduced by practically complete electric welding and the use of an improved quality of steel and other metals. The propelling machinery consists of geared turbines driving twin screws and Diesel engines driving a third (midship) screw. The Diesel engines are used for cruising purposes. The boilers are oil-fired. The total horse power is 65,000 and the speed about 32 knots. A mine-laying port is in the stern under the overhang.

The *Leipzig* differs from her predecessors of the *Königsberg* type in several important features.

The use of the highest grade of steel, of some lighter metals, and of electric welding was carried still further. Bulges on the side give better anti-torpedo protection and may be used as reserve feed tanks. The dimensions are: water-line length, 544.5 ft.; beam 53.3 ft.; mean draft at 6000 tons, 15.5 feet. The battery consists of nine 6-inch guns said to be more powerful than those of the *Königsberg* class. The four 3.46-inch, anti-aircraft guns are on twin mounts—both guns and mounts being of improved type. The machinery is similar to that of the *Königsberg* class, but the Diesel engines are of a new and lighter type; they are designed to develop 12,000 horse power at full power and give a speed of 18 knots. At 14 knots these engines will give a cruising range of over 4000 miles without using the reserve supply in the bulge tanks. The horse power of the turbine engines is about 60,000, so that the total power is 72,000; and the expected speed is 32 to 33 knots with all engines in operation. All five of these cruisers have armored water-line belts 3 to 4 inches thick as well as armor on the turrets and conning tower, but the protection of the *Leipzig* was said to be superior to that of the others.

GREAT BRITAIN. The naval budget for the fiscal year, (Apr. 1 to Apr. 1) 1930-31, provided for an expenditure of £51,739,000. It was £4,126,000 less than the budget of 1929-30 and was the smallest since the war. The authorized personnel on Apr. 1, 1930, consisted of 5767 commissioned officers in service and 675 others, 530 cadets at Dartmouth, 905 warrant officers, 79,143 enlisted men, 378 marine officers, 37 marine warrant officers, and 9619 enlisted men—a total personnel of 97,054. During the ensuing year this total was to be reduced to about 94,000. The building programme of 1929-30 was reduced by the cancellation of 2 cruisers, 2 destroyers, 3 submarines, 2 sloops, 1 net-layer, and 1 target tower. The programme for 1930-31 consisted of 3 cruisers of about 6500 tons armed with 6-inch guns, 1 destroyer leader, 8 destroyers, 3 submarines, 4 sloops, 1 net-layer, and 1 target tower.

The estimated expenditure on the Singapore naval base was raised to £800,000—an increase of £220,000 over the estimates of 1929-30. The floating dry dock at the base was in service and had docked the cruiser *Cumberland* (10,000 tons). The naval aviation allotments were reduced £33,000 below the £1,300,000 of the previous budget. There were 82 naval officers qualified as observers and 120 officers acting as pilots in active service; 20 others were under instruction. Catapults for launching planes were installed on the battleship *Resolution* and the large cruiser *Frobisher*, but were said not to have given satisfaction. Trials with catapults are being continued on the aircraft carrier *Ark Royal*.

The battleship *Valiant* and the battle cruiser *Hood* were undergoing modernization in 1930 and the work was approaching completion at the end of the year, if not completed. The *Barham* was the only British capital ship which had not been modernized since the World War; work on her was reported to have been planned. The vessels under construction for the British navy in 1930 and those of which the construction was authorized, but probably not commenced, are listed in the table in the second column.

The tonnages of certain vessels given in these tables differ from the figures for 1929 chiefly because of the change from normal to standard tons, as required by the London Naval Treaty.

GREAT BRITAIN: WARSHIPS BUILDING IN 1930

| Class and name | Tons | Reported condition on Dec. 31, 1930 |
|--------------------------|-------------|-------------------------------------|
| Light cruisers: | | |
| <i>Shropshire</i> | 10,000 | Completed 1930 |
| <i>Dorsetshire</i> | " | " |
| <i>Norfolk</i> | " | " |
| <i>York</i> | 8,400 | " |
| <i>Exeter</i> | " | Completed Jan., 1931 |
| <i>Leander</i> | 6,500 | Laid down Sept. 8, 1930 |
| <i>Neptune</i> | " | Authorized |
| <i>Orion</i> | " | " |
| <i>Achilles</i> | " | " |
| Aircraft carrier: | | |
| <i>z</i> | ..... | Authorized |
| Repair ship: | | |
| <i>Resource</i> | 13,500 | Completed Jan., 1930 |
| Sloops: | | |
| <i>Penzance</i> | 945 | Completed Dec., 1930 |
| <i>Hastings</i> | " | Practically complete |
| <i>Folkestone</i> | " | Laid down Feb. 12, 1930 |
| <i>Scarborough</i> | " | Laid down Mar. 14, 1930 |
| <i>Shoreham</i> | " | Practically complete |
| <i>Fowey</i> | " | Launched Nov. 4, 1930 |
| <i>Bideford</i> | " | Launched June 10, 1930 |
| <i>Rochester</i> | " | Laid down 1930 |
| <i>Falmouth</i> | " | Ordered 1930 |
| <i>Milford</i> | " | " |
| <i>Dundee</i> | " | " |
| <i>Weston-Super-Mare</i> | " | " |
| <i>z</i> | " | Authorized |
| <i>z</i> | " | " |
| Destroyer leaders: | | |
| <i>Codrington</i> | 1,520 | Completed 1930 |
| <i>Keith</i> | " | Launched July, 1930 |
| <i>Kempenfelt</i> | " | Laid down 1930 |
| <i>Duncan</i> | " | Authorized |
| Destroyers: | | |
| <i>Arrow</i> | 1,330 | Completed 1930 |
| <i>Ardent</i> | " | " |
| <i>Anthony</i> | " | " |
| <i>Acheron</i> | " | " |
| <i>Acasta</i> | " | " |
| <i>Achates</i> | " | " |
| <i>Active</i> | " | " |
| <i>Antelope</i> | " | " |
| <i>Boreas</i> | " | Trials in progress |
| <i>Brazen</i> | " | Launched July, 1930 |
| <i>Blanche</i> | " | Trials in progress |
| <i>Boadicea</i> | " | Launched Sept., 1930 |
| <i>Brilliant</i> | " | Launched Oct., 1930 |
| <i>Bulldog</i> | " | Launched Dec., 1930 |
| <i>Basilik</i> | " | Launched Aug., 1930 |
| <i>Beagle</i> | " | Launched Sept., 1930 |
| <i>Crusader</i> | ? | " |
| <i>Comet</i> | ? | " |
| <i>Cygnat</i> | ? | Ordered |
| <i>Crescent</i> | ? | " |
| <i>Defender</i> | ? | " |
| <i>Daring</i> | ? | " |
| <i>Diamond</i> | ? | " |
| <i>Decoy</i> | ? | " |
| <i>Dainty</i> | ? | " |
| <i>Delight</i> | ? | " |
| <i>Duchess</i> | ? | " |
| <i>Diana</i> | ? | " |
| <i>z</i> | ? | Authorized |
| <i>z</i> | ? | " |
| Submarines: | | |
| <i>Parthian</i> | 1,540/2,020 | Completed 1930 |
| <i>Perseus</i> | " | " |
| <i>Proteus</i> | " | " |
| <i>Pandora</i> | " | " |
| <i>Phœnix</i> | " | Nearly completed |
| <i>Rainbow</i> | 1,475/2,015 | " |
| <i>Regent</i> | " | Trials in Oct. |
| <i>Regulus</i> | " | Completed 1930 |
| <i>Rover</i> | " | Complete 1931 |
| <i>Thames</i> | 1,850/..... | Ordered |
| <i>Swordfish</i> | 650/..... | " |
| <i>Sturgeon</i> | " | " |
| <i>Starfish</i> | ? | Authorized |
| <i>Seahorse</i> | ? | " |
| <i>Porpoise</i> | ? | " |
| Net-layer: | | |
| <i>z</i> | ? | Authorized |
| Target tower: | | |
| <i>z</i> | ? | Authorized |
| River gunboat: | | |
| <i>Falcon</i> | ? | Probably complete |

GREECE. The Greek naval budget for 1930-31 provided for an increase of 11,339,070 drachmas in the ordinary expenditure and 14,514,250 drachmas in the extraordinary expenditure above the

corresponding figures in the budget for 1929-30. The total of the budget was about 437 million drachmas (1 drachma = 1.3 cents). The principal increases in the ordinary expenditure were: 5.5 millions for personnel, 4 millions for aviation, 10.5 millions for mobile material, maintenance, etc., and 11 millions for pay; the principal reduction was 8 millions on naval instruction. The principal items of increase in the extraordinary expenditure concerned naval aviation and amounted to a total of nearly 7 millions. It was therefore apparent that much greater attention was being given to naval aviation. According to the *London Engineer*, the Greek government had finally agreed to take over and complete the battleship *Salamis*, modernize, and complete her. Earlier reports from Greece left the matter in some doubt. The four submarines of the *Nereus* type (730/930 tons) had been completed in France and turned over to the Greek naval authorities. The only vessels under construction for the navy in 1930 were two destroyer leaders (see YEAR BOOK for 1929, p. 552) of 1450 tons building in Italy.

ITALY. The naval budget for the fiscal year 1930-31 provided for an expenditure of 1,475,966,000 lire (1 lira = 5.263 cents). The programme of construction consisted of 29 vessels, viz: 1 light cruiser of 10,000 tons; 2 light cruisers of about 5100 tons; 4 destroyers of 1240 tons; 4 submarines (mine-layers) of 1390 tons; 6 submarines (mine-layers) of 810 tons; 12 submarines (coast defense) of 610 tons. As in most navies the recent light cruisers of 10,000 tons were reported to have much better armor protection with a consequent reduction in speed. The *Zara* and *Fiume*, sister ships, and both launched in 1930, were designed to develop a speed of about 32 knots instead of 35.5 as in the *Trento* and *Trieste*. The designed horse power is 95,000 instead of the 150,000 in the *Trento* class. The hull is shorter and deeper, and hull, machinery, and battery have much greater armor protection—a 5.5-inch belt from forward to after turret, 5-inch turret fronts, and 4.7-inch transverse bulkheads. The *Gorizia* and *Bolzano* were believed to be similar to the *Zara* and *Fiume* in all essential respects. No information concerning the *Pola*, which was authorized by the programme for 1930-31, had been published.

One of the 5250-ton cruisers, the *Alberto da Giussano*, had her trials in June, 1930, less than two months after launching. The speed during the four hours trial was 38.77 knots with 100,000 horse power. In September the mean speed developed during five hours was 39.3 knots, the maximum reached being 40.7 knots. The designed speed was 37 knots with 95,000 horse power. It is noteworthy that all the larger submarines of the new programme were mine-layers. The vessels under construction for the Italian Navy in 1930 and those of which the construction was authorized, but probably not commenced, are listed in the accompanying table.

JAPAN. The amount of the naval budget for 1930-31 was 265,200,000 yen. As that for 1929-30 was 269,120,000 yen, there was a reduction of 3,920,000 for the current year. The new naval programme called for:—(1) acceleration of the work of modernizing all battle ships; (2) augmenting the elevation of their guns; (3) substituting, as far as possible, light cruisers carrying 6-inch guns for those having 5.5-inch guns. A new type of light cruiser of 8000 to 9000 tons, carry-

ITALY: WARSHIPS BUILDING IN 1930

| Class and name | Tons | Reported condition on Dec. 31, 1930 |
|----------------------------|-------------|-------------------------------------|
| Light cruisers: | | |
| <i>Pola</i> | 10,000 | Ordered 1930 |
| <i>Gorizia</i> | " | Laid down 1929 |
| <i>Bolzano</i> | " | " |
| <i>Zara</i> | " | Launched Apr., 1930 |
| <i>Fiume</i> | " | " |
| <i>Montecoroli</i> | 5,100 | Authorized |
| <i>Attendolo</i> | " | " |
| <i>Bande Nere</i> | 5,250 | Launched Apr., 1930 |
| <i>Colleoni</i> | " | Laid down 1928 |
| <i>Da Barbiano</i> | " | Launched Aug., 1930 |
| <i>Da Guisano</i> | " | Trials Sept., 1930 |
| <i>Maresciallo Diaz</i> | " | Laid down 1929 |
| <i>Maresciallo Cadorna</i> | " | " |
| Aircraft tender: | | |
| " | " | Authorized |
| Destroyer leaders: | | |
| <i>L. Targio</i> | 1,654 | Completed 1930 |
| <i>L. Malocello</i> | " | Launched Mar., 1929 |
| <i>U. Vivaldi</i> | " | Completed 1930 |
| <i>A. Usodimare</i> | " | Launched May 1929 |
| <i>L. Pancaldo</i> | " | Completed 1930 |
| <i>A. Da Noli</i> | " | Completing |
| <i>E. Passagno</i> | " | " |
| <i>N. Da Kecco</i> | " | Completed 1930 |
| <i>N. Zeno</i> | " | " |
| <i>G. Di Verazzano</i> | " | Status unreported |
| <i>A. Cudamoto</i> | " | Completing |
| <i>A. Pigafetta</i> | " | Launched Jan., 1930 |
| Destroyers: | | |
| " | 1,240 | Authorized |
| " | " | " |
| " | " | " |
| " | " | " |
| <i>Folgore</i> | " | Laid down 1929 |
| <i>Lembo</i> | " | " |
| <i>Buleno</i> | " | " |
| <i>Eulmine</i> | " | " |
| <i>Dardo</i> | 1,225 | Launched Sept., 1930 |
| <i>Strale</i> | " | Laid down 1928 |
| <i>Breccio</i> | " | Launched Aug., 1930 |
| <i>Saetta</i> | " | Laid down 1928 |
| Submarines: | | |
| (Mine-layer) | 1,390/1,884 | Authorized |
| " | " | " |
| " | " | " |
| " | 810/1,020 | " |
| " | " | " |
| " | " | " |
| " | " | " |
| " | " | " |
| " | " | " |
| (Coast defense) | 610/1 | " |
| " | " | " |
| " | " | " |
| " | " | " |
| <i>Argonautica</i> | 636/791 | Ordered 1929 |
| <i>Fisalia</i> | " | " |
| <i>Medusa</i> | " | " |
| <i>Ialea</i> | " | " |
| <i>Iantina</i> | " | " |
| <i>Nautilus</i> | " | " |
| <i>Salpa</i> | " | " |
| <i>Delfino</i> | 875/1,090 | Launched Apr., 1930 |
| <i>Narvalo</i> | " | Laid down 1928 |
| <i>Squalo</i> | " | Launched Feb., 1930 |
| <i>Tricheco</i> | " | Launched Sept., 1930 |
| <i>S. Santarosa</i> | 850/1,065 | Launched 1930 |
| <i>O. Menotti</i> | " | Launched Dec., 1929 |
| <i>F. Bandiera</i> | " | Completing |
| <i>L. Monara</i> | " | " |
| <i>L. Settembrini</i> | 810/1,150 | Launched Sept., 1930 |
| <i>R. Settimo</i> | " | Launched 1930 |
| <i>V. Pisani</i> | 830/1,050 | Completed 1930 |
| <i>G. Bausan</i> | " | " |
| <i>M. Colonna</i> | " | " |
| <i>A. dei Genes</i> | " | " |
| <i>E. Fieramosca</i> | 1,453/1,768 | Trials Dec., 1930 |
| <i>M. Bragadino</i> | 862/1,068 | Launched July, 1929 |
| <i>F. Corridoni</i> | " | Launched Apr., 1930 |
| <i>Tito Speri</i> | 780/990 | Completed 1930 |
| <i>G. da Procida</i> | " | Completing |
| School ship: | | |
| <i>Amerigo Vespucci</i> | 2,985 | Laid down 1930 |

ing 6-inch guns, was to be developed. The tonnage of submarines and light cruisers was to be maintained to the limit of the treaty. The reduction in submarines was to be compensated by the increase of aircraft; 25 per cent of all vessels were to be

fitted to carry planes; catapults were to be placed on all combatant vessels which could carry them. The new six-year programme of construction called for the expenditure of 215,000,000 yen.

During 1930 the number of airplane squadrons was increased to seventeen and the navy department was being urged to extend the number of squadrons to twenty-eight at a cost of 60 million yen. A preparatory school for aviation cadets was created at Yokosuka; the number of cadets was between 70 and 80, the entrance age 15 to 17 years, and the duration of the course three years. The work of developing and equipping the great naval aviation base at Tateyama was accelerated during 1930. The vessels that were under construction for the Japanese navy in 1930 and those of which the construction was authorized, but probably not commenced, are listed in the accompanying table:

JAPAN: WARSHIPS BUILDING IN 1930

| Class and name | Tons | Reported condition on Dec. 31, 1930 |
|------------------------|-------------|--|
| Aircraft carriers: | | Laid down Jan., 1930 |
| <i>Ryujo</i> | 7,100 | Authorized |
| " | 12,000 | |
| Light cruisers: | | |
| <i>Atago</i> | 10,000 | Launched June, 1930 |
| <i>Takao</i> | " | Launched May, 1930 |
| <i>Maya</i> | " | Launched Nov., 1930 |
| <i>Chokai</i> | " | Laid down May, 1928 |
| " | 9,000 | Proposed |
| Destroyers: | | |
| <i>Amagiri</i> | 1,700 | Launched Feb., 1930 |
| <i>Asagiri</i> | " | Launched Nov., 1929 |
| <i>Yugiri</i> | " | Launched May, 1930 |
| <i>Ushio</i> | " | Laid down 1929 |
| <i>Ayanami</i> | " | Launched Oct., 1930 |
| <i>Sayuri</i> | " | Launched 1930 |
| <i>Shikanami</i> | " | Completed 1930 |
| <i>Oboro</i> | " | Building |
| <i>Akebono</i> | " | " |
| <i>Sazanami</i> | " | Launched 1931 |
| <i>Hibiki</i> | " | " |
| <i>Akatsuki</i> | 1,850 | Laid down 1930 |
| <i>Ikadachi</i> | " | " |
| <i>Kaminari</i> | " | " |
| <i>Inaduma</i> | " | " |
| Submarines: | | |
| <i>I-5</i> | 2,000/2,550 | Launched |
| <i>I-59</i> | 1,650/2,220 | Launched Mar., 1929 |
| <i>I-60</i> | " | Launched Apr., 1929 |
| <i>I-61</i> | " | Launched Nov., 1928 |
| <i>I-62</i> | " | " |
| <i>I-63</i> | " | " |
| <i>I-64</i> | " | Launched Oct., 1929 |
| Submarine mine-layers: | | |
| <i>I-65</i> | 1,638/2,220 | Laid down Dec., 1929 |
| <i>I-66</i> | " | Laid down 1930 |
| <i>I-67</i> | " | " |
| Surface mine-layer: | | |
| <i>Itsukushima</i> | 2,050 | Completed 1930 |
| Mine sweepers: | | |
| No. 5 | 700 | Completed 1930 |
| No. 6 | " | " |
| Net-layers: | | |
| <i>Shirataka</i> | 1,405 | Launched Jan., 1929 |
| <i>Kamome</i> | 570 | Completed 1930 |
| <i>Tsubame</i> | " | " |
| <i>Yayoyama</i> | 2,020 | Laid down 1930 |
| River gunboats: | | |
| <i>Atami</i> | 400 | Completed 1930 |
| <i>Futami</i> | " | " |

NETHERLANDS. The national parliament, early in 1930, approved the naval budget which allots 12,500,000 florins (1 florin = \$0.402) in four annual installments for the construction of a new cruiser of 5250 tons, 32 knots speed and carrying six 5.9-inch guns. The necessity of a greater protection for the Netherlands East Indies was laid before parliament with the explanatory notes on the budget and a supplementary budgetary allowance of 700,000 florins was voted later in the year. Of this, the sum of 250,000 was to be added to the

first installment on the new cruiser and the remainder was to be used for commencing the construction of a gunboat, for East Indian service, which would be armed with three 6-inch guns and have a speed of about 15 knots.

NORWAY. During 1930 the navy department laid down a new mine-layer of about 1700 tons which was also to be specially fitted for instruction of the naval personnel in mining work. The armament was to consist of 4.7-inch guns, an anti-aircraft gun, and torpedo tubes.

PERSIA. According to reports the Italian naval commission, which had been asked to advise the government in regard to the organization of a naval force, had recommended the forming of a flotilla of six gunboats and some small craft. This was to form the nucleus of the Persian naval establishment. A naval academy and schools of instruction were in prospect.

PERU. The naval and air budget for 1930 amounted to £823,396 sterling as compared with £675,717 in 1929 and £565,229 in 1928. The increase was due to the development of the combined air force (naval and land) which was controlled by the minister of marine and aviation. In the preceding years the land air force was under control of the minister of war.

POLAND. The old German marine schoolship *Prinz Eitel Friedrich*, of 1570 tons, was taken over from France and renamed *Dar Pomorza*. She had been thoroughly repaired and refitted and, in 1930, was taken to Gdynia where she replaced the *Lwow* as the Polish naval schoolship. The new Polish destroyers *Wicher* and *Burza*, of 1500 tons, that were supposed to be completed in 1929, were delayed in construction and not finished until 1930. The work on the submarines *Rys*, *Wilk*, and *Zbik*, of 980/1250 tons, was also delayed. The first two were completed in 1930 and the *Zbik* was to be finished in 1931.

PORTUGAL. The minister of marine presented to the council of ministers a long report on the condition of the navy and recommendations for reorganization. The recommended programme of construction was designed to be completed in four periods of about three years each. The vessels of the first period are to be 2 gunboats of 2000 tons and 2 of 1000 tons, 4 destroyers of 1500 tons, 2 submarines of 800 tons, and 1 aircraft tender carrying 12 planes; the vessels of the second period are to be, 1 cruiser of 5000 tons, 2 destroyers of 1500 tons, and 4 submarines of 800 tons; those of the third period, 1 cruiser of 5000 tons, 2 gunboats of 2000 tons and 2 of 1000, 2 destroyers of 1500 tons, and 2 submarines of 500 tons; and those of the fourth period, 2 gunboats of 1000 tons, 4 destroyers of 1500 tons, 4 submarines of 500 tons, and 1 submarine tender. The total cost of the programme was estimated to be about \$60,000,000.

RUMANIA. The government decided to build a naval base on the Black Sea; a British admiral and two French officers were asked for their advice and opinions concerning it.

RUSSIA. Competent observers who have been able to examine the conditions of Russian ships during the past year report no improvement—probably a steady degeneration. During the year 1929, the destroyers *Voikoff* and *Trotsky* were lost with all hands in the well-protected waters of the Gulf of Finland; while the battleships *Pariskaya Kommuna* of 23,000 tons and the armored cruiser *Profintern* of 7600 tons were seriously injured by a storm while cruising in the Baltic. Such things

could never happen in a navy of the third rate as regards seamanship, discipline, and condition of ships. Repairs of serious importance were effected under the direction of German foremen, assisted by German workmen, in the naval dockyards.

SPAIN. The naval budget for 1930 provided for the expenditure of 109 million pesetas (1 peseta = about 10.5 cents), an increase of 1 million over the amount allotted in 1929. The new programme of construction, announced late in 1929, proposed the construction of 2 light cruisers of 10,000 tons, 12 submarines, 3 destroyer leaders of 1650 tons, 1 oil-fuel ship, 3 gunboats of 250 tons, and several small craft. The estimated cost of the programme was 800 million pesetas. This programme was a modification and extension of previous undertakings. The light cruiser *Miguel de Cervantes* was completed in February, 1930. Shortly afterwards she was seriously injured by collision with a pier; the resulting necessary repairs were completed late in summer. In the spring of 1930 work on the 10,000-ton cruisers *Baleares* and *Canarias* was temporarily stopped as a measure of economy. The destroyer leaders *José Luis Diaz* and *Almirante Ferrandiz* were completed and commissioned late in 1929; the *Lepanto* had her trials, (speed attained, 38.65 knots) and was commissioned in 1930; the *Alcala Galiano* was launched in December, 1929, and the *Almirante Valdez* in the summer of 1930; the *Almirante Antequera* and the *Almirante Miranda* were laid down at the works of the Sociedad Espanola de Construcción Naval at Cartagena in 1929. All these destroyer leaders are of the same class and have a displacement of 1650 tons. The submarines *C.5* and *C.6* were completed in 1930. Some improvements were made in aviation organization and instruction during 1930.

SWEDEN. According to the Swedish press, the law of 1925 cut down the numbers of the personnel too far to leave a sufficient force to carry on the work of the navy. This condition was to be accentuated still further as aviation was developed and the vessels building were completed. These consist of the airplane carrier *Gottland* (5500 tons, laid down in 1929 or 1930), the destroyers *Claes Horn* and *Claes Uggle* (974 tons, laid down 1928), the submarine *Ulven* (700/850 tons, laid down 1928), two small submarines, and two to four vedette boats.

TURKEY. The very extensive repairs and alterations of the *Yavuz Sultan Selim* were completed early in 1930 and her trials in August were regarded as very satisfactory. The vessels under construction during 1930 are listed and described in the YEAR BOOK for 1929, p. 555.

UNITED STATES. The naval appropriation bill for 1930-31 as passed by the Senate amounted to \$380,669,386. In the Senate-House conference this sum was reduced by \$103,875, leaving a balance of \$380,565,511. On June 30, 1930, there were, on the active list of the navy, 5492 line officers, 2062 staff officers, 1148 chief warrant officers and 283 warrant officers. The appropriation act for 1929-30 provided for an enlisted force of 84,500. This was insufficient completely to man all the ships—the average complement of the different ships being about 12 per cent short, notwithstanding that a large number of cruisers, destroyers, and submarines were condemned and put out of commission. The same provisions for officers and men were made in the appropriation act for 1930-31. The appropriation acts for 1929-30 and 1930-31 provided for an average of 1020 com-

missioned marine officers, 155 marine chief warrant and warrant officers, and 18,000 enlisted men.

Pursuant to the terms of the London Naval Armaments Treaty of 1930, the navy department presented to Congress a new programme of construction. This included: 1 airplane carrier of 13,800 tons to cost not more than \$27,650,000, including armor, armament, ammunition, and 114 airplanes; 1 flying deck cruiser, of 10,000 tons and armed with 6-inch guns, to cost not more than \$20,780,000, including armor, armament, ammunition, and 36 airplanes; 1 cruiser, of 7500 tons and armed with 6-inch guns, to cost not more than \$16,005,000, including armor, armament, ammunition, and 6 airplanes; 1 destroyer leader of 1850 tons and 10 destroyers, to cost not more than \$47,000,000; and 4 submarines of 1100 tons to cost not more than \$17,600,000. The department desired to let the contracts, on July 1, 1931, for the airplane carrier, the destroyer leader, the destroyers, and the submarines; the contract for one cruiser to be let in January, 1932, and the contract for the other cruiser before Apr. 1, 1932.

The vessels under construction in 1930 are listed in the subjoined table which gives the tonnage of each and its status as regards completion at the end of the year. Four 10,000-ton light cruisers were completed and commissioned in 1930: the *Pensacola*, February 6; the *Northampton*, May 17; the *Houston*, June 17; and the *Chester*, June 24. Three 10,000-ton cruisers were launched: the *Augusta*, February 1; the *Chicago*, April 10; the *Louisville*, September 1. Of the six others of the same class, the *Portland* and the *Indianapolis* were laid down in 1929; and the *New Orleans*, the *Astoria*, the *Minneapolis* and the *CL-38* were laid down in 1930. The fleet submarine *V.5* (2760/3960 tons, was completed and commissioned on May 15, and a sister boat, the *V.6*, was completed in July. The aircraft carrier *CV.4* (about 13,800 tons) and the submarine *V.7* were laid down in 1930.

UNITED STATES: WARSHIPS BUILDING IN 1930
[Includes vessels of the new building programme presented to Congress in December, 1930]

| Class and name | Tons | Date, or estimated future date, of completion |
|---------------------|--------|---|
| Light cruisers: | | |
| <i>Pensacola</i> | 10,000 | Completed Feb. 9, 1930 |
| <i>Northampton</i> | " | Completed May 17, 1930 |
| <i>Houston</i> | " | Completed June 17, 1930 |
| <i>Chester</i> | " | Completed June 24, 1930 |
| <i>Augusta</i> | " | To be compl. Feb. 1, 1931 |
| <i>Chicago</i> | " | " |
| <i>Louisville</i> | " | To be compl. Feb. 14, 1931 |
| <i>Portland</i> | " | To be compl. Aug. 15, 1932 |
| <i>Indianapolis</i> | " | " |
| <i>New Orleans</i> | " | To be compl. June 2, 1931 |
| <i>Astoria</i> | " | To be compl. Oct. 2, 1933 |
| <i>Minneapolis</i> | " | To be compl. Oct. 2, 1933 |
| <i>CL-38</i> | " | To be compl. Feb. 11, 1934 |
| Flying deck cruiser | " | Proposed |
| Light cruiser | 7,500 | " |
| Aircraft carriers: | | |
| <i>Ranger</i> | 13,800 | To be compl. Mar. 1, 1934 |
| <i>CV-5</i> | " | Proposed |
| Fleet submarines: | | |
| <i>V-5</i> | 2,760 | Completed May 15, 1930 |
| <i>V-6</i> | " | Compl. Sept. 1, 1930 |
| <i>V-7</i> | " | To be compl. Aug. 1, 1932 |

The United States continues to lead the world in naval aviation. So great was her preëminence in everything, except aircraft carriers, that pertains to this important service, that no other country was in her class as respects naval aviation. As regards carriers she was considerably inferior to England, slightly superior to Japan, and much

superior to France and Italy. There were on hand June 30, 1930, 928 service planes, 32 experimental planes, and 29 obsolete planes; in July, 53 of the older service planes were transferred to the obsolete list and 27 obsolete planes were withdrawn from use and destroyed. In 1931, the number of service planes probably would reach 1000 and thereafter would be maintained at that figure, or above it. The 1930 allowance of planes for the naval reserve, which were not included in the 1000-plane programme, was 124. The full 1000-plane strength was to be attained with a saving of more than \$20,000,000 on the estimated cost—an achievement highly creditable to the Naval Bureau of Aeronautics.

All battleships and large light cruisers of the navy, as well as many other vessels, for years had been equipped with catapults for the launching of planes from their decks. The older models largely had been replaced by the new gunpowder type and this work probably would be completed in 1931. Few catapults had been installed on fighting ships of other countries. Of those that had been tried, many had given much trouble; but all the principal European navies as well as the Japanese were endeavoring to develop a satisfactory type. Until they do so they will have to lower their planes over the side and let them "take off" from the water. The American catapults were the result of many years experiment and trials. The *U.S.S. Akron* (Airship *ZRS.4*) probably would be completed in June, 1931; construction of *ZRS.5* was likely to be commenced in 1931 as an allotment of \$1,000,000 appeared in the budgetary estimates. The personnel of the navy on duty June 30, 1930, in connection with naval aviation is shown below:

U. S. NAVY: OFFICERS AND ENLISTED MEN ON AVIATION DUTY

| Classification | Officers | Enlisted men | Total |
|-------------------------|----------|--------------|--------|
| Pilots | 614 | 244 | 858 |
| Student pilots | 184 | 160 | 344 |
| Observers | 9 | . | 9 |
| Student observers | .. | .. | .. |
| Flight orders | 45 | 765 | 810 |
| Non-flyers | 167 | 9,599 | 9,766 |
| Total | 1,019 | 10,768 | 11,787 |

In the Marine Corps flying force there were on June 30, 1930, 127 officers and 1148 men. Of these, 82 officers and 24 men were pilots. Compare the foregoing with the British report (see paragraphs under the head of Great Britain on page 521) that gives 120 officers acting as pilots and 29 under instruction. The number of observers is unimportant, as they are not usually aviators and may be quickly trained. How many air-force (non-naval) pilots were acting in this capacity in the British naval air force was not stated; but they cannot be as efficient in *naval* aviation as were officers that had received a naval education and training. France had no more naval aviators than Great Britain—probably fewer. The exact figures for Japan and Italy were not published, but it was reasonably certain that they possessed less than half as many trained naval aviators as the United States. Four regular navy aviators (3 officers, 1 enlisted man) and 3 regular marine aviators (all officers) were killed in accidents during the fiscal year 1929-30. The total number of deaths from flying accidents during the year, including aviators, naval reserve and marine reserve aviators in service, student aviators, non-aviators, and those on flight orders, was 18; in 1928-29, the total deaths were 31. The number of hours of

flying per fatal accident was 19,070; hours per death (in some accidents more than one were killed), 14,832. The corresponding figures for 1928-29 were 11,288 and 6558. The gain in safety was thus very marked.

NAVAL RESERVES. See NAVAL PROGRESS.
NAVAL TREATY OF LONDON. See NAVAL PROGRESS and GREAT BRITAIN under *History*.

NAVIES. See NAVAL PROGRESS.

NEBRASKA. POPULATION. According to the Fifteenth Census, the population of the State on Apr. 1, 1930, was 1,377,963. The population on Jan. 1, 1920, was 1,296,372. The capital is Lincoln.

AGRICULTURE. The following table gives the acreage, production, and value of the principal crops in 1929 and 1930:

| Crop | Year | Acreage | Prod. Bu. | Value |
|-------------|------|-----------|-------------|---------------|
| Corn | 1930 | 9,171,000 | 235,695,000 | \$120,204,000 |
| | 1929 | 9,144,000 | 237,744,000 | 164,043,000 |
| Wheat ... | 1930 | 3,810,000 | 73,275,000 | 38,656,000 |
| | 1929 | 3,548,000 | 56,555,000 | 55,902,000 |
| Hay | 1930 | 4,689,000 | 6,434,000* | 36,763,000 |
| | 1929 | 4,580,000 | 6,224,000* | 57,131,000 |
| Oats | 1930 | 2,485,000 | 80,017,000 | 22,405,000 |
| | 1929 | 2,480,000 | 86,304,000 | 32,796,000 |
| Potatoes .. | 1930 | 94,000 | 9,400,000 | 7,990,000 |
| | 1929 | 92,000 | 8,924,000 | 9,816,000 |
| Sugar beets | 1930 | 81,000 | 1,132,000* | ..... |
| | 1929 | 92,000 | 1,054,000* | 7,332,000 |
| Barley ... | 1930 | 725,000 | 22,330,000 | 7,816,000 |
| | 1929 | 647,000 | 18,892,000 | 9,446,000 |
| Rye | 1930 | 333,000 | 4,995,000 | 1,898,000 |
| | 1929 | 262,000 | 3,694,000 | 2,807,000 |

* Tons.

Farms in the State numbered 129,532 in 1930, the total having increased from the 127,734 of 1925 and the 124,417 of 1920. Irrigated lands totaled 528,680 acres in 1929 as against 442,690 in 1919.

MINERAL PRODUCTION. Distinctly secondary in the industrial activity of the State, mineral production made no conspicuous development in 1928. Outside of the digging of sand and gravel to the total value of \$1,265,001 for 1928 and \$1,370,605 in 1927, no mineral industry was listed as reaching \$1,000,000 a year. Clay products totaled \$794,851 for 1928, and \$819,494 for 1927. Stone, cement, and some pumice were also produced. The total value of the mineral products was, for 1928, \$3,454,700; for 1927, \$3,541,792.

FINANCE. State expenditures in the year ended June 30, 1928, as reported by the U. S. Department of Commerce, were: for maintenance and operation of governmental departments, \$12,264,152 (of which \$1,333,037 was for local education); for interest on debt, \$140,390; for permanent improvements, \$8,573,976; total, \$20,978,518 (of which \$8,738,832 was for highways, \$2,385,277 being for maintenance and \$6,353,555 for construction). Revenues were \$23,632,325. Of these, property and special taxes formed 46.5 per cent; departmental earnings and remuneration to the State for officers' services, 9.1; sales of licenses, 20.0 (including taxes of \$3,999,702 on sales of gasoline). The State's funded debt outstanding on June 30, 1928 was nil, indebtedness consisting then only of certain yet unpaid warrants. On property bearing an assessed valuation of \$3,283,382,472 were levied in the year State taxes of \$11,945,279.

TRANSPORTATION. The total number of miles of railroad line under operation on Jan. 1, 1930, was 6174.36. No construction of additional railway line or trackage during the year 1930 was reported.

EDUCATION. Through the establishment of the Nebraska State Reading Circle an effort was made to bring the school pupils of the State into contact with books considered desirable for them to read as an adjunct to their education. The circle was an organization under professional leadership. An investigation made into the qualifications of the rural teachers, according to G. W. Rosenlof, director of teacher-training, revealed that about 20 per cent of these teachers possessed at least one year of preparation beyond the high-school level. There were enrolled in the public schools of the State, in the academic year 1928-29, 325,204 pupils, out of an estimated population of 416,644 individuals of school age (from 5 to 21 years). Of the enrolled, 151,889 were in graded elementary schools, 106,767 in one-teacher rural schools, and 66,548 in high schools. The year's expenditures for public-school education were: current, 23,404,782; total, including capital outlay and debt service, 27,363,923. The year's salaries of teachers averaged \$1464 for men and \$1239 for women in city and village schools; \$770 for men and \$763 for women in rural schools.

LEGISLATION. A special session of the Legislature was held in March. It repealed the old Bank Guaranty Act, under which all State banks had been required to contribute regular assessments on the basis of their daily deposits, to a fund for the reimbursement of depositors in banks that failed. This law had been found unserviceable, and at the time of its repeal the fund for bank depositors was estimated to show a deficit of \$20,000,000, while about 65,000 depositors were awaiting restitution from it. A new act was passed, relieving all State banking institutions of assessments, both special and regular, except a levy of $\frac{3}{40}$ of one per cent, to continue 10 years.

POLITICAL AND OTHER EVENTS. The campaign of Senator George W. Norris for the Republican nomination to succeed himself was marked by an effort to invalidate his primary vote by placing in nomination to run against him an obscure individual of the same name. This second George W. Norris was a grocer doing business in Broken Bow. Had his candidacy been allowed, the allocation of votes as between the two would have been legally impossible, and the candidate favored by the regular, as opposed to the progressive Republican vote, William M. Stebbins, might have secured the nomination. The confusion was made possible by a feature of the election law, prohibiting the appearance of anything besides the name of the candidate on the primary ballot. The State Supreme Court ruled out the second Norris on the ground that his certificate of nomination, which had been filed at the last possible moment, had not actually been placed in the hands of the Secretary of State until the morning of the day after the time had expired. Senator Norris easily won in the primary on August 12. In September the Senate committee on campaign funds sought to find out whence the instigation of the grocer Norris to enter as a candidate had come; an assistant vice-chairman of the Republican National Senate campaign committee, Victor Seymour, denied having promoted the grocer's candidacy but later resigned from the committee.

The State Supreme Court rendered in July a decision to the effect that when the Legislature had increased a budget estimate of the Governor's and had passed the increase by a vote of at least three to two, the Governor might not veto the

increase. The effect of the decision was to release some \$500,000 of vetoed appropriations, largely for public buildings. The State act to fix the weight of loaves of bread, passed in 1927, was declared unconstitutional by a statutory Federal court of three judges, and a Federal injunction against its enforcement was issued on January 3. The law was judged inequitable because it penalized bakers for shrinkage occurring in their loaves after these had been in the hands of retailers for 12 hours.

The Omaha Grain Exchange reopened its pit for trading in future contracts for grain, after an interval of 13 years, on June 16. The pit had been closed by Federal authority in 1917.

ELECTIONS. Senator George W. Norris, Republican, was reelected, defeating Gilbert M. Hitchcock, Democrat, by a vote unofficially reported as 242,760 to 170,133. The Democratic candidate for Governor, Charles W. Bryan, won narrowly by 217,704 votes (unofficial) to 213,940 for Governor Arthur J. Weaver, Republican. Two Republicans and four Democrats were elected to the House of Representatives, the Democrats gaining two seats. A referendum vote approved a measure to permit municipal electric-power plants to extend their services beyond the bounds of their home municipalities. A constitutional amendment providing for the liability of stockholders of insolvent State banks was approved by popular vote. A proposed amendment to authorize the issue of \$8,000,000 in State bonds to reimburse depositors of insolvent banks was rejected.

OFFICERS. Governor, Arthur J. Weaver; Lieutenant-Governor, George A. Williams; Secretary of State, Frank Marsh; Treasurer, W. M. Stebbins; Auditor, L. B. Johnson; Attorney-General, C. A. Sorensen; Superintendent of Public Instruction, C. W. Taylor.

JUDICIARY. Supreme Court: Chief Justice, Charles A. Goss; Associate Justices, William B. Rose, James R. Dean, W. H. Thompson, George A. Eberly, Edward E. Good, George A. Day.

NEBRASKA, UNIVERSITY OF. A State institution of higher education in Lincoln, Nebr., founded in 1869. The enrollment for the autumn of 1930 was 6327, of whom 3835 were men and 2492 women. The enrollment was distributed as follows: Agriculture, 599; arts and sciences, 1805; business administration, 782; dentistry, 114; engineering, 698; graduate, 405; law, 145; medicine, 322; nursing, 117; pharmacy, 94; teachers, 1295. Included in the arts and sciences and teachers colleges were 455 students of the school of fine arts and 189 of the school of journalism. There were 2665 students enrolled in the summer session of 1930, of whom 902 were men and 1763 were women. The faculty numbered 388. The total income for the year was \$4,573,698. The library contained 254,000 volumes. A new department of agricultural engineering was created, and by purchase, the university school of music was added as a part of the school of fine arts. Chancellor, Edgar A. Burnett, D.Sc.

NEBULÆ. See ASTRONOMY.

NECROLOGY. The following list contains the names of notable persons who died in 1930. Articles will be found in this volume, in their alphabetical order, on those whose names are given below without other text.

Aakjaer, Jeppe.

Acheson, William McCarthy. An American engineer, died in Albany, N. Y., Jan. 25, 1930. He was born in Cohoes, N. Y., July 16, 1878, and was a student at Rensselaer Polytechnic Institute from 1895 to 1898.

From the waterworks department of Troy, N. Y., he went to Panama as engineer in the Isthmian Canal Service (1904-10), after which he was supervising engineer and, later, division engineer for the New York State Highway Department in Buffalo. In 1915-16 he held the same position in the Syracuse Division of the State Highway Department and, after serving as chief engineer for the Crescent Portland Cement Company (1916-1917), he returned in 1917, and again during 1919-23, to the State Highway Department in Syracuse. From 1923 to 1927, he was division engineer for the Bureau of Highways and the Bureau of Canals in the New York State Department of Public Works and, after 1927, chief engineer of the department. After 1922, he also lectured on engineering at Syracuse University. During the World War, he served as captain, and later as major, with the corps of Engineers, U. S. Army. In 1917 he was at the Royal Engineers School, Chatham, England. In 1920 he was promoted to the rank of Lieutenant-colonel in the Engineers' Reserve Corps, U. S. A.

Adam, George Jefferys. A British journalist, died in Paris, France, Mar. 21, 1930. He was born in Edinburgh, Scotland, Sept. 6, 1883. He began his newspaper career in 1901 with Reuters Agency; joined the Paris staff of the London *Times* in 1912; and after 1921 served as European correspondent for the New York *Herald* and New York *Sun*. In addition to achieving a reputation as a war correspondent, he was an able interpreter of French history and politics. His books include: *Behind the Scenes at the Front* (1915); *History of France* (with his wife, Pearl H. Adam, 1921); *A Book about Paris* (1927); *Treason and Tragedy* (1929); and *Georges Clemenceau, 1841-1929* (1930).

Adamowski, Joseph.

Adams, Ephraim Douglass.

Adcock, (Arthur) St. John.

Ahmed Mirza.

Albani, Emma (Marie Louise Emma Cecile Lajeunesse).

Albee, Edward F. An American theatrical manager, died Mar. 11, 1930, at Palm Beach, Fla. He was born in Machias, Me., Oct. 8, 1857. After spending seven years with the road show of P. T. Barnum, he became associated in 1883 with B. F. Keith, in Boston. Together, they developed the vaudeville circuit. At the death of Mr. Keith in 1914, Mr. Albee became president of the Keith-Albee Vaudeville Circuit. In 1927 the Keith-Albee Circuit merged with the Orpheum Circuit, and in 1928 the Radio Corporation of America became a part of the organization, then the Radio-Keith-Orpheum Corporation. Mr. Albee retired in 1929.

Alden, Isabella MacDonald.

Alexander, George.

Allardyce, Sir William Lamond. A British colonial official, died in London, June 10, 1930. He was born Nov. 14, 1861, and was educated at the Oxford Military College. He entered the government service as a clerk and interpreter in the Provincial Department, Fiji Islands, in 1879 and served successively as Acting Resident Commissioner of Rotumah (1881), Stipendiary Magistrate of Fiji (1882), member of the Native Regulation Board and Commissioner of the Supreme Court (1889), Assistant Native Commissioner (1890), Extraordinary Member of the Executive Council (1893), Native Lands Commissioner and member of the Legislative Council (1894), Native Commissioner (1895), Acting High Commissioner for the Western Pacific (1901), and Receiver-General and Colonial Secretary for the Fiji Islands (1902-1904). He also edited a native newspaper, *Na Mata*, from 1890 to 1899. In 1904 he was transferred to the Falkland Islands, where he remained as governor until 1914. In 1915 he became Governor of the Bahamas; in 1920, Governor of Tasmania; and in 1922, Governor of Newfoundland, holding the latter post until 1928. The order of Companion of St. Michael and St. George was conferred on him in 1902, and in 1916 he was created a Knight Commander of St. Michael and St. George and in 1927 a Knight of the Grand Cross of St. Michael and St. George.

Allen, Harry S. An American clergyman, died in Philadelphia, Pa., Nov. 8, 1930. He was born in Butler, Pa., in 1854 and was graduated from Wooster College in 1874, later studying for the Presbyterian ministry at the Western Theological Seminary in Pittsburgh. After holding several pastorates he became in 1893 president of the Presbyterian Ministers' Fund. During his administration the assets of this fund were increased from \$517,000 to more than \$19,000,000.

Allen, Maj. Gen. Henry Tureman, U. S. A., Ret.

Allen, Kenneth. An American civil engineer, died in White Plains, N. Y., Sept. 7, 1930. He was born in New Bedford, Mass., Apr. 6, 1857, and was graduated from the Rensselaer Polytechnic Institute in 1879. After spending a few years in railroad engineering work in the West, he became in 1883 assistant engineer of the

Philadelphia water department, and in 1886 a member of the firm of Breithaupt & Allen, consulting engineers, in Kansas City, Mo. From 1890 to 1893 he was engineer in charge of the topographical survey of the Connelville coke region for the H. C. Frick Coke Company, and until 1899, when he became a member of the firm of Hill, Quick & Allen in Baltimore, held several public engineering posts in Eastern cities. He again relinquished private practice in 1902 to become engineer and superintendent of the water department of Atlantic City, N. J. In 1906 he was appointed division engineer of the Baltimore Sewerage Commission; in 1908, engineer of the Metropolitan Sewerage Commission of New York City; in 1915, engineer of the Bureau of Sewer Plan; and in 1916, engineer of sewerage disposal and then sanitary engineer to the Board of Estimate and Apportionment of New York City. At the time of his death he was sanitary engineer of the New York Sanitation Commission and president of the State Sewerage Works Association.

Amira, Karl von.

Anderson, the Rt. Rev. Charles Palmerston.

Andrée, Salomon August.

Ansorge, Konrad. A German pianist, died in Berlin Feb. 13, 1930. He was born in Buchwald near Liebau, Silesia, Oct. 15, 1862, and studied piano at the Leipzig Conservatory during 1880-84 and under Liszt during 1885-86. After a concert tour through Europe and North and South America he returned to Berlin in 1895, where he taught for several years at the Klindworth-Scharwenka Conservatory. His compositions include a Requiem for male chorus and orchestra, several orchestral pieces, string sextet, two string quartets, and three sonatas.

Appell, Paul Emile.

Appleton, John Howard. An American chemist and educator, died in Providence, R. I., Feb. 18, 1930. He was born in Portland, Me., Feb. 3, 1844, and was graduated from Brown University in 1863, becoming assistant instructor in analytical chemistry there the same year. From 1868 to 1872, he was professor of chemistry applied to arts and from 1872 to 1914, professor of chemistry at Brown University. In 1914 he became emeritus professor. He was also, for a time, State sealer of weights and measures for Rhode Island and chemist for the State Board of Agriculture. His books, of a popular nature because of their attractive form and clearness of exposition, include *The Young Chemist* (1878); *Short Course in Qualitative Analysis* (1878); *Quantitative Analysis* (1881); *Laboratory Year Book* (1883-92); *Beginner's Hand Book of Chemistry* (1884); *Advanced Quantitative Analysis* (1889); *Medical Chemistry* (1889); *Lessons in Chemical Philosophy* (1890); *Metals of the Chemist* (1891); *Report Books for Chemical Work* (1891); *Carbon Compounds* (1892); *Chemistry of Non-Metals* (1897); *Easy Experiments of Organic Chemistry* (1898).

Arcoverde de Albuquerque Cavalcanti, Joachin, Cardinal. A prelate of the Roman Catholic Church, died in Rio de Janeiro, Brazil, Apr. 18, 1930. He was born in Pernambuco Jan. 17, 1850, and as Archbishop of Rio de Janeiro, was created a Cardinal Priest in 1905.

Arnold, John Oliver.

Arnold, Sir Thomas Walker.

Asano, Soichiro. A Japanese industrialist, died in Tokyo, Nov. 9, 1930. He was born in Toyama-ken in 1848. The foundation of his fortune was laid in the '70s, when he converted coal-tar and other refuse of the Yokohama Gas Works, then unutilized, into profitable materials. He next became interested in cement manufacture and oil refining, and in 1895 promoted, with others, the Toyo Steamship Company. At the time of his death he was president of this company and of the Asano dockyards in Tokyo.

Ashford, Emma Louise (Hindle). An American composer, died in Nashville, Tenn., Sept. 22, 1930. She was born in Newark, Del., Mar. 27, 1850. Specializing in the study of organ and church music, she was for many years organist and choir director in churches in Nashville. She also composed more than 400 anthems, cantatas, and sacred songs and duets, and compiled *Favorite Organ Voluntaries*, *Organ Praise Series*, and *Ashford's Hymn Voluntaries*. She was married in 1867 to John Ashford, who later became connected with Vanderbilt University.

Ashton, James Williamson, First Baron of. A British manufacturer, died in Lancaster, May 27, 1930. He was born Dec. 31, 1842. He was high sheriff of Lancashire in 1885 and was a member of Parliament for the Lancaster division of North Lancashire from 1886 to 1895. In 1895 he was created first baron of Ashton. Lord Ashton was a wealthy manufacturer, having made his fortune by the manufacture of linoleum. His last years he spent as a recluse, although he contributed generously to philanthropic enterprises.

Atwood, Charles Edwin. An American neurologist, died in New York City, Feb. 19, 1930. He was born in

Shoreham, Vt., July 21, 1861, and was graduated from Cornell University in 1880, receiving the M.D. degree from Bellevue Hospital Medical College in 1888. He was assistant physician in the Hudson River State Hospital during 1885-87 and in the Utica State Hospital from 1887 to 1892. He was first assistant physician in the Society of the New York Hospital, Bloomingdale, from 1892 to 1905 and assistant neurologist in the Vanderbilt Clinic, Columbia University, from 1892 to 1914. In 1905-06 he studied in Vienna and in London. From 1907 to 1917, he was neurologist for the New York City Hospital and Schools, Randall's Island. Dr. Atwood was associate editor for the *American Journal of Insanity* during 1887-92 and he was editor of the department of nervous diseases for the *Medical Review of Reviews* for a time. His works include *Multiple Neuritis Associated with Insanity*; *Causation of Insanity*; *Treatment of Habits*; *The Longevity of Idiots*.

Auer, Leopold.

Baird, Rear Admiral George Washington, U. S. N., Ret. An American naval officer, died Oct. 4, 1930, in Washington, D. C., where he was born Apr. 22, 1843. Following an academic education, he studied engineering, was appointed third assistant engineer in the United States Navy in 1862, and saw service during the Civil War. Promoted through successive grades up to 1905, he was then retired with the rank of rear admiral. He was a past president of the American Society of Naval Engineers.

Baker, Thomas Rakestraw. An American scientist and educator, died in Winter Park, Fla., Mar. 10, 1930. He was born in Chester Co., Pa., Feb. 27, 1837. On his graduation from the First Pennsylvania State Normal School in 1860, he became professor of mathematics at the Agricultural (later State) College of Pennsylvania. In 1867 he was called to the First Pennsylvania State Normal School as professor of natural science and two years later attended the University of Göttingen, from which he received the Ph.D. degree in 1871. On his return to the United States he resumed his connection with the First Pennsylvania State Normal School, holding this post until 1886. During 1889-92 he was identified with the development of the phosphate industry of Florida, and in 1892 became professor of natural science at Rollins College where he remained until his retirement in 1911. From 1909 until the time of his death he was director of the Rollins College Museum, which had been established in his honor to house his scientific specimens. His publications include: *Elements of Physics* (1881); *A Short Course in Chemistry* (1883); and *Questions in Physics and Chemistry* (1884).

Baldwin, William Delavan. An American manufacturer and financier, died in Yorktown Heights, N. Y., Sept. 26, 1930. He was born in Auburn, N. Y., Sept. 5, 1856. From 1872 to 1882 he was with D. M. Osborne & Co., manufacturers of harvesting machinery, becoming manager of the company's European business. He then was made treasurer of Otis Bros. & Co. and, after the formation of the Otis Elevator Company, acted as president from 1898 to 1918 and as chairman of the board from 1918 until his death. He was also president for several years of the Westchester County Park Commission, which was successful in beautifying this part of New York State.

Balfour, Arthur James, First Earl of.

Barnes, William.

Barnett, George.

Barnhardt, Brig. Gen. George Columbus. An American soldier, died in El Paso, Texas, Dec. 10, 1930. He was born in Gold Hill, N. C., Dec. 28, 1868, and was graduated from the U. S. Military Academy in 1892. In the World War he commanded the 329th Infantry and later was commander of the 178th Infantry brigade.

Barry, The Rt. Rev. Mgr. William (Francis).

Barton, William Eleazar.

Beit, Sir Otto (John). A British capitalist, died in London Dec. 7, 1930. Born Dec. 7, 1865, he became associated with his brother, Alfred, in the development of South African mining enterprises. He was a director of the British South Africa Company and Rhodesia Railways, Ltd., and founded the Beit Memorial Fellowship for Medical Research.

Bemis, Edward Webster.

Benson, Louis FitzGerald.

Benton, John Robert. An American engineer and educator, died in Gainesville, Fla., Jan. 8, 1930. He was born in Concord, N. H., June 6, 1876, and was graduated from Trinity College in 1897. In 1900 he received the Ph.D. degree from the University of Göttingen. After 1905 he was professor of physics and electrical engineering and, after 1910, also dean of the college of engineering at the University of Florida. He was the author of several books on electrical-engineering subjects, his last publication being *An Introductory Textbook on Electrical Engineering* (1928).

Bernhardi, Friedrich von.

Bettelheim, Anton.

Bhopal, H. H. Nawab Sultan Jahan Begum, Begum of.

Bianchi, Michele. An Italian cabinet minister and a leader of the Fascist party, died in Rome, Feb. 8, 1930, at the age of 47. As a journalist and sub-editor in 1919 of the *Popolo d'Italia*, official paper of the Fascisti, and as secretary of the Fascist party in 1922, he had an important share in the party's growth and victory. Premier Mussolini appointed him Minister of Public Works in his cabinet in September, 1929.

Bienaimé, Amédée Pierre Léonard. Chief of Staff, French Navy, retired, died Mar. 15, 1930, in Paris, where he was born Feb. 26, 1843. He was educated at the lycée Bonaparte. During 1883-96 he took part in the conquest of Madagascar, planting the French flag at Tamatave, at Majunga, and at Marovoay. He was promoted rear admiral in 1895 and vice admiral in 1900. In 1901 he was made Chief of Staff of the French Navy and, the following year, was chosen prefect of Toulon. He retired from the Navy in 1904. In 1905-06 he served as deputy for the Department of the Seine, representing the Nationalist party. Admiral Bienaimé was the author of *Etude pratique sur la perforation des murailles cuirassées* and *Etude sur l'artillerie navale*.

Birkenhead, Frederick Edwin Smith, First Earl of.

Black, Van-Lear. An American capitalist, died at sea Aug. 18, 1930. He was born in Cumberland, Md., Dec. 18, 1875, and was chairman of the board of the A. S. Abell Company, publishers of the *Baltimore Sun*, and of the Fidelity and Deposit Company of Maryland, with which he had started as a clerk in 1894. He was also a promotor of travel by airplane, having flown more than 200,000 miles between 1926 and the time of his death.

Black, William Henry. An American educator, died in Marshall, Mo., June 23, 1930. He was born in Centreville, Ind., Mar. 19, 1854, and was graduated from Waynesburg College, Pa., in 1876 and from Western Theological Seminary in 1878. After his ordination to the Presbyterian ministry, he served as pastor in Pittsburgh, Pa., during 1877-81 and in St. Louis, Mo., during 1881-90. He became president of the Missouri Valley College in 1890, which position he held until his resignation in 1925. He was moderator of the General Assembly of the Cumberland Presbyterian Church in 1888; chairman of the Cumberland Presbyterian Committee on Fraternity and Union; and a member of the World Conference of Edinburgh Associations which met in Edinburgh, Scotland, in 1925. He received the D.D. degree from Cumberland University in 1888, and the LL.D. degree from Westminster College in 1903, and the Litt.D. degree from Waynesburg College in 1915. His works include: *Sermons for the Sabbath School* (1886); *God Our Father* (1889); *Womanhood* (1890); *Outline Life of Paul* (1894); *The Life and Times of Moses* (1901); *The Hebrew Monarchy—A Harmony* (1902); *The Life of Jesus* (1906); *Tripsacal* (1906); and *The Division and Fall of the Hebrew Monarchy—A Harmony* (1910).

Blass, Robert. A German opera singer, died in Berlin Dec. 9, 1930, at the age of 63. In 1902 he came to the United States and for several years was the principal basso for Wagnerian rôles at the Metropolitan Opera House, New York City.

Bliss, Gen. Tasker Howard, U. S. A., Ret.

Blohm, Herman. A German engineer, died in Hamburg, Mar. 12, 1930, at the age of 81. With Ernest Voss, he founded the shipbuilding firm, Blohm and Voss in 1877 on the island of Steinwarder in the Elbe. Included among their ships were the ocean liners, *Majestic*, *Leviathan*, *Bremen*, and *Europa*.

Blum, Léon. A French physician, died in Strassburg, Mar. 7, 1930. Born in Fegersheim, Bas-Rhin, Dec. 7, 1878, he was educated at the University of Strassburg and in 1901 began the practice of medicine. In 1919 he became professor of clinical medicine in the faculty of medicine at the University of Strassburg. He did important research work in diabetes and wrote on that subject and on nutrition. His books include *L'Origine des corps acétoniques*; *Recherches sur les diurétiques et le rôle des substances minérales dans l'organisme*.

Bok, Edward William.

Bolito (Ryall), William.

Bolona, Francisco J. An Ecuadorian statesman, died in Quito Nov. 7, 1930, at the age of 48. Educated as a physician, he had abandoned his practice in favor of politics, and at the time of his death was Minister of Agriculture and Social Welfare in the cabinet of President Ayora.

Bols, Lt.-Gen. Sir Louis Joan. A British soldier and Governor of Bermuda, died in Bath, England, Sept. 14, 1930. He was born Nov. 23, 1867. Entering the British Army in 1887, he served in Burma during 1891-92; was with the Chitral Relief Force in India in 1895; and as a result of his service in the Boer War was made

a companion of the Distinguished Service Order in 1900. At the outbreak of the World War he was lieutenant-colonel of the Dorset regiment and appointed to the General Staff. During 1914-17 he served with distinction in France and Flanders, being appointed commander of the 24th Division in 1917 and being promoted to the rank of major-general. In Palestine and Syria during 1918-19 he was Lord Allenby's chief of staff, after the signing of the Versailles Treaty serving as administrator in this region. He was created a companion of the Order of the Bath in 1915, a knight commander of St. Michael and St. George in 1918, and a knight commander of the Order of the Bath in 1919. He became Governor and commander-in-chief of Bermuda in 1927.

Bond, Maj.-Gen. Sir Francis George. A British soldier, died in Stowe, Camberley, England, Aug. 15, 1930. He was born Aug. 10, 1856. After attending Marlborough College he joined the Royal Engineers in 1876, and served in the Zulu War in 1879 and in Egypt in 1882. He also took part in the Hazara Expedition in 1891 as field engineer of the 1st Brigade. During 1897-98 he was on the northwestern frontier of India with the Tirah Expeditionary Force, and served in South Africa during 1900-01 as deputy assistant adjutant-general and chief staff officer in the eastern Transvaal. He later served in India becoming commander of the Indian Southern Brigade in 1911. Retiring from active service in 1913, on the outbreak of the World War he was made assistant director of quartering at the War Office and in 1917 director of quartering. Among the honors which were bestowed on him were: Companion of the Bath (1902); Companion of St. Michael and St. George (1918); knight of Grace of the Order of St. John of Jerusalem (1918); and knight commander of the Order of the British Empire (1919).

Bonchill, Capt. Ralph. See Stratemeyer, Edward.

Bonner, Geraldine. An American author, died in New York City June 17, 1930. She was born in Staten Island, N. Y., in 1870 and was taken to the West when 10 years old, where she lived for two years in Colorado mining camps and then in San Francisco. She did her first writing in 1887 for the San Francisco *Argonaut*, of which her father, John Bonner, was editor, and was later dramatic critic and foreign correspondent for this paper. Several of her novels are based on these early western impressions, including *Hard Pan* (1900)—whose title she sometimes used as a pseudonym; *The Pioneer* (1905); *The Emigrant Trail* (1909); and *Treasure and Trouble Therewith* (1917). She also was the author of the mystery stories: *The Castlecourt Diamond Case* (1906); *The Girl at Central* (1914); *The Black Eagle Mystery* (1916); *Miss Maitland, Private Secretary* (1919); and *The Leading Lady* (1925), and collaborated in writing the plays *Sham* (with Elmer B. Harris, 1908) and *Sauce for the Goose* (with Harry Hutcheson Boyd, 1909).

Borodin, Ivan Parthenievitch. A celebrated Russian naturalist, died in Moscow in April, 1930. He was born in Novgorod in 1847 and attended the University of St. Petersburg. In 1887 he became professor of botany at that institution, and three years later was appointed director of the Forest Institute where he remained until 1920, attracting students from all parts of Europe by his prestige. He was also director of the Borodin Biological Fresh-Water Station, which he founded in 1897. His researches centred chiefly upon an investigation of the effect of light on the higher cryptogams.

Bostock, Hewitt.

Boyd, Maj.-Gen. Sir Gerald Farrell. A British soldier, died in London Apr. 14, 1930. He was born Nov. 19, 1877, and was educated at St. Paul's School. In 1895 he enlisted with the Devonshire Regiment as a private, and served with distinction during the Boer War, becoming sergeant in 1899, 2nd lieutenant in 1900, and lieutenant in 1902. During the World War he again displayed unusual valor and was rapidly promoted from major of the Royal Irish Regiment to brigadier general of the General Staff in the 5th Army Corps, brigadier commander of the 170th Infantry Brigade, and division commander of the 46th (North Midland) Division. He led the latter division when on Sept. 29, 1918, it swam the Schelde and broke through part of the Hindenburg line, routing four German divisions. After the War he was general officer in command of the Dublin District, and from 1923 to 1927 was commandant of the Staff College in Quetta, India. He became military secretary to the British Secretary of State for War in 1927. He was created a Companion of the Distinguished Service Order in 1902, Companion of St. Michael and St. George in 1918, Companion of the Bath in 1919, and Knight Commander of the Bath in 1923.

Boy-Ed, Karl.

Boynton, Frank David. An American educator, died in Bay Shore, Long Island, June 17, 1930. He was born in Potsdam, N. Y., Apr. 29, 1868, and was gradu-

ated from the Potsdam State Normal School in 1887 and from Middlebury College in 1891. He was principal of the Union School and Academy of Webster, N. Y., from 1891 to 1893 and principal of the high school in Ithaca, N. Y., from 1893 to 1900. In 1900 he became superintendent of the Ithaca public schools, and was active in matters connected with the New York State Department of Education. He was president of the New York State teachers' association in 1904 and of New York State council of superintendents in 1909. He was also active in the National Education Association, serving on the executive committee of the department of superintendence from 1924 to 1927, as vice president in 1928, and as president in 1929.

Brabrook, Sir Edward (William). A British barrister and sociologist, died in Wallington, Surrey, Mar. 20, 1930. He was born Apr. 10, 1839, and after working in an insurance office was called to the bar in 1866. He was appointed assistant registrar of the Friendly Societies in 1869, and served as chief registrar from 1891 to 1904. He also was interested in anthropology and archeology, acting as president of the Anthropological Institute during 1895-97, of the Folk Lore Society during 1901-02, of the South-Eastern Union of Scientific Societies during 1920-21, and of the Sociological Society in 1927. He was created a Companion of the Bath in 1897 and was knighted in 1905. He was an authority on thrift and social insurance, his works including: *Provident Societies and Industrial Welfare* (1898); *Institutions for Thrift* (1905); and *Building Societies* (1906).

Bradley, Glenn Danford. An American educator, died in Toledo, Ohio, Jan. 4, 1930. He was born in Kinderhook, Mich., Apr. 12, 1884. After receiving from the University of Michigan the Ph.D. degree in 1915, he became assistant professor of history and acting professor of English at the University of Toledo, and in 1917 was appointed associate professor of history and head of the history department. In 1927 he also was made director of evening sessions. He was considered an authority on the history of the Southwest, his best known works being *Winning the Southwest* (1912); *The Story of the Pony Express* (1913); and *The Story of the Santa Fé* (1920).

Brady, Nicholas Frederic. An American financier and public service official, died in New York City, Mar. 27, 1930. He was born in Albany, N. Y., Oct. 25, 1878, and was graduated from Yale University in 1899. After graduation he was associated with the New York Edison Company and in 1913 became president of the company. In 1928 the New York Edison Company was incorporated with the Brooklyn Edison Company and several other smaller electric companies, with Mr. Brady chairman of the board of directors. He was also a director in many other companies, including the Anaconda Copper Mining Company, the Chrysler Corporation, the Union Carbide & Carbon Corporation, and the National City Bank of New York.

Branker, Vice-Marshal Sir (William) Sefton.

Brandès, Marthe.

Branscomb, Lewis Capers. An American clergyman, died in Jasper, Ala., Oct. 30, 1930. He was born in Union Springs, Ala., Aug. 27, 1865, and was graduated from Southern University in 1885. The following year he was ordained to the ministry of the Methodist Episcopal Church, South, serving successively as pastor in Bessemer, Decatur, Huntsville, Talladega, and Birmingham, Ala. From 1912 to 1916 he was presiding elder of the Birmingham district; from 1916 to 1922, editor of the *Alabama Christian Advocate*; from 1922 to 1927, pastor of the First M. E. Church in Anniston, Ala.; and from 1928 to 1930, presiding elder of the Bessemer district. He was also chairman of the North Atlantic Conference's committee for the unification of American Methodism; a member of the executive committee of the Federal Council of the Churches of Christ in America; and a member of the executive committee of the board of directors of the Anti-Saloon League of America.

Brătianu, Vintilă.

Breuer, Peter.

Brickner, Walter M. An American surgeon, died in Atlantic Beach, Long Island, N. Y., July 22, 1930. He was born in New York City, Aug. 28, 1875, and was graduated from the College of the City of New York in 1893 and from the College of Physicians and Surgeons of Columbia University in 1896. He was attending surgeon at the Morrisania City Hospital and the Hospital for Joint Diseases, and associate surgeon at Mt. Sinai Hospital, New York City. During the World War he was a lieutenant-colonel with the Medical Reserve Corps, and in 1918 became chief of the surgical service at Base Hospital 3 and consultant in neuro-surgery for Base Section 2 of the American Expeditionary Force. He was a fellow of the American College of Surgeons and governor during 1927-29. He was editor-in-chief of *American Journal of Surgery* from 1905 to 1928 and

was the author of *The Surgical Assistant* (1905), and *1000 Surgical Suggestions* (1911).

Bridges, James Robertson. An American clergyman and former president of the Presbyterian College for Women, died in Montreal, N. C., July 19, 1930. He was born in St. Louis, Mo., Sept. 29, 1852, and was graduated from Hampden-Sidney College and from the Union Theological Seminary (Richmond, Va.). On being ordained to the Presbyterian ministry in 1880, he was an evangelist in Kentucky and Texas for three years, and then held pastorates in Baltimore, Md.; Leesburg and Salem, Va.; Columbia, Mo.; and Orlando, Fla. In 1899 he was elected president of the Presbyterian College for Women in Charlotte, N. C., resigning in 1911 to become editor of the *Presbyterian Standard*.

Bridges, Robert (Seymour).

Briggs, Clare A.

Bristol, William Henry. An American inventor, died in New Haven, Conn., June 18, 1930. He was born in Waterbury, Conn., July 5, 1859, and was graduated from Stevens Institute of Technology in 1884. After teaching for four years in the Workingman's School in New York City, he became an instructor in mathematics at Stevens Institute in 1886, assistant professor in 1888, and professor in 1899, resigning his chair in 1906. In 1889 he organized The Bristol Company in Waterbury, Conn., for the manufacture of his inventions, which included numerous instruments for recording pressure, temperature, and electricity, as well as apparatus for steel belt-lacing, sound amplifying, and talking moving pictures. The latter device, known as the Bristolphone, was based on the principle of synchronizing sound and action and was patented in 1917.

Browne, The Rt. Rev. George Forrest.

Browne, George Waldo. An American author, died in Manchester, N. H., Aug. 13, 1930. He was born in Deerfield, N. H., Oct. 8, 1851. For several years he was editor of the *American Young Folks*, after which he became president and manager of the Standard Book Company, Inc. He wrote more than 50 books, mostly of a historical nature for children, under his own name and the pen name, Victor St. Clair. Among these are: *The Woodranger* (1899); *Two American Boys in Hawaii* (1899); *For Home and Honor* (1902); *Japan, the Place and the People* (1904); *With Axe and Flintlock* (1907); *Ruel Durkee* (1910); *Green Mountain Pioneers* (1914); *Story of New Hampshire* (1924); *Legends of New England* (1925); and *Story of the Old Bay State* (1927).

Brumbaugh, Martin Grove.

Bryan, Rear Admiral Benjamin Chambers, U. S. N., Ret. An American naval officer, died in Washington, D. C., July 21, 1930. He was born in Throggs Neck, N. Y., Aug. 16, 1858, and was graduated from the U. S. Naval Academy in 1879. He served on the *Dolphin* during the Spanish-American War, and from 1903 to 1908 was with the bureau of steam engineering of the U. S. Navy Department. He served as head of the department of steam engineering of the Navy Yard at Philadelphia, 1908 to 1912; director of navy yards for the U. S. Navy Department, 1912 to 1915; and commandant of the naval station at Charleston, S. C., 1915 to 1922. He was also a member of the Naval Examining and Retiring Board.

Bryan, Mary Baird. The widow of William Jennings Bryan, American statesman, died Jan. 21, 1930, in Glendale, Calif. She was born in Perry, Ill., June 17, 1861, and was graduated in 1881 from the Presbyterian Academy for Young Women in Jacksonville, Ill. In 1884 she was married to William Jennings Bryan, who died in 1925. After her marriage, Mrs. Bryan studied law in order to enter into her husband's work, and was admitted to practice in the district and supreme courts of Nebraska. She completed the memoirs left unfinished by Mr. Bryan.

Burnham, Maj.-Gen. William Power, U. S. A., Ret. An American soldier, died in San Francisco, Calif., Sept. 27, 1930. He was born in Scranton, Pa., Jan. 10, 1860, and attended the Kansas State Agricultural College, U. S. Military Academy (1877-80), and the U. S. Infantry and Cavalry School (1889). During the Spanish-American War and the Philippine insurrection he served as a lieutenant colonel with the 4th Missouri Volunteers. In 1907 he was delegated to the general staff of the United States Army, and in 1912 became commandant of the Army Service Schools at Fort Leavenworth, Kansas. He served as commander of the Military District of Porto Rico from 1914 to 1917, and on the entry of the United States into the World War was assigned to command of the 164th infantry brigade of the 82d division at Camp Gordon, Ga. Later, as major general, he commanded the 82d division in France, taking part in the St. Mihiel offensive and the Battle of Meuse-Argonne. During 1918-19 he was military attaché and American delegate to the Inter-Allied Military Commission in Athens, Greece. On his return to the United States in 1919 he reverted to the rank of

colonel and was made commander of Fort McDowell on Angel Island and the Presidio in San Francisco, holding this post until 1924 when he was retired as a brigadier general.

Burns, Melvin P. An American clergyman, died in Little Rock, Ark., Sept. 21, 1930. He was born in Canada, Sept. 14, 1866, but coming to the United States in 1880 six years later was naturalized. He attended the Valparaiso (Ind.) Normal School during 1888-90 and the Little Rock University during 1890-94. He was ordained a minister in the Methodist Episcopal Church in 1890 and successively held pastorates in Stuttgart, Ark., and Casselton, N. D. He was superintendent of the Jamestown (N. D.) Conference (1899-1902), of the Fargo District (1902-04), of the Grand Forks District (1904-07), of the Minneapolis District and the Northern Minnesota Conference (1907-12), and of the Duluth District (1912-16). From 1916 until 1929 he was superintendent of the department of city work of the Board of Home Missions of the General Conference of the Methodist Episcopal Church. He was also president of the church's bureau of good-will industries and of the council of cities, and chairman of the committee for leadership training.

Burrell, Joseph Dunn. An American clergyman, died in Barcelona, Spain, Apr. 18, 1930, while touring that country. He was born in Freeport, Ill., Dec. 22, 1858, and was graduated from Yale in 1881 and from the Union Theological Seminary in 1884. In the latter year he was ordained to the Presbyterian ministry, serving as pastor in Clinton, Iowa, until 1892, when he was called to the Clason Avenue Church, Brooklyn, N. Y. During the World War he was with the Red Cross in Pontzenzen and Brest, France, and in Berlin, Germany. In 1920 he was appointed secretary of the metropolitan district of the New Era Movement of the Presbyterian Church, and in 1922 became executive secretary of the Brooklyn-Nassau Presbytery. He was also president of the Brooklyn Federation of Churches. His publications include: *The Early Church* (1894); *The Singular Death of Christ* (1900); and *A New Appraisal of Christian Science* (1906).

Byers, Maxwell Cunningham. An American railroad president, died in Baltimore, Md., Sept. 23, 1930. He was born in Pittsburgh, Pa., Feb. 2, 1878, and attended the University of Pittsburgh. His railroad experience began in 1897 as assistant engineer on various divisions of the Pennsylvania lines west of Pittsburgh. In 1902 he became assistant engineer of maintenance-of-way for the Baltimore and Ohio Railroad and the following year was promoted to engineer of the Baltimore division. He served successively as assistant engineer of maintenance-of-way, assistant to the general manager, engineer of maintenance-of-way, chief engineer, and chief engineer of operations for the St. Louis and San Francisco Railway from 1904 to 1913. In 1913 he became assistant to the president of the Great Northern Railway, and the following year entered the service of the Western Maryland Railway in the same capacity. He was appointed federal general manager of the Western Maryland, the Cumberland Valley, and the Cumberland and Pennsylvania Railroads in 1918. In 1920 he was chosen president of the Western Maryland Railroad and in 1926, chairman of the board of directors of that road.

Calkins, Mary Whitton.

Callender, Hugh Longbourne.

Callender, (William) Romaine. An American musician and inventor, died in Philadelphia, Pa., July 1, 1930. He was born in South Shields, England, Aug. 16, 1857, and attended the Mechanics Institute and Marine School in South Shields and the Literary and Philosophical Institute in Newcastle-on-Tyne. His musical education was received privately. He went to Canada in 1876, and from there to the United States in 1889. After being associated in an editorial capacity with J. B. Lippincott Company for several years, he became in 1900 principal of the Metropolitan College of Music in Philadelphia. He was the inventor of pneumatic and electric organ actions, autographic piano recording and reproducing apparatus, and apparatus for engraving music plates. He was also the author of several books on musical instruction, travel, and fiction, including *Teachers' Manual and Elementary Method* (for piano, 1911) and the novels *Prison Flower* (1912) and *Kermadec Romance* (1912).

Canterbury, Lute Archbishop of. See Davidson.

Carden, Sir Sackville Hamilton. Admiral, British Navy, retired, died in Lynton, May 7, 1930. Born May 3, 1857, he entered the British Navy in 1870 and was promoted to commander in 1894, captain in 1899, and rear-admiral in 1908. In 1910 he was made rear-admiral of the Atlantic Fleet and, during 1912-14, he was admiral superintendent of the Malta Dockyard. With the rank of vice-admiral, he was placed in command of the Eastern Mediterranean Allied Squadron at the beginning of the World War in 1914. He directed the early operations in the Dardanelles, including bom-

berdment and destruction of all forts at the entrance, but, because of ill health, resigned the command in March of 1915 and returned to England. In 1916 he was created Knight Commander of St. Michael and St. George and, on retirement in 1917, was promoted a full admiral.

Carlin, James Joseph. An American educator, died in Los Angeles, Calif., Oct. 1, 1930. He was born in Peabody, Mass., Apr. 14, 1872, and was graduated from Boston College in 1892. On entering the Society of Jesus in 1892 he served his novitiate in Frederick, Md., becoming in 1896 professor of philosophy and sciences at the Woodstock (Md.) Seminary, in 1899 professor of Latin, Greek, and English at Georgetown University, in 1904 professor of theology, sacred scripture, and canon law at Woodstock, and in 1910 lecturer on scholastic philosophy at Holy Cross College. He served as assistant to the provincial of Maryland for several years, and in 1918 was elected president of Holy Cross College, holding this office until 1925 when he went to the Philippines as president of the Ateneo de Manila, a Jesuit academy in Manila. In 1927 he was made superior of the Jesuit Mission in the Philippines.

Carneiro, Antonio.

Carr, Clarence Alfred. Rear admiral. U. S. N., retired, died in New London, Conn., Mar. 9, 1930. Born in Crawford Co., Pa., July 26, 1856, he was graduated from the U. S. Naval Academy in 1879 and from the Stevens Institute of Technology, with the M.E. degree, in 1884. Becoming assistant engineer in the U. S. Navy in 1881, he was promoted to chief engineer in 1893 and the following year was transferred to the line with the rank of lieutenant. In 1902-04 he was inspector of machinery in Seattle, Wash., fleet engineer of the Coast Squadron and in charge of steam engineering on the U.S.S. *Texas* in 1904-06, head of the department of steam engineering in the Navy Yard, Mare Island, Calif., during 1906-10; machinery inspector at Bayonne, N. J., from 1911 to 1917; and engineering officer in the Navy Yard of Philadelphia during 1917-19. Promoted through the grades, he became rear admiral in September, 1919, in the same month being made inspector of machinery in the Third Naval District, New York City. He retired in July, 1920.

Carson, Herbert William. A British surgeon, died in London, Aug. 31, 1930. He was born in 1870 and received his medical education at St. Bartholomew's Hospital, London. As senior surgeon at the Prince of Wales's General Hospital, he became recognized not only as a skillful operator but as a great teacher who attracted surgeons from all parts of the world. He was a fellow of the Royal College of Surgeons, of the Royal Society of Medicine, and of the Association of Surgeons of Great Britain and Ireland. His publications include: *Aids to Surgical Diagnosis and Modern Operative Surgery*.

Carter, Brig.-Gen. Jesse McIlvaine, U. S. A., Ret. An American soldier died in Houston, Tex., June 23, 1930. He was born in Missouri, Apr. 12, 1863, and was graduated from the U. S. Military Academy in 1886. From 2d lieutenant with the 3d Cavalry he was promoted through the grades to brigadier-general on his retirement in 1921. During 1909-13 he served on the General Staff of the U. S. Army, and on the entrance of the United States into the World War he was assigned to the Militia Bureau of the War Department, acting as its chief in 1917. He was commissioned major-general in the National Army, organizing and commanding the 11th Division from August, 1918, to February, 1919.

Casanova y Marzol, Vincenzo, Cardinal. A prelate of the Roman Catholic Church, died in Saragossa, Spain, Oct. 23, 1930. Born in Borja, Spain, in 1854, he was created a Bishop in 1907 and Archbishop of Granada in 1921, and was elevated to the rank of Cardinal-Priest in 1925.

Chaney, Lon.

Chanler, Robert Winthrop. An American artist, died in Woodstock, N. Y., Oct. 24, 1930. He was born in New York City, Feb. 22, 1873, and studied painting at the Academy Julien in Paris under Jean-Léon Gérôme. He became prominent as a mural painter, and in 1923 his panel "Giraffes" was bought by the French Government to be hung in the Luxembourg Museum.

Charost, Alexis Armand, Cardinal.

Chase, Frank Herbert. An American librarian, died in Hingham, Mass., Dec. 12, 1930. Born in Portland, Me., Apr. 22, 1870, he graduated from Yale in 1894, taking his Ph.D. degree in 1896. After acting as professor of English at Centre College (1902-04) and Beloit College (1904-11), he became associated with the Boston Public Library, serving as reference librarian from 1923 until his death.

Chilcott, Ellery.

Chisholm, George Goudie.

Christensen, Jens, Christian,

Claar, Emil.

Clark, Clarence Don.

Clark, Edgar Erastus.

Clark, Eugene Francis. An American educator, died in Hanover, N. H., Feb. 21, 1930. Born in Portland, Me., Aug. 10, 1879, he was graduated from Dartmouth College in 1901. During 1902-06 he was an instructor in the De Merritt School in Boston, becoming assistant professor of German at Dartmouth College in 1908. In 1915 he received the Ph.D. degree from Harvard University and later studied at the universities of Marburg and Freiburg. After 1918, he was secretary of Dartmouth College and professor of German in 1919. He edited the *General Catalogue of Dartmouth College, 1769-1925*.

Clarkson, Coker Fifield.

Clodd, Edward.

Coates, George James. A British painter, died in London, July 28, 1930. He was born in Melbourne, Australia, in 1869 and studied art at the Melbourne National Gallery, where he received the Victorian Gold Medal, and in Paris. He was a frequent exhibitor at the Paris Salon, the Royal Academy in London, and the Carnegie international exhibition in Pittsburgh. In 1919 he was commissioned by the Australian and Canadian Governments as portrait painter for their war memorial exhibitions. He was a member of the International Society of Sculptors, Painters, and Gravers; the National Portrait Society; the Royal Society of Portrait Painters; the Royal Institute of Oil Painters; and the Société Nationale des Beaux Arts. He was also a founder member of the London Portrait Society (1928.) His principal works are: *Stretcher Bearers*; *General Bridges and Staff*; *The Russian Lady*; *The Spanish Dancer*; and *Portrait of Lord Northcote as Governor-General*, for the Australian Commonwealth. Many of the illustrations in the *Historians' History of the World* came from his pen.

Cohn, Adolphe.

Colgate, Sidney Morse. An American industrialist, died Nov. 10, 1930, in Orange, N. J., where he was born Sept. 11, 1862. On graduating from Yale University in 1885 he became associated with Colgate & Co., the soap manufacturing firm founded by his grandfather, William Colgate, in 1806. For several years he was treasurer of this company, and in 1925 became president. Three years later, following a merger with the Palmolive-Peet Company, he became chairman of the board of the new company, known as the Colgate-Palmolive-Peet Company. During the World War he was chairman of the War Service Committee of the Soap Industry. He was also first president of the Association of American Soap and Glycerine Producers (1926) and of the Cleanliness Institute (1927).

Comstock, Anna Botsford.

Conklin, Charles. An American clergyman, died in Canton, Mass., May 27, 1930. He was born in Nyack, N. Y., Feb. 10, 1855, and attended St. Lawrence University. He was ordained a minister in the Universalist Church in 1876, his first charge being in Mt. Vernon, N. Y. From there he was called to Troy, N. Y., and to Chelsea, Mass. In 1885 he became pastor of the Church of the Redeemer in Chicago. He returned to Massachusetts in 1891, being located in Boston for the next two years and in Springfield from 1893 to 1902. In 1902 he became superintendent of the Universalist churches in Massachusetts and secretary of the Massachusetts Universalist Convention, holding this office until 1914 when he became pastor of the Beacon Universalist Church in Brookline. From 1922 until his death he was pastor of the Universalist Church in Canton.

Connelley, William Elsey.

Constantine VI. Former Patriarch of the Greek Church in Turkey, died in Athens, Greece, Nov. 28, 1930. He was Archbishop of Konitza in Epirus, and in 1906 was made Metropolitan of Trebizond. In 1924 he was elected Ecumenical Patriarch of Constantinople, but was expelled by the Turkish authorities the following year because he was a Greek national.

Cook, William Wilson.

Cooper, Bryan Ricco. An Irish statesman and soldier, died in Dublin, July 5, 1930. He was born June 17, 1884, and attended Eton and Woolwich. He entered the British Army in 1903, his first commission being as 2d lieutenant in the Royal Field Artillery. In 1905 he became a captain in the Royal Garrison Artillery, known as the Duke of Connaught's Own Shgo. During the World War he saw service with the 10th (Irish) Division in Gallipoli and Macedonia, and was later on the staff of the army in Salonika and in the war office. He was a conservative in politics, and in 1910 represented County Dublin (South) in the British House of Commons. From 1912 to 1914 he was honorary secretary of the Irish Unionist Alliance and president of its junior branch. In 1919 he became Irish press censor, and in 1926 was a member of the Irish tribunal on prices. He was elected to the Dail Eireann as an independent for

County Dublin in 1923, and was reflected in 1927. He served as chairman of the Irish Free State delegation to the Empire Parliamentary Association conference in Australia in 1926. His works include: *The Tenth Division in Gallipoli* (1917) and *The Collar of Gold* (1920).

Courtleigh, William Louis.

Cox, Henry Joseph. An American meteorologist, died in Chicago, Ill., Jan. 7, 1930. He was born in Newton, Mass., Apr. 5, 1863, and was graduated from Harvard University in 1884, entering the U. S. Army Signal Service in its weather bureau the same year. Discharged from the Army as an observer sergeant in 1891, when the Weather Bureau, as a part of the U. S. Army, became a branch of the Department of Agriculture, he remained in this work. In 1894 he became assistant in the weather bureau at Chicago, later principal meteorologist, and, after 1924, senior meteorologist. His forecasts in the Great Lakes districts were important for shipping in that region. In addition to special articles in the *Chicago Daily News*, popular weather articles in the *American Magazine*, and bulletins and reports, he wrote *Weather Bureau Records in Court*; "Lantern Slides in Teaching of Meteorology" (*Bulletin*, 3, Geographical Society, Chicago); *Recent Advances in Meteorology*; *Notes of a Meteorologist in Europe*; *The Weather Bureau and the Cranberry Industry*; *Weather and Climate of Chicago*; *Weather Forecasting in the United States* (joint author); *Influence of Great Lakes upon Movement of Storms*; *Thermal Belts and Fruit Growing in North Carolina Mountain Region*.

Craigie, Patrick George.

Cramer, W. (William) Stuart. An American clergyman, died in Lancaster, Pa., Nov. 6, 1930. He was born in Frederick Co., Md., Apr. 12, 1873, and was graduated from Franklin and Marshall College in 1898 and from the Theological Seminary of the Reformed Church in America in 1901. On ordination to the ministry of the Reformed Church in 1901 he became associate pastor of the First Reformed Church in Lancaster, Pa., and pastor in 1903. During the World War he was assistant secretary of the General Wartime Committee of Churches and was a member of the General Committee of Army and Navy Chaplains and of the Commission on the Relations of Religious Bodies in Europe. In 1924 he dedicated the memorial church in Château-Thierry, France. He was also president of the eastern synod of the Reformed Church in America during 1927-28.

Croly, Herbert.

Cunningham, Edward Henry. An American agriculturist and banker, died in Washington, D. C., Nov. 28, 1930. Born in Burlington, Wis., Dec. 14, 1869, he was secretary of the Iowa Farm Bureau Federation from 1920 to 1923, when he was appointed a member of the Federal Reserve Board as agricultural representative.

Curry, Charles Forest. An American congressman, died in Washington, D. C., Oct. 10, 1930. Born in Naperville, Ill., Mar. 14, 1858, he was elected secretary of state for California in 1899, serving until 1911 when he was elected to the 63d Congress from the third California district. His term in the 71st Congress would have expired in 1931.

Curtiss, Glenn Hammond.

Cushman, Allerton Seward.

Cutler, Condit Walker. An American physician, died July 9, 1930, in Morristown, N. J., where he was born Feb. 27, 1859. He was graduated from Rutgers College in 1879 and from the College of Physicians and Surgeons of Columbia University in 1882. In addition to his general practice he was from 1888 to 1902 physician-in-chief of the New York Dispensary and from 1892 to 1895 professor of dermatology at the University of Vermont. His works include: *Essentials of Physics and Chemistry* (1885); *Manual of Differential Medical Diagnosis* (1886); *Differential Diagnosis of the Diseases of the Skin* (1890); and *Practical Lectures in Dermatology* (1894).

Dana, Paul.

Darlington, The Rt. Rev. James Henry.

David, Eduard.

Davidson, the Most Rev. and Rt. Hon. Randall Thomas, Former Archbishop of Canterbury.

Davidson, William Meharr. An American educator, died in Pittsburgh, Pa., July 27, 1930. He was born in Jamestown, Pa., May 8, 1863, and was graduated from the Kansas State Normal School in 1886 and the Kansas State University in 1892. He was successively superintendent of public schools in Topeka, Kans. (1892-1904); Omaha, Neb. (1904-11); Washington, D. C. (1911-14); and Pittsburgh, Pa. (1914-30). He was also president of the Kansas State Teachers' Association in 1893, of the Nebraska State Teachers' Association and the department of superintendence of the National Education Association in 1911, and of the Pennsylvania State Education Association in 1923. In 1929 he was appointed a member of the Federal advisory committee to study the relations of the Federal government to education.

Davis, Lyman Edwyn. An American clergyman, died in Baltimore, Md., Aug. 13, 1930. He was born in

Perryburg, Ohio, Dec. 28, 1854. On graduation from Adrian College in 1877, he was ordained a minister in the Methodist Protestant Church, successively holding pastorates, until 1896, in Tarrytown-on-Hudson, Rockville Centre, Brooklyn, Middletown, Albany, and Saratoga, N. Y. From 1896 to 1913 he was pastor of Grace Church, Pittsburgh, Pa. In 1912 he became president of the General Conference of the Methodist Protestant Church, holding this office until 1920. He was also editor of the *Methodist Recorder* from 1918 to 1929, and at the time of his death was editor of the *Methodist Protestant Recorder*, the *Methodist Protestant* having been merged with his own organ. He was a member of the executive committee of the Federal Council of the Churches of Christ in America and of the National Reform Association, and during the World War had served as a member of the General War Time Commission of the Churches and of the National Committee on Army and Navy Chaplains. His works include: *Jonathan Twigg*; *The Scepter of Washington*; *Social Doctrines of Christianity*; *Democratic Methodism in America*; and *The Creed of Bethlehem*.

Davis, William Stearns.

Dawley, Thomas Robinson, Jr.

Deane, Walter. An American naturalist, died in Cambridge, Mass., July 30, 1930. He was born in Boston, Mass., Apr. 23, 1848, and was graduated from Harvard University in 1870. After serving for 15 years as tutor and private schoolmaster, he turned to the field of natural history, and from 1897 to 1907 he was associated with William Brewster, the ornithologist, being in charge of the Brewster Ornithological Museum in Cambridge. He was also president of the New England Botanical Club during 1908-11. He compiled and edited *Flora of the Blue Hills, Middlesex Fells, and Stony Brook and Beaver Brook Reservations of the Metropolitan Park Commission* (Boston).

Dellenbaugh, Harriet Rogers Otis. An American actress, died in New York City Nov. 15, 1930. During the '90s she was a member of the New Theatre Company, and also acted with Felix Morris, Annie Russell, James K. Hackett, William H. Crane, and Frances Starr. She was married in 1885 to Frederick Samuel Dellenbaugh, the artist and explorer.

Dennis, Alfred Lewis Pinneo.

Derennes, Charles. A French novelist and poet, died Apr. 28, 1930. He was born at Villeneuve-sur-Loir in 1882, the son of a poet. His novels include: *L'Amour fessé* (1906); *Nique et ses cousines* (1909); *Les Caprices de Nouchette* (1910); *Leur tout petit cœur* (1916); *Cassino va-t-en guerre* (1917); and *le Pèlerin de Gascogne* (1918). He wrote a series of fable books, stories of animals, which showed keen and minute observation. They are: *Vie de grillon* (1921); *la Chouette-souris* (1922); and *Émile et les autres* (1924). He was the author of the following poems: *L'Enivrant angeois* (1904); *la Tempête* (1906); *la Chanson des deux jeunes filles* (1920); *Perréphone* (1921); and *la Fontaine Souvenance* (1924).

Dessaulles, George Casimir. A Canadian senator, died Apr. 19, 1930, in St. Hyacinthe, Quebec, Canada, where he was born Sept. 29, 1827. He was educated at the seminaries of St. Hyacinthe and Quebec and later attended Georgetown University in the District of Columbia. In 1858 he was elected to the city council of St. Hyacinthe and, from 1868 to 1898, except for a period of six years, he was mayor of St. Hyacinthe. He became a member of the legislative assembly of Quebec in 1897. After 1907, he served in the Senate of the Dominion of Canada. He was a Liberal in politics.

Destinn, Emmy.

Dewa, Baron Shigeto. A retired admiral of the Japanese navy, died in Tokyo, Jan. 27, 1930. He was born in 1855 in Aizu and was graduated from the Japanese Naval Academy in 1882. He was captain of the cruiser *Takachiho* in the Chino-Japanese War, 1894-95, and was chief of the committee to bring back the cruiser *Tokiva* from England in 1899. In 1900 he was given the rank of rear admiral. Admiral Dewa was commander of the Standing Squadron, chief of the Construction Board at Yokosuka, and director of the Naval Affairs Bureau. He represented Japan at the Panama Exposition in 1915.

Dewar, Thomas Robert, First Baron of Homestall. An English distiller and sportsman, died at Homestall, in East Grinstead, Sussex, Apr. 11, 1930. He was born in Perth, Scotland, Jan. 6, 1864, and was educated in Edinburgh. His father was a distiller in Perth and, as a young man, Lord Dewar went to England to expand his father's business. In London John Dewar & Sons became one of the largest whisky-distilling firms in the world, the presidency of which he held at the time of his death. A Unionist in politics, he represented St. George's, Tower Hamlets, from 1900 to 1906. He was knighted in 1902 and created a baron in 1919. Lord Dewar was famous for his epi-

grams and after-dinner speeches, many of which are included in his book *Toasts and Maxims and Wisdom Compressed*. He also wrote *A Ramble Around the Globe*; *Prohibition in the United States, Canada, and New Zealand*; and *Experiences of the Gothenburg System*. Diekema, Gerrit John.

Dimmock, George. An American zoologist, died May 17, 1930, in Springfield, Mass., where he was born May 17, 1852. He was graduated from Harvard University in 1877, and after two years of graduate study at that institution he attended the University of Leipzig, receiving the Ph.D. degree in 1881. He also studied at the Sorbonne and the University of Paris during 1881-82, and on his return to the United States resumed the editorship of *Psyche*, an entomological journal which he had started in 1877 and which he continued to edit until 1890. His principal contributions to zoological research were an anatomical study of the early stages of beetles and of the mouth of the mosquito. His works include: *The Anatomy of the Mouth-Parts and the Sucking Apparatus of Some Diptera* (1881) and *Alpumas Oocnecellidæ de Cuba* (1906).

Dixon, Harold Bailey.

Donahue, John J. (Jack). An American actor, died in New York City, Oct. 1, 1930. He was born in Charlestown, Mass., in 1892. As a comedian and dancer he was starred in the musical comedies, *Sunny*, *Rosalie* and *Sons o' Guns*. Other successes were *Be Yourself* and *Hitchy-Koo* of 1918. He was the author of *Letters of a Hooper to His Ma*, published serially in 1930.

Dorrance, John Thompson. An American manufacturer, died in Cinnaminson, N. J., Sept. 21, 1930. He was born in Bristol, Pa., Nov. 11, 1873, and was graduated from the Massachusetts Institute of Technology in 1895 and with the Ph.D. degree from the University of Göttingen in 1897. He became associated with the Joseph Campbell Preserve Company as a chemist in 1899 and developed the manufacture of canned condensed soups. This company later became known as the Campbell Soup Company, of which Mr. Dorrance was chosen president in 1914.

Dow, Herbert Henry.

Dowling, the Most Rev. Austin.

Downer, Charles Alfred. An American educator, died in Samaden, Switzerland, Aug. 14, 1930. He was born in Jersey City, N. J., May 3, 1866, and was graduated from the College of the City of New York in 1886, taking his Ph.D. degree from Columbia University in 1901. He was professor of French at the College of the City of New York from 1904 to 1909 and professor of Romance languages at that institution from 1909 until his death. In 1926 he was president of the American Association of Teachers of French and president from 1915 to 1924 of the Fédération de l'Alliance Française of New York. He was decorated a chevalier of the Legion of Honor in 1913, and in 1926 was designated an officer of the same by Ambassador Paul Claudel on behalf of the French Government. He also was created a knight of the Order of the Crown of Italy in 1919. His works include: *Frédéric Mistral, Poet and Leader in Provence* (1900); *A First Book in French* (1910); and *A First Course in French* (1922).

Doyle, Sir Arthur Conan.

Dresslar, Fletcher Bascom. An American educator, died in Nashville, Tenn., Jan. 19, 1930. He was born in Banta, Ind., Sept. 21, 1858, was graduated from Indiana University in 1889, and in 1894 received the Ph.D. degree from Clark University. During 1882-85 and 1889-91, he taught in the rural schools of Indiana and was principal of the high school and superintendent of schools in Princeton, Ind. He was professor of psychology and education at the State Normal School of Los Angeles, Calif., 1894-97; assistant professor of science and the art of teaching at the University of California from 1897 to 1906; and associate professor there during 1906-09. He became professor of education and dean of the school of education at the University of Alabama in 1909, and during 1909-11 was specialist in school hygiene and sanitation in the Bureau of Education in Washington. After 1912 he was professor in the school of hygiene at Peabody College for Teachers. Dr. Dresslar was a member of the Permanent International Committee on School Hygiene. He wrote *Superstition and Education* (1907); *American Schoolhouses* (1911); *School Hygiene* (1913); *Rural Schoolhouses and Grounds* (1914); *Open-Air Schools* (with Sherman E. Kingsley, 1916); *Rosenwald Schoolbuildings* (1920); *Ethics of the Trees* (1921); *American Schoolbuildings* (1925). He also translated from the German *The Auxiliary Schools of Germany* (1907) and edited, with others, *Moral Training in the Public Schools* (1908).

Dubois, Fred Thomas.

Dufferin and Ava, Frederick Temple-Blackwood, Third Marquess of. An Irish peer, died in an airplane accident near Meopham, Kent, England, July 21, 1930. He was born in Ottawa, Ont., Canada, Feb.

26, 1875. On entering the British Army in 1897, he became a captain of the 9th Lancers, and served in the Boer and World Wars, being mentioned in the dispatches and receiving the Distinguished Service Order. He succeeded his brother in the title in 1918, and in 1921 became speaker of the Senate of Northern Ireland. He was also an aide-de-camp to the King and Vice Admiral of Ulster.

Du Pont, (Thomas) Coleman.

Durham, Plato Tracy. An American clergyman and educator, died in Atlanta, Ga., Feb. 10, 1930. He was born in Shelby, N. C., Sept. 10, 1873, and was graduated from Trinity College, N. C., in 1895. During 1895-96 he attended the Yale Divinity School and was graduated from Union Theological Seminary in 1899. He was professor of Biblical literature and church history at Trinity College from 1899 to 1906. Having been ordained to the ministry of the Methodist Episcopal Church, South, in 1903, he accepted a call as pastor of Trinity Church in Charlotte, N. C., in 1906, being transferred two years later to Central Church in Concord, N. C. He was chosen presiding elder of the Winston (N. C.) district in 1911 and of the Charlotte district in 1913. He was one of the founders of the Candler School of Theology at Emory University and acted as dean and professor of church history from 1914 to 1918.

Dyson, Rear Admiral Charles Wilson, U. S. N. Ret. An American naval officer, died in Washington, D. C., Oct. 25, 1930. He was born in Cambridge, Md., Dec. 2, 1861, and was graduated from the U. S. Naval Academy in 1883. Promoted through the grades, he became rear admiral in 1917 and was retired in 1925. From 1906 to 1913 he was assigned to duty in the bureau of steam engineering of the Navy Department, and in 1914 was placed in charge of the design of naval machinery. The Distinguished Service Cross was bestowed on him in recognition of his improvement of the propeller installation on many vessels.

Eames, Clare.

Eckstein, Sir Frederick, First Baron. A British financier, died in London, June 10, 1930. He was born in Stuttgart, Germany, Apr. 9, 1857. Joining his brother's firm of H. Eckstein & Co., in Johannesburg, South Africa, in 1887, he later became head of the firm and a partner in Wernher, Beit & Co., and was engaged in the direction of some of the richest gold mines in the Rand region. In 1910, when Wernher, Beit & Co. was merged with the Central Mines Investment Corporation, he was made chairman of what was perhaps the largest mine-owning company in the world. He was also chairman for many years of the Sudan Plantations Syndicate, which had been formed in 1907 to promote the raising of cotton in the Sudan. He was made a baron in 1929.

Edmonds, Richard Hathaway. An American editor, died in Baltimore, Md., Oct. 4, 1930. He was born in Norfolk, Va., in 1857. After serving as assistant editor of the *Baltimore Journal of Commerce* from 1878 to 1882, he founded the *Manufacturer's Record*, of which he was editor and chairman of the board at the time of his death. The latter publication was especially devoted to the industrial development of the South and to utilization of its resources. He was also the author of *Facts about the South*, a review of business conditions before and after the World War, and of numerous pamphlets on prohibition and kindred subjects.

Edwards, Howard. An American educator and president of Rhode Island State College, died in Kingston, R. I., Apr. 10, 1930. He was born in Fauquier County, Va., Nov. 7, 1854, and was graduated from Randolph-Macon College with the M.A. degree in 1876, later studying at the University of Leipzig and at the Sorbonne in Paris. After several years' experience as teacher and principal of secondary schools, he became professor of English and modern languages at the University of Arkansas in 1885 and at the Michigan Agricultural College in 1890. In 1906 he was elected president of the Rhode Island State College, which office he held at the time of his death. He was president of the National Association of Land-Grant Colleges in 1923. The LL.D. degree was conferred on him by the University of Arkansas in 1891, Brown University in 1914, and Michigan State College in 1927 and the Litt.D. degree by Rhode Island Normal College in 1927.

Edwards, James Harvey. An American engineer, died in New York City, Aug. 14, 1930. He was born in Oxford, N. Y., June 19, 1864. On graduation from Cornell University in 1888 he became associated with the Berlin Iron Bridge Company in East Berlin, Conn., being appointed chief engineer in 1897. In 1900, when this company was merged with the newly-formed American Bridge Company, he was appointed structural engineer, becoming assistant chief engineer the following year and chief engineer in 1927. In 1929 he was awarded a medal by the American Welding

Society in recognition of his contribution to the development of a process of welding steel in structural work.

Eijkman, Carl Ben.

Bijlman, Christian. A Dutch scientist, died in Utrecht Nov. 5, 1930, where he was connected with the university. In 1889 while director of the hygienic laboratory in Batavia, Dutch East Indies, he succeeded in producing polyneuritis in fowl by feeding them a diet consisting exclusively of polished rice. He had previously noted that this disease closely resembled the disease beri-beri occurring in human beings. This discovery won for him the Nobel Prize in Medicine in 1929.

Elliot, Hugh. A British author, died in Hampton, Middlesex, England, May 6, 1930. He was born Apr. 3, 1881, and was educated at Eton and at Trinity College, Cambridge. He served with the Coldstream Guards during the Boer War and after resigning from the army in 1902 he devoted himself to scientific and philosophical studies, and during 1915-20 edited the *Annual Register*. His works include: *Modern Science and the Illusions of Professor Bergson* (1912); *Herbert Spencer* (1917); *Modern Science and Materialism* (1919); and *Human Character* (1922). He also translated Hagenbeck's *Von Thieren und Menschen* (1909); and edited *The Letters of John Stuart Mill* (1910).

Elliott, George. An American clergyman, died in Flint, Mich., Nov. 2, 1930. He was born in Licking County, Ohio, Dec. 14, 1851, and was graduated from Cornell College in 1872. On ordination to the ministry of the Methodist Episcopal Church he held pastorates in Baltimore (1884-87), Washington (1887-94), Philadelphia (1894-1900), and Detroit (1900-07), becoming field secretary of the General Conference's Board of Home Missions and Church Extension in Chicago in 1907. In 1910 he was called to Bay City, Mich., as pastor of the Madison Avenue Church, and in 1914 to Mt. Clemens, Mich. He was preacher-at-large for the Detroit episcopal area during 1918-20 and then was appointed editor of the *Methodist Review*, which position he held at the time of his death. He wrote: *The Abiding Sabbath* (1884); *The Beauty of Jesus* (1904); *Biblical Criticism and Preaching* (1913); and *The Christmas Canticles* (1922).

Elliott, Henry Wood. An American naturalist, died in Seattle, Wash., May 25, 1930. He was born in Cleveland, Ohio, Nov. 13, 1846. In 1862 he became private secretary to Joseph Henry, secretary of the Smithsonian Institution. During 1872-74 he was detailed by special act of Congress to investigate depredations on the Seal Islands of Alaska. He served again in the latter capacity in 1890, and under authority of the act, approved by Congress in 1904, prepared the fur-seal treaty of "mutual concession and joint control" which was ratified in 1911 by Canada, Japan, Russia, and the United States. His works include: *Conditions of Affairs in Alaska* (1875, for the U. S. Treasury Department); *Monograph on the Seal Islands of Alaska* (1882, for the U. S. Fish Commission); *The Seal Islands of Alaska* (1884); and *Our Arctic Province* (1886).

Emerson, Edward Waldo.

Emerton, James H.

Erlanger, Abraham Lincoln.

Esher, Reginald Baliol Brett, Second Viscount.

Exner, Felix M.

Facts, Luigi.

Farnam, Lynnwood. An American organist, died in New York City Nov. 23, 1930. He was born in Sutton, Que., Canada, Jan. 13, 1885, and attended the Royal College of Music in London. After serving as church organist in Montreal and Boston, he came to New York in 1920 and at the time of his death was organist at the Church of the Holy Communion and also head of the organ department of the Curtis Music School in Philadelphia.

Faunce, William Herbert Perry.

Felton, Mrs. Rebecca Latimer. An American woman-suffrage leader, author, and lecturer, died in Atlanta, Ga., Jan. 24, 1930. She was born in DeKalb Co., Ga., June 10, 1835, and was graduated from the Madison (Ga.) Female College in 1852. The following year she married W. H. Felton. Making her home in Cartersville, Ga., she wrote and lectured on woman suffrage and on temperance throughout the State. In 1922, on the death of Senator Thomas E. Watson of Georgia, she was appointed by the governor of the State to serve for two days in the U. S. Senate, thus becoming the first woman to occupy that position. The honorary appointment was in recognition of Mrs. Felton's services in the cause of woman suffrage in Georgia. In addition to writing for newspapers, she wrote *Memoirs—Georgia Politics* (1911); and *Country Life in Georgia in the Days of My Youth* (1918).

Felton, Samuel Morse.

Ferguson, William J.

Ferranti, Sebastian Ziani de.

Ferris, Jean Léon Gérôme.

Fewkes, J(ease) Walter.

Fielitz, Alexander von.

Findlay, Sir John Ritchie. A British newspaper publisher, died in Edinburgh, Apr. 13, 1930. Born in Aberlour, Scotland, Jan. 13, 1866, he attended Harrow and Balliol College, Oxford. In 1898 on the death of his father, J. Ritchie Findlay, he became principal partner in Messrs. John Ritchie & Co., publishers of *The Scotsman* and its associated newspapers. He was created a Knight Commander of the Order of the British Empire in 1917 and baronet in 1925. In 1928 he was appointed Lord Lieutenant of Banffshire, the county in which his estate was located. He was particularly interested in the furtherance of art and archaeology and was chairman of the board of trustees for the National Galleries of Scotland and vice-chairman of the Scottish Ancient Monuments Board.

Fish, Frederick Perry.

Fitzgerald, Harrington. An American landscape painter, died in Williamstown, Pa., Sept. 16, 1930. He was born in Philadelphia Apr. 5, 1847, and studied under Fortuny and Gérôme in Paris. His principal works are the four panels depicting the Battle of Valley Forge in the State Capitol, Harrisburg, Pa.; "The Wreck" in the National Gallery, Washington; "On the Shore" in the Pennsylvania Museum; and "The Smugglers' Cave" in the Detroit Institute. For 30 years he was also managing editor of the *Philadelphia Item*.

Folger, Henry Clay.

Forbes, Stephen Alfred.

Ford, Frank Richards. An American consulting engineer, died in New York City, Sept. 17, 1930. He was born in Philadelphia, Pa., in 1871, and was graduated from the University of Pennsylvania in 1890. After spending several years in public utility and industrial engineering, he joined the firm of Ford, Bacon and Davis, consulting engineers, in New York in 1894. He served as a member of the New York and New Jersey Port and Harbor Development Commission from 1917 to 1921, and of the Port of New York Authority from 1921 to 1923.

Ford, George Burdett.

Foster, William Eaton. An American librarian, died in Providence, R. I., Sept. 10, 1930. He was born in Brattleboro, Vt., June 2, 1851, and was graduated from Brown University, Providence, in 1873, receiving the A.M. degree from that institution in 1876 and the Litt.D. degree in 1901. He was librarian at the public library in Hyde Park, Mass., from 1873 to 1876; cataloguer at the Turner Free Library in Randolph, Mass., during 1876-77; and librarian at the Providence Public Library from 1877 to 1930. Under his direction the Providence library became one of the most progressive in the United States and was among the first to establish art and industrial, as well as foreign and business, departments. He was president of the Massachusetts Library Club during 1894-95 and of the Rhode Island Library Association during 1903-05. His works include: *The Civil Service Reform Movement* (1881); *The Literature of Civil Service Reform in the United States* (1881); *Libraries and Readers* (1883); *Stephen Hopkins, a Rhode Island Statesman* (1884); *Town Government in Rhode Island* (1886); *The Point of View in History* (1906); *Five Men of '76* (1926); and *The First Fifty Years of the Providence Public Library* (1928).

Foucault, Mgr. Alphonse Gabriel.

Francke, Kuno.

Franklin, William Suddards.

Franko, Naham. An American musician, died in Amityville, N. Y., June 7, 1930. He was born in New Orleans July 23, 1861, and received his musical education in Berlin. In 1875 he came to New York City where he was identified with various orchestras, becoming concert-master at the Metropolitan Opera in 1883 and conductor during 1905-07. He was the first American-born musician to hold that post.

Freeman, Mary Eleanor Wilkins.

Fries, Archibald. An American railway official, died in Severna Park, Md., June 9, 1930. He was born Feb. 27, 1864, in Cincinnati, Ohio. In 1880 he became an entry clerk in the general freight offices of the Baltimore & Ohio Railroad at Cincinnati, Ohio. Remaining in the employ of the Baltimore & Ohio, he was steadily promoted, his positions including those of chief clerk in Cincinnati (1892), assistant general freight agent in Pittsburgh, Pa. (1913), and freight traffic manager in the latter place (1916). At the beginning of United States Government administration of the railroads in 1918, he was appointed traffic manager of the Allegheny region and, in 1920, general traffic manager of the Baltimore & Ohio lines. At the end of the period of federal control in 1920, he was appointed vice president of the Baltimore & Ohio and placed in charge of traffic and commercial development, with headquarters in Baltimore, Md. He held his position with the Baltimore & Ohio system until the time of his death.

Fripp, Sir Alfred Downing. An English physician, died Feb. 25, 1930, in Dorset, where he was born Sept. 12, 1865. He was educated at the University of London and at Guy's Hospital, and became a fellow of the Royal College of Surgeons. In 1897 he was elected assistant surgeon of Guy's Hospital, becoming in 1925 consulting surgeon and governor of the hospital. He was Surgeon in Ordinary to the King and to the Duke of Connaught, appointed by Edward VII and reappointed by George V. He was also surgeon to the Hospital for Women and Children in London. In the South African War, he was chief civilian medical officer of the Imperial Yeomanry Hospital in South Africa and, in the World War, was consulting surgeon to the Royal Navy. Dr. Fripp was knighted in 1903.

Fuchs, Ernst.

Furness, Horace Howard, Jr.

Gasson, Thomas Ignatius. A Roman Catholic clergyman and educator, died in Montreal, Canada, Feb. 27, 1930. He was born in Sevenoaks, Kent, England, Sept. 23, 1859, and was educated at St. Stephen's School, London; at Woodstock College, Md.; and at the Royal University, Innsbruck, Austria. He entered the Society of Jesus in 1875 and was ordained a priest in 1891. He was later appointed professor at Boston College, lecturing on poetry, rhetoric, mental philosophy, ethics, and economics. In 1907 he was elected president of the institution, serving in this capacity until 1914. His administration was marked by the purchase of a new site and the erection of a new building at Chestnut Hill in 1913. During this period he was also rector of the Church of the Immaculate Conception in Boston. In 1914 he went to Georgetown University as dean of the graduate department and professor of sociology, and in 1924 was appointed dean of studies at Loyola College, Montreal.

Gillespie, Richard Thomas. An American clergyman and educator, died in Charlottesville, Va., May 30, 1930, while attending the annual meeting of the General Assembly of the Presbyterian Church in the United States. He was born in Tirzah, S. C., Oct. 23, 1879, and was graduated from Davidson College in 1904. On completing the course at the Columbia Theological Seminary in 1908, he was ordained to the Presbyterian ministry, his first charge being the First Presbyterian Church in Florence, S. C. In 1917 he was called to the Maxwell Street Presbyterian Church in Lexington, Ky., and in 1922 to the First Presbyterian Church in Louisville, Ky. He became president of the Columbia Theological Seminary in 1925.

Gilpin, Charles Sidney.

Gladstone, Herbert John, First Viscount.

Godoy, José Francisco.

Goldstein, Eugen. A German physicist, died in Berlin Dec. 27, 1930. He was born in Gleiwitz Sept. 5, 1850, and in 1888 became associated as physicist with the Berlin observatory. His most important discoveries pertained to cathode rays and "kanalstrahlen."

Gollancz, Sir Hermann.

Gollancz, Sir Israel.

Golovin, Alexander Jakowlewitsch.

Gordon, David Stuart. Brigadier general, U. S. Army, retired, died in Washington, D. C., Jan. 28, 1930. He was born in Franklin Co., Pa., May 23, 1832. In 1861 he was appointed from Kansas to the U. S. Army as second lieutenant in the Second Dragoons, and the same year was transferred to the Second Cavalry with the rank of first lieutenant. In this branch of the Army he served during the Civil War, being brevetted major for his gallant services in the Gettysburg campaign (1863). After the Civil War, General Gordon was stationed on the frontiers, where he engaged in fighting with the Indians. For his services in a campaign against the Indians at Miners Delight in Wyoming in 1870, he was promoted in 1890 to the rank of lieutenant-colonel. In 1892 he was made a colonel and was retired in 1896. He attained the rank of brigadier general in 1904.

Gordon, John R. An American public official, died in Washington, D. C., Aug. 26, 1930, aged 58. For many years he was in charge of marine affairs for the Union Sulphur Company in New York City, and during the World War was a representative of the Food Administration in London. In 1929 he was appointed president of the Merchant Fleet Corporation, being engaged at the time of his death in effecting the consolidation of lines still under Government control.

Gosling, Harry. A British labor leader, died in London Oct. 24, 1930. Born in 1861, he served an apprenticeship as a Thames waterman and lighterman, becoming later, in 1924, Minister of Transport and Paymaster-General in the first Labor Government. For more than 30 years he was one of the leaders of the trade union movement, serving as member of the Civil Service Arbitration Board. In 1923 he was elected a member of Parliament for Whitechapel. He was the author of *Up and Down Stream* (1927).

Gracie, Sir Alexander. A British financier, died in

London, Mar. 2, 1930. He was born Nov. 14, 1860. He was a director of Cammell Laird & Co., Sheffield; the English Electric Company, London; and the Leeds Forge Company and was a member of the Scottish committee of the London, Midland & Scottish Railways. As an expert on shipbuilding engineering, his services were much sought after by various technical commissions. In 1904 he was a member of the Design Committee appointed by the Admiralty; in 1905, a member of the Royal Dockyards Reorganization Committee; and in 1912, a member of the Royal Commission on the Navy in Peace and War. He was made a member of the Royal Victorian Order in 1908 and a Knight Commander of the Order of the British Empire in 1918.

Grant, Rear Admiral Albert Weston.

Greene, Frank Lester.

Greve, Charles Theodore. An American lawyer, died Sept. 4, 1930, in Cincinnati, Ohio, where he was born Jan. 3, 1863. He was graduated from Harvard University in 1884 and from the Cincinnati Law School in 1885. On being admitted to the bar in the latter year, he was engaged in the practice of his profession in Cincinnati until his death. In 1894 he was appointed United States Attorney, but resigned four years later to become United States referee in bankruptcy, holding this office over a period of years. He also was engaged in journalism, being literary editor of the Cincinnati *Tribune* during 1894-97, and of the Cincinnati *Times-Star* during 1898-1901. From 1904 to 1917 he was professor of law at the Cincinnati Law School (later affiliated with the University of Cincinnati), and from 1919 to 1930 at the Y. M. C. A. Law School in Cincinnati. He was the author of a *Centennial History of Cincinnati* (2 vols., 1904) and was a contributor to the *NEW INTERNATIONAL ENCYCLOPEDIA*.

Griswold, The Rt. Rev. Sheldon Munson.

Guffey, James McClurg. An American oil producer, died in Pittsburgh, Pa., Mar. 20, 1930. He was born in Westmoreland Co., Pa., Jan. 19, 1839, and was educated in public and commercial schools of the State. After working for a time in Tennessee as a railroad and express clerk, he returned to Pennsylvania in 1872 and engaged in oil and gas production. He became one of the largest individual oil producers in the United States. Mr. Guffey was active in Democratic politics of Pennsylvania.

Guggenheim, Daniel.

Guggisberg, Brigadier-General Sir (Frederick) Gordon. Governor of British Guiana, died at Bexhill in Sussex, Apr. 21, 1930. He was born in Toronto, Can., July 20, 1869, and was educated at Burney's in Hampshire and at the Royal Military Academy in Woolwich. In 1889 he was commissioned in the Royal Engineers and, during 1893-96, served at Singapore. From 1897 to 1902, he was instructor in fortifications at the Royal Military Academy at Woolwich. He was assistant director of the surveys of the African Gold Coast, made by the Colonial Office in 1902-05, and director during 1905-08, the surveys proving of great value in the development of the colony. In 1910 Sir Gordon was appointed surveyor-general of Nigeria, acting until 1914. During the World War, he served with the Royal Engineers, at which time he was awarded the Distinguished Service Order and the Legion of Honor. He was governor and commander-in-chief of the African Gold Coast Colony from 1919 to 1927. The harbor of Takoradi, completed after he left the colony, was in great part his enterprise. In 1928 he was appointed governor and commander-in-chief of British Guiana. He wrote *We Two in West Africa* (with Mrs. Guggisberg, 1909) and *The Future of the Negro* (with the Rev. A. G. Fraser, 1929). In 1922 he was elevated to the knighthood.

Guthrie, Sir James.

Haas, his, Ludwig. A German statesman, died in Karlsruhe, Baden, Aug. 2, 1930. He was born in Freiburg, Baden, Apr. 16, 1875, and attended the Universities of Heidelberg, Freiburg, and Munich, becoming an advocate in 1901. He represented Baden in the German Reichstag from 1912 to 1918 and from 1920 to 1930, when he retired from political life. He was also Baden Minister of the Interior during 1918-19, and was one of the founders of the Democratic party, acting as chairman of its parliamentary division.

Habdank-Woynicz. See Woynich, Wilfred Michael.

Hadley, Arthur Twining.

Haffkine, Waldemar Mordecai Wolff.

Hagen, Johann Georg.

Hall, The Rt. Rev. Arthur Crawshaw Alliston.

Hall, Asaph, Jr.

Halpert, Samuel.

Hamann, Carl August. An American surgeon and educator, died in Cleveland, Ohio, Jan. 12, 1930. He was born in Davenport, Iowa, Jan. 26, 1868, and was graduated from the medical school of the University of Pennsylvania in 1890. On beginning his practice in Cleveland in 1893, he became associated with the medical school of Western Reserve University as professor

of anatomy. In 1913 he became professor of applied anatomy and clinical surgery and dean of the medical school.

Harding, William P. G(ould).

Hardy, Arthur Sherburne.

Hark, J(oseph) Max(imilian). An American clergyman and former president of the Moravian Seminary and College for Women, died in St. Croix, Virgin Islands, West Indies, July 24, 1930. He was born in Philadelphia, Pa., June 4, 1849, and was graduated from the Moravian College and Theological Seminary in 1870. After serving as pastor of Moravian churches in Lebanon, Philadelphia, and Lancaster, Pa., until 1893, he became principal, and later president, of the Moravian Seminary and College for Women in Bethlehem, Pa., holding that office until 1909. He was one of the founders of the Pennsylvania German Society and of the Pennsylvania Chautauqua, of which he was the first chancellor. He was the author of *The Unity of the Truth in Christianity and Evolution* (1887).

Harnack, Adolf von.

Harris, J(ames) Arthur.

Harris, Maurice Henry. An American rabbi, died in New York City, June 23, 1930. He was born in London, Nov. 9, 1859, and came to the United States at the age of 19. He was graduated from Columbia University in 1887, taking his M.A. degree at the same institution in 1888 and his Ph.D. degree in 1889. He received his rabbinical training at Emanuel Theological Seminary in New York City. He became associated with Temple Israel in New York City, then known as the Hand-in-Hand Synagogue, in 1882 and was appointed official rabbi in 1887. He was past president of the New York Board of Jewish Ministers and of the Eastern Council of Reform Rabbis, and was founder and past president of the Harlem Federation Settlement. His chief work was a three-volume biblical history, entitled *People of the Book* (1895-97). He was also the author of several popular textbooks for Jewish children, including *A Thousand Years of Jewish History* (1904); *Jews of the Middle Ages* (1907); *Modern Jewish History* (1909); and *A Confirmation Manual* (1919), and prepared *Two Chautauqua Syllabi of Jewish History and Literature from the Kabbala to Mendelssohn* (1899).

Harrison, Henry Sydnor.

Harrison, (Thomas) Alexander.

Hart, Julius.

Harvey, Sir Robert.

Haviland, Clarence Floyd. An American psychiatrist, died in Cairo, Egypt, Jan. 1, 1930. He was born in Spencerstown, N. Y., Aug. 15, 1875, and was graduated in medicine from Syracuse University in 1896. From 1897 to 1910, he was successively interne, junior physician, and assistant physician at the Manhattan State Hospital on Ward's Island, N. Y. C. In 1910 he became first assistant physician in the Kings Park State Hospital, on Long Island, N. Y., leaving there in 1915 to become superintendent of the Connecticut State Hospital in Middletown. During 1921-26 he was medical member and chairman of the New York State Hospital Commission and in 1926 returned as superintendent to the Manhattan State Hospital on Ward's Island. After 1927 he was also clinical professor of psychiatry at Columbia University. In 1914 Dr. Haviland made a survey of conditions attending the care of the insane in Pennsylvania. He contributed frequently to medical journals, and was associate editor of *The Modern Hospital*.

Hawthorne, Charles Webster.

Hayes, Maurice Richard Joseph. An Irish physician, died in Dublin, Mar. 2, 1930. He was educated at Sacred Heart College and at Mungret College in Limerick, and at the Catholic University in Dublin. In 1907 he became radiologist for Mater Misericordia Hospital in Dublin. He was a captain in the Royal Army Medical Corps in 1917, and in 1922 he was major general and director general of the Irish Free State Army Medical Service. At the time of his death, he was professor of materia medica and therapeutics at University College in Dublin and consulting radiologist at the National Maternity Hospital there. Dr. Hayes contributed to the study of X-rays, and many of his medical papers treat of that subject.

Hazen, Allen.

Heaton, Augustus Goodyear.

Hendrick, Ellwood.

Henry, Augustine. An Irish botanist, died in Dublin, Mar. 23, 1930. He was born July 2, 1857, and was educated at Queen's Colleges in Galway and in Belfast, later attending Cambridge University and Royal University, Ireland. After medical training in Edinburgh, he became attached as a medical officer to the Chinese Imperial Maritime Customs. In 1882 he was appointed medical officer to the customs station at Ichang on the Yangtze and, during his seven years there, he began a study of the flora of China, at first for its medicinal possibilities. He introduced to the western world the *Lilium Henryi* and, from central and western China, he sent to Kew, England, dried plants of a new flora.

Included in collections from the Chinese province of Hupeh in 1888 were 500 new species of plants and 20 new genera. In Hupeh he discovered the flowering tree *Davidia*. As medical officer on the island of Formosa (then a possession of China and at Mengtze and Ssemao, he made further botanical discoveries, later publishing a first account of the flora of Formosa. On his return to Ireland in 1900, he began the study of forestry, entering the French Forestry School at Nancy (1902-03). During 1907-13 he was reader in forestry at the University of Cambridge, from 1913 to 1926, professor of forestry in the College of Science at Dublin, and, after 1926, professor at University College in Dublin. During these years, he wrote with H. J. Elwes, *The Trees of Great Britain and Ireland* (published in parts between 1906 and 1913) and made frequent contributions to scientific publications, especially to the *Kew Bulletin*.

Henshaw, Henry Wetherbee.

Herschel, Clemens.

Hill, Frederick Trevor.

Hofstede de Groot, Cornelius.

Holgate, Henry. A Canadian engineer, died in Montreal, Jan. 22, 1930. He was born in Milton, Ont., Sept. 14, 1863, and was educated in the Toronto schools. Apprenticed to the Northern Railway of Canada in 1878, he remained there until 1894, engaged at first in railway construction and maintenance and, later, in bridge and structural designing. Entering the service of the Royal Electric Company of Montreal in 1894, he built and operated the Montreal Park and Island Railway. He went in 1898 to the West Indies as manager of the West India Company in Jamaica, building and operating the Hydro-Electric Tramway System in Kingston. On his return to Montreal in 1901, he formed a partnership with Robert A. Ross and, until 1911, the firm was engaged chiefly in constructing hydro-electric plants. Mr. Holgate was appointed by the Dominion Government to investigate some matters in connection with the Trent Valley Canal in 1906 and to act as chairman of a commission to report on the collapse of the Quebec Bridge in 1907. After 1911, he was president of the Cedar Rapids Power Company and was later consulting engineer for the company.

Hollis, Ira Nelson.

Holm, Frits (Vilhelm).

Holman, Alfred. An American editor, died in Bolinas, Calif., Dec. 14, 1930. He was born in Yamhill Co., Ore., July 6, 1857, and for more than 50 years was prominent in journalism on the Pacific Coast. He was reporter and assistant editor on the *Portland Oregonian* (1877-88) and editor of the *Seattle Post Intelligencer* (1888-91). In 1891 he became editor of the *Pacific Rural Press*, San Francisco, and later of the *San José Mercury* (1898-1901), of the *Sacramento Union* (1903-06), and of the *San Francisco Argonaut* (1907-24).

Holmes, Robert. A Canadian painter, died in Toronto, Ont., May 14, 1930. He was born in Cannington, Ont., in 1861, and attended the Port Perry and Hamilton Collegiate Institute, the Toronto School of Art, and the Royal College of Art in London. He was the foremost painter of Canadian flora, his work being noted for its careful detail. At the time of his death he was librarian and lecturer on the history of art at the Ontario College of Art in Toronto. He was president of the Toronto Art League during 1891-94, of the Graphic Arts Club during 1909-11, and of the Ontario Society of Artists during 1919-24. He was elected a member of the Royal Cambrian Academy in 1920.

Howard, James E.

Howse, Sir Neville Reginald.

Hoy, Col. Sir William Wilson. A railway official in South Africa, where he died Feb. 12, 1930. He was born in Kinross, Scotland, Mar. 11, 1868, and at the age of 12 (1880), entered the service of the North British Railway in Edinburgh. In 1889 he went to South Africa as a clerk in the Cape Government Railway Service, becoming assistant traffic manager in Bulawayo (1897-98), in Kimberley (1898), and in Port Elizabeth (1899). During the South African War (1900-02), he was traffic manager at Bloemfontein, with control of the Imperial Military Railways. On the transfer of the railways to civil administration, he became chief traffic manager in Johannesburg for the Central South African Railways and represented them at the International Railway Congress held in Washington, D. C., in 1905; he was assistant general manager in 1909. In the World War, he was director of military railways with the rank of Colonel, and was knighted in 1916. From 1910 to 1927, with the exception of the World War period, he was general manager of railways and harbors of South Africa and, after 1928, chairman of the Rhodesian Railway Commission. He was active in promoting railway electrification in South Africa.

Hughes, Hector James. An American civil engineer and educator, died in Cambridge, Mass., Mar. 1, 1930. He

was born in Centralia, Pa., Oct. 28, 1871. He was graduated from Harvard College in 1894 and later studied at the Lawrence Scientific School of Harvard University, from which he was graduated in 1899. From 1899 to 1902, he was successively assistant engineer of maintenance and resident engineer in charge of construction in Iowa for the Chicago, Burlington & Quincy Railroad. After serving for a few months as designer for the American Bridge Company, he returned to Harvard, in 1902, as instructor in civil engineering. He became assistant professor in 1903, associate professor in 1913, full professor in 1914, and dean of the engineering school in 1920. During 1914-18 he was also professor of civil engineering at the Massachusetts Institute of Technology. He was successful in broadening the scope of the Harvard engineering school, adopting "the industrial plan" whereby students in their junior year might spend a portion of their time working in engineering and industrial plants. In addition to a number of technical articles he was the author of *A Treatise on Hydraulics* (with A. T. Safford, 1911); *Roads and Toll Roads in America* (1913); and *Highway Engineering Education* (1914-27).

Hunt, Theodore Whitefield. An American educator, died in Princeton, N. J., Apr. 12, 1930. He was born in Metuchen, N. J., Feb. 19, 1844, and was graduated from Princeton University in 1865 and from the Princeton Theological Seminary in 1869. From 1868 to 1871 he was a tutor at Princeton, and during the next two years studied at the University of Berlin. On returning to the United States in 1873, he was appointed adjunct professor of rhetoric and English language at Princeton, becoming full professor of English language and literature in 1881 and professor emeritus in 1918. He also was ordained to the Presbyterian ministry in 1878. His works include: *Principles of Written Discourse* (1884); *English Prose and Prose Writers* (1887); *Studies in Literature and Style* (1890); *Ethical Teachings in Old English Literature* (1894); *American Meditative Lyrics* (1896); *English Meditative Lyrics* (1899); *Literature, Its Principles and Problems* (1906); *English Literary Miscellany* (1914); and *Timely Topics* (1921).

Huntington, William Edwards.

Hurlbut, Jesse Lyman. An American clergyman, died in Bloomfield, N. J., Aug. 2, 1930. He was born in New York City, Feb. 15, 1843, and was graduated from Wesleyan University in 1864. On ordination to the Methodist Episcopal ministry the following year, he successively held charges in Newark, N. J. (1865-67); Montclair, N. J. (1867-69); Paterson, N. J. (1869-72); West New Brighton, Staten Island, N. Y. (1872-74); Plainfield, N. J. (1874-77); and Hoboken, N. J. (1877-79). After 1879 he was connected with the Sunday School and tract work of his denomination, acting as general agent of the Sunday School Union (1879-84), assistant editor of publications (1884-88), and editor and secretary of the Sunday School Union and Tract Society (1888-1900). He was secretary of the Epworth League in 1889-92, and for some time was associated with Dr. J. H. Vincent in the direction of the Chautauqua Literary and Scientific Circle. In 1901 he resumed his pastoral work, being located in Morristown, N. J. (1901-04); South Orange, N. J. (1904-05); and Bloomfield, N. J. (1906-09). From 1909 to 1914 he was superintendent of the Newark district, and from 1914 until his retirement in 1918, director of the Biblical Institute of Newark. Among his works are: *Manual of Biblical Geography* (1885); *Studies in the Four Gospels* (1888); *Studies in Old Testament History* (1892); *Revised Normal Lessons* (1895); *Our Church* (1899); *Hurlbut's Story of the Bible* (1901); *Sunday Half Hours with the Great Preachers* (1905); *Handy Bible Encyclopædia* (1906); *Teacher Training Lessons* (1908); *Organizing and Building Up the Sunday School* (1909); *Hurlbut's Story of Jesus* (1915); *Story of the Christian Church* (1918); and *The Story of Chautauqua* (1921).

Huston, Abraham Francis. An American steel manufacturer, died Jan. 12, 1930, in Coatesville, Pa., where he was born July 7, 1852. After graduation from Haverford College in 1872, he entered the Lukens Ironworks, and in 1882 succeeded his father as manager of the foundry, which in 1890 was incorporated under the name, Lukens Iron & Steel Co. Becoming president of the company in 1897, he retained that office when the Lukens Steel Company was formed in 1917. In 1925 he retired from the presidency, but remained chairman of the board of directors until his death.

Hutchins, Harry Burns.

Huyck, Edmund Niles. An American manufacturer, died July 15, 1930, in Rensselaerville, N. Y., where he was born May 17, 1866. On graduation from Williams College in 1888, he entered his father's business, the name of the firm being changed a few years later to F. C. Huyck & Sons. At the time of his death he was president of this firm, which was one of the largest in the United States making paper manufacturers' felts,

and was also president of the Kenwood Mills, Ltd., in Arnprior, Ont., Canada. In 1914 he was a member of the New York State Housing Commission for Second Class Cities, and in 1918 was appointed a member of the felt section of the War Industries Board. He also served for several years as advisory commissioner to the New York State Fund for Compensation Insurance. He was the author of *Establishment Funds and Universal Health Insurance* (1916); *Industrial Medicine and Health Insurance* (1922); and *Elimination of Preventable Sickness* (1922).

Hyatt, Brig.-Gen. Charles Eliot. An American educator and president of the Pennsylvania Military College, died in Chester, Pa., Apr. 9, 1930. He was born in Wilmington, Del., Nov. 27, 1851, and was graduated from the Pennsylvania Military College in 1872 with the degree of C.E. From 1872 to 1888 he was an instructor at this institution, succeeding to the presidency upon the death of his father in the latter year. He was brevetted a brigadier-general in the National Guard of Pennsylvania in 1923.

Ibsen, Sigurd.

Irvine, Julia Josephine (Thomas).

Jaccaci, August F. An American artist, died in Châteaufort-de-grasse, France, July 22, 1930. Born in Fontainebleau, France, Jan. 28, 1856, he migrated in the '80s to the United States where he remained 80 years, becoming a citizen. He was successively art editor of McClure's and Scribner's magazines and became a decorative artist. His most important murals are those in the Capitol at St. Paul, Minn. During the World War he established the Society for the Protection of Children of the Frontier, which aided Flemish and French orphans.

Jewett, Henry.

Jhering, Hermann von.

Johnson, Clarke Howard. An American jurist, died Sept. 14, 1930, in Foster, R. I., where he was born Nov. 18, 1851. He was graduated from Brown University in 1877 and was admitted to the bar two years later, practicing in Providence. He was a member of the House of Representatives of the Rhode Island Legislature during 1879-80 and 1899-1903 and served as clerk of the House during 1881-86. From 1886 to 1903 he was a justice of the District Court of the 8th Judicial District of Rhode Island, and in 1903 was elected an associate justice of the Rhode Island Supreme Court. He became chief justice of the Supreme Court in 1913, holding this office until his retirement in 1917.

Jones, John Carleton. An American educator and former president of the University of Missouri, died in Daytona, Fla., Apr. 22, 1930. He was born near Sharpsburg, Ky., July 30, 1856. On graduation from Westminster College in 1879, he taught Latin for three years at that institution and received the M.A. degree in 1882. After a year of graduate study at Johns Hopkins University, he joined the faculty of the University of Missouri, serving as assistant professor of Latin and Greek from 1883 to 1887, as associate professor of Latin from 1887 to 1891, and as professor of Latin from 1891 to 1922. He also was appointed dean of the College of Arts and Science in 1900 and served as acting president on two occasions, during 1905-06 and in 1921. In 1923 he was elected president of the University of Missouri but held this office only a year, retiring in 1923 with the title of president emeritus. On his retirement he directed a campaign among the alumni of the university for funds to build a Memorial Union and Stadium. The Ph.D. degree was conferred on him by Westminster College in 1891 and the LL.D. degree by the University of Missouri in 1908 and Washington University in 1923. He was a contributor to the *Classical Review* and other philological and educational journals.

Jones, Mary Harris ("Mother").

Junkersfeld, Peter. An American engineer, died in Scarsdale, N. Y., Mar. 18, 1930. He was born in Campaign County, Ill., Oct. 17, 1869, and was graduated from the University of Illinois in 1895. From 1895 to 1909, he was in charge, first, of the engineering department of the Chicago Edison Company and, later, of its successor, the Commonwealth Edison Company. He was assistant to the vice-president of the company during 1909-17 and in 1916 was elected president of the Association of Edison Illuminating Companies. In 1917-19 serving in the U. S. Army he was supervising officer of cantonment and other war construction headquarters in Washington, D. C., where he was promoted to the rank of colonel and awarded the Distinguished Service Medal. He was engineering manager for Stone & Webster in New York City in 1919-22, resigning to become a member of McClellan & Junkersfeld, Inc., engineers and constructors. In 1928 that firm was incorporated with the division of construction and engineering of Stone & Webster, and Mr. Junkersfeld accepted the position of vice-president of the Stone & Webster Engineering Corporation.

Keith-Falconer, Sir Algernon Hawkins Thomond, Tenth Earl of Kintore. An English political leader, died in London, Mar. 3, 1930. He was born in Edinburgh, Aug. 12, 1852, and was educated at Eton and at Trinity College, Cambridge University. In 1880 he succeeded to his father's title, and in 1885 became the first government whip in the House of Lords. Lord Kintore was lord-in-waiting in 1885-86 and again from 1895 to 1905. He was aide-de-camp both to King Edward and to King George. When captain of the Yeomen of the Guard (1886-89), he resigned on his appointment as governor and commander-in-chief of South Australia. Lord Kintore supported the Unionist party and, in 1913, became deputy speaker of the House of Lords.

Kelsey, Clarence Hill. An American banker, died in West Orange, N. J., Apr. 30, 1930. He was born in Bridgeport, Conn., Dec. 23, 1856, and was graduated from Yale University in 1878. On receiving a degree from the Hamilton Law School in 1880, he was admitted to the New York bar and practiced law in New York City until 1883. In that year he entered the Title Guarantee & Trust Co. as office manager, becoming later secretary, vice-president, president, and, after 1923, chairman of the board of directors. He was also chairman of the board of directors for the Bond & Mortgage Guarantee Co. and a director in a number of other banking and insurance companies.

Kenny, Courtney Stanhope. An English jurist, died in Cambridge, Mar. 18, 1930. He was born in Halifax, Yorkshire, Mar. 18, 1847, and was educated at Downing College, Cambridge University. During 1882-86 he was a lecturer in law at Trinity College, Cambridge, and became university reader in English law at Cambridge in 1888, Downing professor of the laws of England in 1907, and emeritus professor in 1918; he was also a fellow of Downing College from 1885 to 1907 and was reelected in 1918. In 1885-86 he was a member of Parliament for the Barnsley Division of Yorkshire. He is best known for his lectures and books on criminal law. His works include: *History of Primogeniture; Law of Married Women; Endowed Charities; Outlines of Criminal Law* (13th ed., 1929); *Criminal Cases; Law of Torts; Contract Cases; Parliamentary Logic* (edited).

Kinkaid, Edgar Benton. An American jurist and educator, died in Atlanta, Ga., Apr. 9, 1930. He was born in Beverly, Washington County, Ohio, Mar. 14, 1862, and attended Marietta College during 1880-82. He was admitted to the bar in 1889, and became professor of law at Ohio State University in 1895. During 1897-98 he was special counsel representing the State of Ohio in important anti-trust litigation brought against the Standard Oil Company. He later served as judge of the Court of Common Pleas of Franklin County, Ohio, during 1909-15. He was an authority on pleadings, his works including: *Code Pleading*, 1895, 1898; *Kinkaid's Common Law Pleading; Kinkaid's Instructions to Jury and Judgment Entries; Probate Law and Practice; Kinkaid's Practice; Kinkaid on Torts; and Kinkaid's Jurisprudence Law and Ethics*.

Kintore, Earl of. See Keith-Falconer, Sir Algernon Hawkins Thomond, Tenth Earl of Kintore.

Kirby-Lunn, Louise.

Klotz, Lucien Louis. A French lawyer and statesman, died June 15, 1930, in Paris where in was born in 1868. Entering Parliament as Deputy for the Somme, he became Minister of Finance in the Briand Cabinet of 1910 and held the same portfolio during two other terms, concluding with the important period from 1917 to 1920 in Clémenceau's Cabinet. In 1928, while a member of the Senate, he was accused of fraud in issuing checks on banks in which he had insufficient funds. He was sentenced to two years' imprisonment but was released as a first offender after serving only two months.

Knight, John Thornton. Brigadier general, U. S. Army, retired, died in San Francisco, Calif., Jan. 15, 1930. He was born in Prince Edward County, Va., Apr. 18, 1861, and was graduated from the U. S. Military Academy in 1884 and commissioned second lieutenant in the 3d Cavalry. He was promoted through the grades reaching that of brigadier general in 1923. General Knight's service included a detail to the Virginia National Guard (1894-96); chief quartermaster in the Department of Santiago (1898-99) and in the Philippines (1899-1900); duty in the office of the Quartermaster-General in Washington, D. C. (1906-08 and 1910-12); detail to the General Staff (1908-10); service as quartermaster at the Port of Embarkation in Newport News, Va. (1917-18) and in France at Brest, Tours, and Paris (1918-19); and chief of construction service in the office of the Quartermaster-General in Washington, D. C. (1923-25). He was retired in 1925.

Komura, Kin-ichi, Second Marquis.

Köster, Adolph. A German statesman and author, died in Belgrade, Yugoslavia, Feb. 18, 1930. He was born in Verden, Hanover, Germany, Mar. 8, 1883, and at-

tended the Universities of Heidelberg, Halle, Marburg, and Zurich. Before the War he was a lecturer at the Technical University in Munich. He began his political career in 1920 as Minister of Foreign Affairs in the cabinet of Chancellor Müller. The following year he was asked by Chancellor Wirth to be Minister of the Interior. In 1923 he was sent to Latvia as German Chargé d'Affaires, and in 1928 was appointed Minister to Yugoslavia. He was the author of several novels, chief of which are: *Die zehn Schornsteine* (1909) and *Die bange Nacht* (1913).

Kriehoff, William George. An American painter, died Apr. 20, 1930, in Philadelphia, Pa., where he was born Aug. 31, 1875. He studied under William Chase in New York, specializing in portraits. Among the prominent persons whom he painted were William Howard Taft, Col. Charles A. Lindbergh, and Eva Le Gallienne. He also gained recognition through his imaginative landscapes, in which mood predominated over shape and contour. Typical of these are: "Solitude"; "Golden Rocks"; "In Arcady"; "Reflected Gold"; "Mysterious Night"; "October Mist"; and "Dreamworld."

Kumm, H. Karl William. An American explorer and geographical research worker, died in San Diego, Calif., Aug. 22, 1930. He was born in Hanover, Germany, Oct. 19, 1874, and attended Harley College, London, and the Universities of Heidelberg, Jena, and Freiburg, receiving his Ph.D. degree from the latter institution in 1903. Most of his explorations were in Africa, where he was the first white man to traverse the north-central African divide between Congo Shari and the Nile. He was founder and director of the Board for Medical Education and Research in Africa and also of the Sudan United Mission, in which 22 denominations cooperated. Under his direction missions, schools, and hospitals were established in central Africa. Following the World War, he made maps of African territories for the Paris Peace Conference. His works include: *Tribes of the Nile Valley* (1901); *Political Economy of Nubia* (1903); *The Sudan* (1907); *From Haussaland to Egypt* (1910); *The Lands of Ethiopia* (1910); and *African Missionary Heroes and Heroines* (1917).

Ladd-Franklin, Christine.

Laffeur, Eugene.

Lambert, George Washington.

Lane, Victor Hugo. An American educator and jurist, died in Ann Arbor, Mich., Jan. 24, 1930. He was born in Geneva, Ohio, May 27, 1852, and was graduated from the University of Michigan in 1874 with the degree of C.E. He decided that the law had a greater appeal to him as a profession, returned to the university, and was graduated in 1878 with the degree of J.L.B. He was admitted to the bar immediately upon graduation and began his practice in Hudson, Mich. In 1884 he moved to Adrian where four years later he became judge of the first judicial court of Michigan, comprising Lenawee and Hillsdale Counties. In 1897 he became Fletcher professor of law at the University of Michigan. One of his outstanding contributions to his alma mater was as president of the general alumni association, from 1901 to 1923. He retired from active teaching in 1927. He was the editor of Cooley's *Constitutional Limitations* (1903) and Tiffany's *Justice Guide* (1905).

Lange, Helene. A German feminist and educator, died in Berlin, May 13, 1930. She was born in Oldenburg, Apr. 9, 1848. In 1888 she became principal of the *Realkurse* for women in Berlin, which in 1893 was recognized as a *Gymnastik-Kurse*, or college for women. In 1889 she founded, with Auguste Schmidt and Marie Loeper-Housselle, the *Allgemeinen Deutschen Lehrerinnenverein* and headed the movement for the admission of women students to German universities. She also served as president of the *Allgemeinen Deutschen Frauenvereins* and was a director of the International Council of Women, devoting her energies in both these movements to securing political suffrage for women. Her works include: *Die höhere Mädchenschule und ihre Bestimmung* (1887); *Frauenbildung* (1889); *Entwicklung und Stand des höheren Mädchenschulwesens in Deutschland* (1893); *Die Frauenbewegung in ihren gegenwärtigen Problemen* (1915); and *Lebenserinnerungen* (1921). She edited the monthly journal, *Die Frau*, from 1893 until her death.

Larkin, Peter Charles.

Larrazola, Octaviano Ambrosio. A former governor and senator of New Mexico, died in Albuquerque, N. Mex., Apr. 7, 1930. Born in Allendale, State of Chihuahua, Mexico, Dec. 7, 1859, he went to the United States in 1870 under the protection of the Rt. Rev. J. B. Salpointe, Bishop of Arizona. He was a student at St. Michael's College in Santa Fé, N. Mex., in 1875-76 and taught in the public school at San Elizario, Texas, from 1878 to 1884. In 1885 he was appointed clerk for the U. S. District and Circuit Courts for the western district of Texas and, in 1886, clerk of the district court at El Paso, Texas, to which he was reelected in 1888. Admitted to the bar in 1888, he became district attorney

for the western district of Texas in 1890 and was re-elected in 1892 for a two year term. From 1919 to 1921, he was governor of New Mexico and in 1928 was elected to fill the unexpired term of Andrieus A. Jones, United States Senator, ending Mar. 4, 1929.

Latham, Third Earl of. See Wilbraham, Edward William Boote.

Lawrence, Aubrey Trevor. An English jurist, died in London, Mar. 23, 1930. Born in 1875, he was educated at Christ Church, Oxford, and in 1899 became a barrister-at-law. He was chancellor of seven dioceses, which included Sheffield (after 1914), Worcester (after 1920), Peterborough and Southwell (after 1922), Winchester (after 1924), and Leicester and Portsmouth (after 1927). He was on the staff of the Ministry of Munitions during 1915-19, honorary secretary of Lord Cave's Commission on the Property and Revenue of the Church in 1921-24, and a member of the House of Laity in the Church Assembly of 1925. He edited *Cripps on the Law of Church and Clergy and Cripps on Compensation*. In 1927 he was made a King's Counsel.

Lawrence, David Herbert.

Le Coo, Albert August von.

Lee, Jennie. An English actress, died May 3, 1930, at the age of 72, in London, her birthplace. She was married to J. P. Burnett, playwright and actor. Her first London appearance was in the rôle of Henry in Herve's comic opera *Chilperic* in 1870. She played with Mrs. Swansborough in *Pilgrim of Love*, *Orpheus* and *Eurydice*, *Edy O'Connor*, *Richard Cœur de Lion*, and *The Idle Prentice*. With E. A. Sothern, she went to America to play Mary Meredith in *Our American Cousin*. She first appeared in her most famous rôle, that of Jo in an adaptation of Dickens's *Bleak House*, at San Francisco in 1875 and, for 20 years of her career, played it all over the world. Her other rôles include Mrs. James Blackwood in *The Chetwynd Affair* (1904); Mrs. Bedwin in *Oliver Twist* (1905); and Mistress Quickly in *The Merry Wives of Windsor* (1906).

Leonard, Reuben Wells. A Canadian engineer, died in St. Catharines, Ont., Dec. 17, 1930. He was born in Brantford, Ont., Feb. 21, 1860, and from 1883 to 1901 was engaged in railroad engineering, chiefly with the Canadian Pacific Railway. He then became interested in hydro-electric development, and in 1906 became promoter and president of the Coniagas Mines, Ltd., one of the richest silver mines in the Cobalt (Ont.) area, and in 1918 of Electric Steel and Engineering, Ltd., in Welland, Ont.

Leonard, The Rt. Rev. William Andrew.

Leopold, Maximilian Joseph Maria Arnulf, Prince of Bavaria.

Lewis, Arthur.

Lissner, Moyer. An American lawyer and civic reformer, died in Los Angeles, Calif., July 29, 1930. He was born in San Francisco, Calif., June 16, 1871, and on completing the course at the Los Angeles Law School was admitted to the bar in 1899, practicing in Los Angeles. He was an effective organizer of good-government movements and an ardent supporter of the Republican and Progressive parties. Among the organizations which he founded were: the Non-Partisan City Central Committee (1906); the Lincoln-Roosevelt Republican League in California (1907); and the Good Government Organization and Good Government Fund (1909). During 1910-11 he was chairman of the California Republican State Central Committee, resigning that office in 1912 to become California chairman of the Roosevelt campaign. He was also a member from 1912 to 1916 of the executive body of the Progressive National Committee. His other activities included the presidency of the Board of Public Utilities of the City of Los Angeles (1909-11) and membership on the California Industrial Accident Commission (1915-19 and 1928-30) and on the U. S. Shipping Board (1921-25). During 1914-17 he edited the *California Outlook*.

Locke, William John.

Logan, James Addison, Jr.

Longman, Thomas Norton. A British publisher, died in King's Langley, Hertfordshire, Nov. 2, 1930. Born in 1849, he was the fifth Thomas Longman in succession to head London's oldest book firm, Longmans, Green & Co.

Lord, Daniel M. An American advertising pioneer, died in New York City May 27, 1930. He was born in Newton Corner, Mass., Sept. 29, 1844. On going to Chicago in 1868, he became associated in an advertising capacity with the *Presbyterian Interior*. A few years later he established, with A. L. Thomas, the advertising agency of Lord and Thomas, which became a leader in the Middle West. Mr. Lord was a staunch upholder of the ethics of advertising, and through his example helped to place the new profession on a higher plane. He retired in 1904.

Lord, Herbert Gardiner.

Lord, Herbert Mathew.

Loring, William Caleb.

Love, Robertus. An American journalist, died in St. Louis, Mo., May 7, 1930. Born near Irontdale, Mo., Jan. 6, 1867, he was graduated from McCune College in 1884 and attended Lincoln University the following year. After graduation he became local editor for the Louisiana (Mo.) *Press* in 1886. In the early years of his work, Mr. Love was editor of the *Daily Press* of Asbury Park, N. J. (1892-95), coast correspondent for the New York *Sun* (1895), staff writer for the St. Louis *Post-Dispatch* (1900-08), editor of the General Press Bureau of the St. Louis Exposition (1903-04) and managing editor of the bureau for the Lewis Clark Exposition (1905). He was on the editorial staff of the St. Louis *Post-Dispatch* in 1911-13 and special feature and humorous writer for the St. Louis *Republic* in 1913-16. After 1922, he was on the editorial staff of the *Post-Dispatch* and, after 1926, of the *Globe-Democrat* in St. Louis, becoming literary editor of the latter paper in 1928. He was the author of *Poems All the Way from Pike* (1904) and *The Rise and Fall of Jesse James* (1925).

Lugon, Louis Henri Joseph, Cardinal.

Lynch, James Mathew.

Lynde, Lind, Francis. An American author, died in Chattanooga, Tenn., May 16, 1930. He was born in Lewiston, N. Y., Nov. 12, 1856, and received an academy education. Until 1893 he was employed with various railroads, after which he turned to writing novels and short stories. His books include: *A Romance in Transit* (1898); *The Helpers* (1899); *The Grafters* (1904); *The Quickening* (1906); *Empire Builders* (1907); *The Taming of Red Butte Western* (1910); *The Price* (1911); *The Honorable Senator Sage-Brush* (1913); *The City of Numbered Days* (1914); *After the Manner of Men* (1916); *David Vallory* (1919); *The Wreckers* (1920); *The Girl, a Horse and a Dog* (1920); *Pirates' Hope* (1922); *The Fight on the Standing Stone* (1925); *The Tenderfoot* (1926); *The Flight of the Gray Goose* (1927).

McAdoo, William. An American judge, died in New York City, June 7, 1930. Born in Rathmelton, County Donegal, Ireland, Oct. 25, 1853, he went to the United States as a child. He was educated in the public schools of Hudson County, N. J., and, at the age of 20, began the study of law in Jersey City, working at the same time as reporter for a local newspaper. On being admitted to the New Jersey bar, he was appointed attorney for the Hudson County (N. J.) Board of Health. From 1883 to 1891, he was a member of Congress for the Seventh District, N. J. He was assistant secretary of the U. S. Navy during 1893-97, after which he went to New York City to practice law. In 1904-05 he was police commissioner for New York City and, after 1910, chief city magistrate. He wrote *Guarding a Great City* (1906) and *When the Court Takes a Recess* (1924).

McBride, Thomas Allen. An American jurist, died in Salem, Ore., Sept. 9, 1930. He was born in Yamhill County, Ore., Nov. 15, 1847, and attended McMinnville College. On being admitted to the bar in 1870, he practiced for several years in Lafayette, Ore. He was elected to the Oregon House of Representatives in 1877, and was district attorney of the 5th Judicial District of Oregon from 1882 to 1892. He then became circuit judge of the same district, serving until 1909 when he was appointed an associate justice of the Supreme Court of Oregon. At the time of his death he was chief justice of the Supreme Court.

McClintock, William E. An American engineer, died in Chelsea, Mass., Mar. 2, 1930, at the age of 81. From 1867 to 1876, he surveyed many of the principal harbors of the Atlantic coast, while connected with the U. S. Coast Survey. He was city engineer of Chelsea, Mass., during 1880-90, and in 1892 was appointed highway commissioner for Massachusetts. After the fire which almost destroyed Chelsea in 1908, Mr. McClintock was appointed chairman of the board of control to conduct the government of the city during the period of reconstruction and to direct the rebuilding of the burned areas.

McCormick, Sir William Symington. A Scottish publisher and educator, died in Barcelona, Spain, Mar. 22, 1930. He was born in Dumfries, Scotland, Apr. 29, 1859, and was educated at the universities of Glasgow, Göttingen, and Marburg. He was assistant to the professor of English in Glasgow University, English lecturer in Queen Margaret College, Glasgow, and professor of English at University College, St. Andrews University, in Dundee. At one time, Sir William was secretary to the Carnegie Trust for the Universities of Scotland and, at his death, was chairman of the University Grants Committee. He was also chairman of the Advisory Council on Scientific and Industrial Research, organized in 1915 to give government assistance to scientific research for industrial purposes. He was a partner in the publishing firm of Wilson & McCormick in Glasgow. He was one of the editors of the *Globe*

edition of Chaucer's works and wrote *Lectures on Literature* and papers and essays on Chaucer and Middle English. In 1911 he was knighted.

MacDonell, Arthur Anthony.

McGonagle, William Albert. An American railway president, died in Duluth, Minn., Aug. 2, 1930. He was born in Conshohocken, Pa., Mar. 28, 1861. On graduating from the University of Pennsylvania in 1881, he entered the engineering department of the Northern Pacific Railway, being engaged as transitman in locating the Little Falls and Dakota branch of that railroad. The following year he began his long service with the Duluth and Iron Range Railway, acting as assistant engineer from 1882 to 1890, resident engineer and superintendent of bridges and buildings from 1890 to 1901, and assistant chief engineer during 1901-02. He then became associated with the Duluth, Missabe and Northern Railway, being appointed assistant to the president in 1902, 1st vice president and general manager in 1903, and president in 1909. Following the merger of the Duluth and Iron Range and Duluth, Missabe and Northern Railways in 1930, Mr. McGonagle continued as administrative head. He was president of the American Railway Bridge and Building Association in 1895, and in 1926 was elected to the Duluth Hall of Fame.

Mackay, John Yule.

McKenna, Charles Francis. An American chemical engineer, died Apr. 25, 1930, in New York City where he was born June 4, 1861. He was graduated from St. Francis Xavier College with the A.B. degree in 1879 and the M.A. degree in 1880, and from Columbia University with the Ph.B. degree in 1883. He was employed as chemist for various industrial companies from 1885 to 1893 and as director of the Laboratory of Physical Testing in New York City from 1893 to 1895. In 1895 he became associated with the Passaic Zinc Company as chemist, and two years later began practice as a consulting chemist, specializing in the qualities of materials. The Ph.D. degree was conferred on him by Columbia University in 1894. He was the chemist member of the Municipal Explosives Commission of New York City from 1902 to 1904 and was chiefly responsible for the regulations on the handling of explosives adopted in that city. He was also president of the Institute of Chemical Engineers in 1910, and in 1918 was chairman of the subcommittee on chemical engineering of the National Defense Council.

Mackenzie, Sir Thomas.

McLean, Walter. Rear admiral, U. S. N., retired, died in Annapolis, Md., Mar. 20, 1930. He was born in Elizabeth, N. J., July 30, 1855, and was graduated from the U. S. Naval Academy in 1876. He was promoted through the grades to rear admiral in 1914. He was in command of the fourth division of the Atlantic Fleet in 1914-15 and became commandant of the Navy Yard and Station in Norfolk, Va., and the Fifth Naval District the following year. In 1919 he was retired. He had an active part in the development of modern ordnance.

McRae, Milton A.

Macy, V(alentine) Everit. An American philanthropist, died near Phoenix, Ariz., Mar. 21, 1930. Born in New York City, Mar. 23, 1871, he was graduated from the School of Architecture at Columbia University in 1893, but did not practice the profession of architecture. He was a director in the Title Guarantee & Trust Co., the Seamen's Bank for Savings, and other corporations in New York City. During the World War, he was chairman of the Shipbuilding Adjustment Board and umpire to the War Labor Board. Mr. Macy's home was in Westchester County, N. Y., where his name is associated with the reforms which he made in the public institutions of the county. From 1914 to 1924, he was Superintendent of the Poor and Commissioner of Public Welfare in the county, during which time he built a model workhouse, hospital, and almshouse and secured the passage of a new poor law. He was a trustee of the Metropolitan Museum of Art and of Teachers College, Columbia University.

Magill, Robert. A Canadian educator and industrialist, died at Battle Creek, Mich., Jan. 15, 1930. Born in County Down, Ireland, he was educated at Queen's University in Belfast and the University of Jena, Germany, taking his Ph.D. degree. He was professor of philosophy at Halifax Presbyterian College in Nova Scotia during 1903-07 and principal in 1907-08. From 1908 to 1912, he was professor of philosophy in Dalhousie University, Nova Scotia. He served as chairman of the royal commission for the regulation of the hours of labor in Nova Scotia in 1908-09, chairman of the royal commission to investigate the grain elevators in Saskatchewan in 1910-11, and chairman of the conciliation board to settle the Port Morien coal mine disputes in 1911. He was chairman of the Board of Grain Commissioners for Canada in 1912-16 and was appointed chairman of the Board of Grain Supervisors for Canada in 1917. At the time of his death, he was secretary of the Grain Exchange of Winnipeg.

Magrath, John Richard. A British educator, died in Oxford, England, Aug. 1, 1930. He was born in the Isle of Guernsey, Jan. 29, 1839, and attended Elizabeth College, Guernsey, and Oriel College, Oxford. Elected a fellow of Queen's College, Oxford, in 1860, he served as tutor and dean (1864-77), bursar (1874-78), pro provost (1877), and provost (1878-1930). He was a member of the Hebdomadal Council of Oxford (administrative board) from 1878 to 1898 and again from 1902 to 1905, and chairman of the Oxford Local Board from 1882 to 1887. In 1894 he was chosen vice chancellor of the University of Oxford, holding that office until 1898. He was also curator of the university chest (1885-1908), delegate of the university press (1894-1920), and delegate of the university museum (1903-12). The M.A. degree was conferred on him by Durham University in recognition of his service as university commissioner during 1908-09, and the D.D. degree by Columbia University. His works include: *The Fall of the Republic of Florence* (Stanhope Prize Essay, 1860); *A Plea for the Study of Theology in the University of Oxford* (1868); *Papers on University Reform* (1877); chapter on "Queen's College" in *Clark's Colleges of Oxford* (1891); *The Plemings in Oxford* (3 vols., 1904, 1913, 1924); *The Obituary Book of Queen's College, Oxford* (1910); and *The Queen's College* (2 vols., 1921).

Mahon, Gen. Sir Bryan Thomas. An Irish soldier, died in Dublin Sept. 24, 1930. He was born in Belleville, County Galway, Apr. 2, 1862, and entered the British Army in 1883. During the Boer War he led the famous flying column which went to the relief of Sir Robert Baden-Powell in the siege of Mafeking in May, 1900. At the outbreak of the World War he was appointed general officer commanding the 10th (Irish) division, which he led during the Salonika campaign of 1915-16, and was commander-in-chief of Ireland during 1916-18. In 1922 he was elected a member of the senate of the Irish Free State Parliament.

Mains, George Preston. An American clergyman, died in Altadena, Calif., Sept. 6, 1930. He was born in Newport, N. Y., Aug. 7, 1844. During the Civil War he served in the North Atlantic squadron of the United States Navy under Admiral Porter. On graduating from Wesleyan University in 1870, he was ordained to the ministry of the Methodist Episcopal Church, holding pastorates until 1896 in Ansonia, New Haven, New Britain, Bristol, and Waterbury, Conn., and in Brooklyn and Mt. Vernon, N. Y. In 1884 he was presiding elder of the New York Eastern District, and from 1889 to 1897 secretary of the New York Eastern Conference. In 1896 he became a member of the board of managers of the Methodist Episcopal Missionary Society, treasurer of the Episcopal Fund, and publishing agent of the Methodist Episcopal Church, retiring in 1916. His writings include: *Life of Francis Asbury* (1909); *Modern Thought and Traditional Faith* (1911); *Some Moral Reasons for Belief in the Godhead of Jesus Christ* (1912); *Christianity and the New Age* (1914); *Divine Inspiration* (1915); *Religious Experience* (1917); *Premillennialism* (1919); *Life's Westward Windows* (1925); *Science, Christianity, and Youth* (1926); and *Mental Phases in a Spiritual Biography* (1928).

Malten (Müller), Therese.

Markham, Charles Henry. An American railway executive, died in Altadena, Calif., Nov. 24, 1930. He was born in Clarksville, Tenn., May 22, 1861, and began his railroad service as a section laborer on the Atchafalaya, Topeka & Santa Fe Railway in 1881. Advanced through the ranks, he became president of the Illinois Central Railroad in 1911 and chairman of the board in 1926. The principal feature which he inaugurated was the electrification of the railroad's suburban service in Chicago. He also acted as president of the Ocean Steamship Company and the Central of Georgia Railway Company, subsidiaries of the Illinois Central system, from 1911 to 1919 and as chairman of the board thereafter.

Markley, Joseph Lybrand. An American educator and mathematician, died in Ann Arbor, Mich., Apr. 20, 1930. He was born in East Nantmeal Township, Chester County, Pa., Oct. 6, 1859, and was graduated from the West Chester (Pa.) Normal school in 1881, completing the scientific course there two years later. He then entered Haverford College, receiving the B.A. degree in 1885 and M.A. in 1886. He pursued graduate studies at Harvard where he served as instructor in mathematics for a year, and then joined the faculty of the University of Michigan in a similar capacity. He was made assistant professor in 1895, junior professor in 1904, and professor in 1907. In 1922 he was appointed to the chairmanship of the mathematics department, from which position he retired in 1926, one year prior to his resignation. He was a contributor to various educational journals and was associate editor of the *Bulletin of the American Mathematical Society* in 1898.

Marshall, William. A British merchant sailor, commodore of the Royal Navy Reserve, retired, and com-

modore of the Fleet of the White Star Line, died in Southampton, England, May 28, 1930. He was born at Bolton in Lancashire, Apr. 10, 1873, and was educated there. He served for two years on H.M. school ship *Conway* in Liverpool, after which he was apprenticed on the White Star Line sailing ship *Copley*, cruising all over the world during 1891-94. In 1911 he was appointed to command in the White Star Line. Having been commissioned in the Royal Navy Reserve as sub-lieutenant in 1900, he was promoted to commander in 1914, captain in 1917, commodore in 1927, and the following year was retired from the Navy Reserve. He was placed in command of the S.S. *Majestic* in 1928 and was appointed commodore of the fleet of the White Star Line in January, 1930.

Marvel, Josiah, An American lawyer, died in Greenville, Del., Oct. 11, 1930. Born near Georgetown, Del., Jan. 18, 1866, he was admitted to the bar in 1894, practicing with his brother, D. D. Marvel, in Wilmington. The inheritance tax law and the child labor law of Delaware were drafted by Mr. Marvel, and he also supervised the drafting of the income tax law and the State highway law. He was elected president of the American Bar Association at its convention in Chicago Aug. 20-23, 1930.

Mather, Stephen Tyng.

Matheson, William John. An American chemist, died off the coast of Miami, Fla., May 15, 1930. Born in Elkhorn, Wis., in 1857, he attended St. Andrews University, Scotland, and in 1876, began working on the application of coal tar dyes. He later became an officer or director of many corporations. In his will he left a bequest of \$600,000 to promote a survey of epidemic encephalitis, or sleeping sickness.

Matthew, William Diller. An American paleontologist, died in San Francisco, Calif., Sept. 24, 1930. He was born in St. John, N. B., Canada, Feb. 19, 1871. Leaving Columbia University with the Ph.D. degree in 1895, he was appointed assistant in the American Museum of Natural History, New York City. After serving as assistant curator and curator he was appointed curator-in-chief in 1922. In 1927 he went to the University of California as professor of paleontology. He was an authority on prehistoric mammals.

Maus, Marion Perry. Brigadier-general, U. S. Army, retired, died in New Windsor, Md., Feb. 9, 1930. He was born in Montgomery Co., Md., Aug. 25, 1850, and was graduated from the U. S. Military Academy in 1874. Commissioned second lieutenant in the 1st Infantry in 1874, he was promoted through the grades to the rank of brigadier-general in 1909. General Maus was in many campaigns against the American Indians, including a battle with the Apache Indians in New Mexico in 1886, for which he was awarded the Congressional Medal of Honor for distinguished gallantry in action. In 1897 he accompanied General Miles to Greece to observe the war between Greece and Turkey and the same year he represented the United States Government at the Queen's Jubilee in England. He was an inspector-general in the Spanish-American War and was in the Philippine Islands during 1903-06. Following the earthquake of 1906, General Maus was on duty in San Francisco. He was retired in 1913.

May, Sir William Henry.

Malchett, Alfred Moritz Mond, First Baron.

Ménard, Émile René.

Menohor, Maj.-Gen. Charles Thomas, U. S. A., Ret. An American soldier, died in Washington, D. C., Aug. 11, 1930. He was born in Johnstown, Pa., Mar. 20, 1862, and was graduated from the U. S. Military Academy in 1886, the Artillery School in 1894, and the Army War College in 1907. Commissioned second lieutenant in 1886, he participated in both the Spanish-American War and the Philippine insurrection. From 1901 to 1903 he was commander of the 28th battery of the Field Artillery, and from 1903 to 1907 served on the General Staff. In 1907 he returned to Cuba as provost marshal and assistant to the chief of staff in the Army of Pacification. He commanded the 5th Field Artillery during 1916-17, and on the entrance of the United States into the World War was sent to France as commander of the school of instruction for field artillery in Saumur. He was later in command of the 42d (Rainbow) Division and of the 6th Army Corps, participating in the battles of Château-Thierry, St. Mihiel, and the Argonne. After the War he became director of the Army Air Service, but resigned in 1921 after a controversy with his assistant, Col. William Mitchell, then a brigadier-general, over fundamental air policies. He was commander of the Hawaiian Division during 1922-24, of the Hawaiian Department during 1924-25, and of the 9th Corps Area in 1925, retiring the following year. He received the Distinguished Service Medal in 1919, and was decorated by the governments of France, Belgium, and Italy.

Mercer, Henry Chapman.

Merritt, Anna Lea.

Merry del Val, Raphael, Cardinal.

Messmer, The Most Rev. Sebastian Gebhard,

Meyer, Eduard.

Milburn, John George.

Mistrangelo, Alfonso Maria, Cardinal. A prelate of the Roman Catholic Church, died in Florence, Italy, Nov. 7, 1930. Born in Savona Apr. 26, 1852, he became a member of the Piarist order in 1869, becoming 40 years later (1909) its superior. In 1899 he was made Archbishop of Florence and in 1915 was elevated to the rank of Cardinal.

Mitter, Sir Binod Chandra. An Indian jurist, died in London, England, July 20, 1930, at the age of 58. He had held high office in India for more than 25 years, serving as member of the council of the Governor of Bengal from 1910 to 1917 and as standing counsel to the Government of India from 1910 to 1916. In 1917 he was appointed advocate-general to the Government of Bengal, and in 1929 was chosen a member of the judicial committee of the Privy Council of Great Britain under an act empowering the appointment of two jurists of Indian experience. He was knighted in 1918.

Mocquereau, Dom Andre.

Mohler, Albert L.

Mohler, J(ohn) Frederick.

Moldenke, Richard (George Gottlob). An American metallurgist, died in Plainfield, N. J., Nov. 17, 1930. Born in Watertown, Wis., Nov. 1, 1864, he was graduated from Columbia University. As a metallurgist associated with the iron and steel industry he became an authority on cast iron. He was the author of *The Production of Malleable Castings* (1911) and *The Principles of Iron Founding* (1917).

Molyneux, Osbert Cecil. See Sefton, Osbert Cecil

Molyneux, Sixth Earl of.

Moore, Addison Webster.

Moore, Alexander Pollock.

Mostyn, Tom. A British painter, died in Crookham, Torquay, England, Aug. 22, 1930. He was born in Liverpool in 1864 and was educated in Manchester, later studying painting under Sir Hubert von Herkomer. His works are found in the permanent galleries of Manchester, Oldham, Newcastle, Cardiff, Bradford, Liverpool, Rochdale, and Birkenhead, the more important being: "Childhood"; "Miss Importance"; "Gethsemane"; "The Domain of Arnheim"; "The Garden of Enchantment"; and "The Garden of Peace." He was a member of the Royal Institute of Oil Painters and of the Royal West of England Academy.

Mouthon, François. A French publisher, died in Nice, Jan. 27, 1930. He was born in Savoy in 1869 and studied law at Lyons University. At the age of 20, he founded *La France Libre*, a newspaper later denounced for its extravagances. He joined the staff of the *Matin* in Paris and became political director of *Le Journal*. For the last 12 years of his life, he was chief director of the last-named paper.

Muirhead, David.

Munro, Kirk.

Munro, Neil.

Murphy, Dominic J. Former American consul general, died in Stockholm, Sweden, Apr. 13, 1930. He was born in Philadelphia, Pa., May 31, 1847. After studying law he entered the civil service in 1871, serving successively, until 1889, as clerk, supervising examiner, and chief clerk in the United States Pension Office. In 1893 he became first deputy commissioner of pensions, and in 1896 commissioner of pensions. He resumed his law study and practice the following year, and in 1903 became editor and publisher of the *New Century*, a weekly journal. During 1904-1905 he was also secretary of the Isthmian Canal Commission. He entered the consular service in 1905, serving as consul at Bordeaux, France, from 1905 to 1909; at St. Gall, Switzerland, from 1909 to 1914; and at Amsterdam, the Netherlands, during 1914-15. In 1915 he was advanced to the post of consul general at Sofia, Bulgaria, where on account of the severance of Bulgarian relations with Great Britain, he represented both American and British interests during 1916-18. He also was detailed to the London consulate general in 1915 for special duty as chief of the war claims department in charge of claims against the British Government. It was largely through his efforts that in September, 1918, the Bulgarian Government was induced to ask the Allies for a separate armistice, an act which marked the beginning of the end of the World War. In 1919 he was transferred to Stockholm, Sweden, where he served as American consul general until 1924.

Murray, Howard. A Canadian educator, died in Halifax, N. S., Sept. 9, 1930. He was born in New Glasgow, N. S., in 1859, and attended Dalhousie College and the Universities of London and Edinburgh. He became tutor in classics at Dalhousie University in 1887, lecturer in 1890, and dean in 1901. He also acted as classical master at Halifax Academy during 1889-94. From 1906 to 1920 he was a member of the Advisory Board of Education for Nova Scotia, and was chairman of the board from 1920 to 1926. He was also a member of the Royal Conservation Commission of Canada from 1909 to 1921, and was chairman of the Advisory Board

of the Royal Military College of Canada. The LL.D. degree was conferred on him by Toronto University in 1907. His publications include: *The Classics: Their Use, Present Position, and Future Prospects* (1894) and *Reform of the High School Course in Nova Scotia* (1906).

Nansen, Fridtjof.

Neibitt, Wallace. A Canadian lawyer, died in Toronto, Apr. 7, 1930. He was born near Woodstock, Ont., May 13, 1858, and was educated at Woodstock College and at Osgoode Hall in Toronto. He was called to the Ontario bar in 1881 and was created a King's Counsel in 1896. In 1903 he was appointed Judge of the Supreme Court of Canada, from which he resigned in 1905. He practiced for a time in Hamilton, Ont., and, prior to his death, was counsel of Osler, Hoskin & Harcourt, barristers and solicitors. In 1906 he was elected a Benchler. The major part of his practice in later years was before the Privy Council of England.

Neville, Maj.-Gen. Wendell Cushing, U.S.M.C.

Newhouse, Samuel. An American capitalist, died near Saint Cloud, France, Sept. 22, 1930. He was born in New York City, Oct. 14, 1853. On completing his high school education he read law in the office of Edward N. Willard in Scranton, Pa., and was admitted to the bar in 1880. He then removed to Leadville, Colo., where after engaging in the freighting business for several years he became interested in mining. He subsequently operated extensive holdings in Utah and was president of the Boston Consolidated Mining Company, the Newhouse Mines and Smelters, and the Nipissing Silver Mines Company. In 1891 he founded the Denver, Lakewood and Golden Railroad, of which he was president in 1894. He also financed the Newhouse tunnel between Idaho Springs and Central City, Colo.

Newton, Edwin Tulley. A British naturalist and paleontologist, died in London, Jan. 28, 1930. He was born in Islington, London, in May, 1840, and was educated at the Royal School of Mines under Thomas Iluxley. In 1865 he became associated with Huxley as assistant naturalist to the Geological Survey, and in 1882 was appointed paleontologist to the Geological Survey and the Museum of Practical Geology, a post which he held until his retirement in 1905. His most important researches were devoted to fossil vertebrates, including the Cretaceous fishes and vertebrate fauna of Great Britain. He was elected Fellow of the Geological Society in 1873, Fellow of the Zoological Society in 1885, and Fellow of the Royal Society in 1893. He was also president of the Geologists' Association, 1896-98, and of the Palaeontographical Society, 1921-28. His works include: *The Chimeroid Fishes of the Cretaceous Rocks* (1878); *Vertebrata of the Forest Bed Series of Norfolk and Suffolk* (1882); *Gigantic Species, a Description of Gastrolites from the Eocene to Oxydion* (1886); and *Vertebrata of the Pliocene Deposits of Britain* (1891).

Nicholls, Rhoda Holmes. An American artist, died in Stamford, Conn., Sept. 7, 1930. Born in Coventry, England, in 1854, she attended the Bloomsbury School of Art in London. On her marriage to Burr H. Nicholls, an American painter, in 1884 she came to the United States. She exhibited in Rome, Turin, Munich, London, and at the Chicago, Buffalo, and St. Louis expositions. Among her works are "The Scarlet Letter," "Those Evening Bells," and "Searching the Scriptures" in the Boston Art Club and "Prima Vera, Venezia" and "Water Lilies" in the Boston Museum of Fine Arts.

Nichols, William Henry.

Normand, Mabel.

Northumberland, Alan Ian Percy, Eighth Duke of. A British peer, died in London, Aug. 23, 1930. He was born Apr. 17, 1880. In 1900 he joined the Grenadier Guards and served in the Boer War during 1901-02. He also served in the Sudan in 1908 and in the World War during 1914-16, acting during the closing months of the War as liaison officer between the Military Intelligence and the press. On succeeding to the title in 1918 he became one of England's greatest land proprietors and coal-mine owners. He also was a leader of the Conservative party in the House of Lords, chairman of the board of directors of the London *Morning Post* (since 1926), and chancellor of Durham University (since 1929). Among the honors conferred on him were: Member of the Royal Victorian Order (1919); commander of the Order of the British Empire (1919); and knight of the Order of the Garter (1925). He was buried in Westminster Abbey in accordance with an honor accorded the Dukes of Northumberland since the time of Charles II.

Noyes, Guy Lincoln. An American educator, died in Columbia, Mo., Feb. 4, 1930. He was born in Boston, Mass., Aug. 6, 1872. On graduation from the University of Vermont in 1894, with the M.D. degree, he began the practice of medicine at Burlington, Vt. He also took graduate work in the medical schools of the University of Michigan (1901) and Harvard University (1907). In 1902 he was called to the University of Michigan as ophthalmic and aural surgery demonstrator. From 1902 to 1910, he held the professorship of diseases of the

eye and ear at the University of Missouri, and in 1913 became dean of the school of medicine. During 1917-18 he served as captain in the Medical Section of the Officers Reserve Corps, U. S. Army.

Ogilvie, Sir Francis Grant. A British scientist, died in Edinburgh Dec. 14, 1930. Born in Aberdeen Aug. 8, 1858, he attended the Universities of Edinburgh and Aberdeen, and in 1880 was appointed assistant professor of natural philosophy at the University of Aberdeen. After serving as director of the Edinburgh Museum of Science and Art from 1900 to 1903, he became assistant-secretary to the Board of Education, and in 1910 secretary of the Board of Education for the Science Museum and Geological Survey. The following year he also became director of the Science Museum, relinquishing these posts in 1920 to become principal assistant-secretary of the Department of Scientific and Industrial Research. From 1925 to 1929 he was a member of the Senate of the University of London.

Oku, Yasukata, Count.

Orton, William Allen. An American plant pathologist, died in Takoma Park, D. C., Jan. 7, 1930. He was born in North Fairfax, Va., Feb. 28, 1877, and was graduated from the University of Vermont in 1897, receiving an M.S. degree there the following year and an Sc.D. degree in 1915. In 1897-99 he was assistant botanist for the Vermont Agricultural Experiment Station and instructor at the University of Vermont. He became connected with the U. S. Department of Agriculture in 1899, first conducting research in the diseases of cotton, cowpeas, and watermelons in the Southern States and, in 1907, becoming director of the office of cotton, truck, and forage crop disease investigations in the Bureau of Plant Industry. From 1912 to 1924, he was also vice chairman of the Federal Horticultural Board. In 1924 he resigned from the Department of Agriculture to become, in the same year, scientific director and general manager of the Tropical Plant Research Foundation in Washington, D. C., organized by a committee from the National Research Council for the purpose of promoting the study of plants and crops of the tropics and their diseases. Dr. Orton was the author of more than 40 bulletins and circulars on plant pathology issued by the Department of Agriculture, the Tropical Plant Research Foundation, and scientific journals.

Overman, Lee Slater.

Overton, Grant (Martin).

Pansy. (See Alden, Isabella MacDonald.)

Parks, Rear Admiral Charles Wellman, U. S. N., Ret. An American naval officer and engineer, died in Washington, D. C., June 25, 1930. He was born in Woburn, Mass., Mar. 22, 1863. Graduating from Rensselaer Polytechnic Institute in 1884, he served for four years as chief engineer on the Denver, Memphis & Atlanta Railway and as electrical engineer with the Electrical Manufacturing Company of Troy, N. Y. In 1888 he became head of the department of physics at Rensselaer Polytechnic Institute, where he remained until 1897 when he was commissioned ensign in the Civil Engineer Corps of the U. S. Navy. Promoted through the grades, he became rear admiral in 1918 and retired in 1921. He served at the navy yards in New York, Boston, and Portsmouth and at the naval station in San Juan, Porto Rico. He was twice detailed to the naval station in Hawaii, where as public works officer during 1908-09 and 1915-17 he had supervision of the completion of the dry docks in Pearl Harbor. He was public works officer at the navy yard in Philadelphia during 1912-14, and in 1918 was appointed chief of the bureau of yards and docks of the Navy Department.

Parsons, Frank Alvah.

Partridge, Edward Lasell. An American physician, died in New York City, May 2, 1930. He was born in Auburndale, Mass., Sept. 27, 1853, and was graduated from the College of Physicians and Surgeons at Columbia University in 1875. In addition to his general and obstetrical practice he served for many years as visiting physician at the New York Maternity, Nursery and Child's, Sloane Maternity, and New York Hospitals, and after 1888 as consulting physician at the New York Hospital. He was likewise professor of obstetrics at the New York Post-Graduate Medical College during 1886-87; lecturer in the same subject at the College of Physicians and Surgeons during 1888-89; and adjunct professor at the College of Physicians and Surgeons during 1892-93. He was a pioneer in the movement which led to the development of the Highlands of the Hudson River as a State reservation and served as commissioner of the Palisades Interstate Park. He was also a commissioner of the Hudson-Fulton Celebration held in 1909. In 1884 he edited *A Practical Manual of Obstetrics* and *A Manual of Obstetrics for Students and Practitioners*.

Partridge, The Rt. Rev. Sidney Catlin.

Partridge, William Ordway.

Patterson, George Washington. An American educator died in Ann Arbor, Mich., May 22, 1930. He was

born in Corning, N. Y., Feb. 1, 1864, and was graduated from Yale in 1884 and from the Massachusetts Institute of Technology in 1887. After a year of study at the Harvard Law School he joined the faculty of the University of Michigan, serving as instructor, assistant professor, and junior professor, of physics from 1889 to 1901; as junior professor of electrical engineering from 1901 to 1905; as professor of electrical engineering from 1905 to 1915; and as professor of engineering mechanics from 1915 until his death. In 1922 he also was appointed assistant dean of the college of engineering. His publications include: *Industrial Photometry* (1891); *Electrical Measurements* (with Henry Smith Carhart, 1895); and *Resolving Vectors* (1911).

Patterson, Sir Reginald Stewart. A British government official, died in London Sept. 16, 1930. He was born in India, Feb. 8, 1878. After attending Marlborough College and Trinity College, Oxford, he entered the Ministry of Education of the Egyptian Civil Service in 1901. Transferred to the Ministry of Finance four years later, he became director general of State Accounts in 1915, adviser to the Ministry of Education in 1919, and financial adviser to the Egyptian Government in 1923, holding the latter post until his retirement in 1927. Among the honors conferred on him were: Commander of the Order of the British Empire (1922) and Knight Commander of the Order of the British Empire (1926).

Pearce, Richard Mills, Jr.

Pearse, Mark Guy.

Pepper, Charles Melville. An American journalist, died in New York City Nov. 4, 1930. He was born in Bloomfield, Ohio, Nov. 11, 1859, and was graduated from the University of Wooster in 1881. After serving as Washington correspondent for the *Chicago Tribune*, 1886-95, and as staff correspondent for the *New York Herald*, 1896-97, he was in Cuba as correspondent for leading American papers until 1901. In 1903 he was appointed special Pan-American Railway Commissioner. He served as foreign trade commissioner to the U. S. Department of Commerce and Labor from 1906 to 1909, and as foreign trade adviser to the Department of State from 1909 to 1913, acting in the latter position as one of the commissioners for the Canadian reciprocity agreement of 1911. He wrote: *Tomorrow in Cuba* (1899); *Panama to Patagonia* (1906); *The West in the Orient* (1908); and *American Foreign Trade* (1919).

Percy, Alan Ian. See Northumberland, Alan Ian Percy, Eighth Duke of.

Perosi, Carlo, Cardinal.

Perry, Henry Thomas. An American missionary educator, died March 29, 1930, in Ashfield, Mass., where he was born May 6, 1838. He was graduated from Williams College in 1862 and from the Auburn Theological Seminary in 1865, being appointed a missionary to Turkey by the American Board of Commissioners for Foreign Missions of the Congregational Church in the latter year. He was stationed first in Aintab in Asiatic Turkey, and later became an instructor in exegesis, the sacred canon, and homiletics at the theological seminary in Marash. In 1876 he was transferred to Sivas, where three years later he founded the Sivas Normal School and soon afterward organized a system of primary schools throughout the State of Pontus, largely taught by graduates of the normal school. The influence of this school was felt not only in raising the educational standards of the country but in molding the thought of a new Turkey. Dr. Perry also founded the Sivas Orphan Asylum to care for more than 800 children left destitute as a result of Armenian massacres in the Sivas region, and organized trade schools in which they were trained to become self-supporting. In addition to his educational work, he was actively engaged in evangelism throughout the fifty years that he was stationed in Turkey.

Phelan, James Duval.

Phipps, Henry.

Pollock, Sir Edward James. An English jurist, died in London, Apr. 15, 1930. He was born Feb. 1, 1841, and was educated at King's College, London University. Entering the medical profession, he became a fellow of the Royal College of Surgeons in 1868. He studied law and was called to the bar by the Inner Temple in 1872. Appointed one of the three official referees of the Supreme Court of Judicature in 1897, he served in that capacity until his retirement in 1927. He was knighted in 1922.

Pomare, Sir Maui. A British government official in New Zealand and descendant of Maori chieftains, died in Glendale, Calif., June 27, 1930. He was born in Pahou, Taranaki, in 1876 and studied at Te Aute College in Hawkes Bay and the medical school of Chicago University. On his return to New Zealand he served successively as Chief Health Officer to the Maoris; Minister for Cook and other islands, and Minister representing the Maori race in the colonial cabinet (1912-28); Minister of Health for New Zealand (1923-26); and Minister of International Affairs (1928). He was created a Companion of St. Michael and St. George in 1920 and a Knight Commander of the Order of the

British Empire in 1922. He published an account of his own people, entitled *The Maori, Past and Present*.

Porter, George Frederick. An American civil engineer, died Sept. 20, 1930, in Detroit, Mich., where he was born Oct. 7, 1862. After attending the public schools of Detroit he was engaged in 1885 by Mason L. Brown, Detroit civil engineer, as a general engineering assistant. In 1894 he became associated with the Detroit Bridge and Iron Works as a draftsman on general structural iron work, and later served in the same capacity with the Keystone Bridge Company of Pittsburgh, Pa. He was one of the organizers, in 1900, of the Canadian Bridge Company in Walkerville, Ont., which during the next decade became one of the leading bridge-building firms of Canada. In 1909, he joined the staff of the board of engineers appointed by the Canadian Government to design and supervise the construction across the St. Lawrence River, near Quebec, of the largest cantilever bridge in the world. The bridge, which replaced the one which collapsed while under construction in August, 1907, was erected by the St. Lawrence Bridge Company, Ltd., a corporation formed especially to carry out the project, with Mr. Porter acting as engineer of construction. On the completion of this task in 1917 he returned to the Canadian Bridge Company, becoming chief engineer in 1919. The LL.D. degree was conferred on him by McGill University in 1921.

Porto-Riche, Georges de.

Post, Melville Davison.

Powell, Alma Webster (Hall). An American singer, died in Mahwah, N. J., Mar. 11, 1930. She was born in Elgin, Ill., in 1870, and was graduated from New York University with the LL.B. degree in 1900 and from Columbia University with the Mus.B. degree in 1909, M.A. degree in 1911, and Ph.D. degree in 1914. She studied singing both in the United States and Europe, and in 1901 made her debut in Breslau, Germany, in the *Magic Flute*, appearing during the next three years at the Royal Opera Houses of Berlin, Prague, Dresden, and Vienna. Returning to the United States in 1904, she joined the Metropolitan Opera Company, and the following year established the Powell Musical Institute in Brooklyn. In 1907 she founded the Webster-Powell Opera Company, which produced many operatic works during the next five years. She became director of the Powell and Pirani Musical Institute in 1913 and of the Powell Vocal Academy in 1920. She was married in 1901 to A. Judson Powell of Brooklyn.

Powell, Lucien Whiting. An American landscape painter, died in Washington, D. C., Sept. 27, 1930. Born in Levinworth Manor, Va., Dec. 13, 1846, he studied art in Philadelphia, New York, London, Rome, Venice, and Paris. His most famous works are "The Afterglow," representing the Grand Cañon of the Colorado, in the Corcoran Art Gallery, Washington, and "The Grand Canyon of the Yellowstone" in the National Gallery, Washington.

Pregl, Fritz. An Austrian chemist, died in Graz Dec. 13, 1930. He was born in Laibach Sept. 3, 1869. From 1904 to 1910 he was a professor of chemistry at the University of Graz and from 1910 to 1913 at the University of Innsbruck. In 1913 he returned to the University of Graz, where he became head of the Medical-Chemical Institute. He gained international recognition for his development of micro-chemical analysis. In 1923 the Nobel Prize in Chemistry was bestowed on him for his work in this field.

Primo de Rivera y Orbaneja, Gen. Miguel, Marquis de Estella.

Pschorr, Robert Franz. A German chemist, died Feb. 23, 1930, in Munich, where he was born Dec. 4, 1868. On graduation from the University of Jena in 1893, he became associated with the Chemical Institute of the University of Berlin, and in 1914 was elected to the chair of organic chemistry at the Technical School in Charlottenburg. His research work was concerned with the constitution of the alkaloids derived from phenanthrene. He was one of the editors of the *Berichte der deutschen chemischen Gesellschaft*.

Putnam, Arthur.

Putnam, George Haven.

Radcliffe, Wallace. An American clergyman, died in Washington, D. C., June 7, 1930. He was born in Pittsburgh, Pa., Aug. 16, 1842. On his graduation from Washington and Jefferson College in 1862, he was ordained to the Presbyterian ministry. His first charge was as pastor of the Woodland Presbyterian Church, Philadelphia, from 1866 to 1870. In 1871 he was called to the First Presbyterian Church in Reading, Pa., where he served in 1876 as moderator of the Synod of Pennsylvania. In 1885 he became pastor of the Fort Street Presbyterian Church in Detroit, serving in 1889 as moderator of the Synod of Michigan. Ten years later he became pastor of the New York Avenue Presbyterian Church in Washington, more popularly known as "the Church of the Presidents," from which he retired as pastor-emeritus in 1922. In 1898 he attained the dis-

tion of moderator of the General Assembly of the Presbyterian Church in the United States of America. Ratoon, Auguste.

Reed, George Edward. An American clergyman and former president of Dickinson College, died in Harrisburg, Pa., Feb. 7, 1930. He was born in Brownsville, Me., Mar. 28, 1846, and was graduated from Wesleyan University with the degrees of A.B. (1869) and M.A. (1872). His first charge, after ordination to the Methodist ministry in 1870, was as pastor in Willimantic, Conn. In 1872 he was called to St. Paul's Church, Fall River, Mass., where he served until 1875 when he assumed the pastorate of the Hanson Place Church, Brooklyn, N. Y. His other charges included the M. E. Church, Stamford, Conn. (1878-81); Nostrand Avenue Church, Brooklyn (1881-84); again Hanson Place Church (1884-87); and Trinity Church, New Haven, Conn. (1887-89). Wesleyan University honored him with the degree of S.T.D. in 1886. In 1889 he was elected president of Dickinson College, holding this office until 1911. His administration was marked by the increase of the student body from 90 to 550 students, the erection of several new buildings, and the restoration of the campus to its original beauty. He also served as State librarian of Pennsylvania from 1899 to 1903. On his resignation from the presidency of Dickinson he became pastor of Grace Church, Wilmington, Del., remaining until 1915.

Reinhardt, Gen. Walther. A German military leader and statesman, died in Berlin, Aug. 8, 1930. He was born in Stuttgart, Württemberg, Mar. 24, 1872, and attended the Herfeld Military School. Entering the Württemberg Army, he was promoted through the ranks, and during the World War served with such distinction in the Verdun offensive that he was made chief of the general staff of the 2d Army in 1916 and of the 7th Army in 1917. In 1919 he was appointed commander-in-chief of the newly formed Republican Reichswehr. He also served in that year as the last Prussian Minister of War.

Ricard, Jerome Sixtus. An American educator and astronomer, died in San José, Calif., Dec. 8, 1930. He was born in Plaisians, Drome, France, Jan. 21, 1850, and after joining the Society of Jesus came to the United States in 1873. He later became professor of philosophy and ethics at the University of Santa Clara. Becoming interested in astronomy, he took up the study of sun spots and faculae in 1900, discovering a method of using them in weather forecasting.

Rice, John Andrew. An American clergyman, died in Tulsa, Okla., June 29, 1930. He was born in Colleton Co., S. C., Sept. 25, 1862, and was graduated from South Carolina College in 1885, later completing the course at the Columbia (S. C.) Theological Seminary in 1896. He was ordained a minister in the Methodist Episcopal Church, South, in 1886, serving successively as pastor of the Bennettsville and Kingstree circuits, Darlington, S. C., and of the Washington Street Church, Columbia, S. C. In 1894 he was elected president of Columbia College, a Southern Methodist institution for women, where he remained until 1902 when he became pastor of the Court Street Church, Montgomery, Ala. From 1907 he held various pastorates in Southern churches, and during 1920-21 he was professor of Old Testament literature at the Southern Methodist University. From 1927 until his death he edited the *Oklahoma Methodist*. His works include: *The Old Testament in the Life of Today*; *The Primacy of Religion in Education*; *Why I believe in the Bible*; and *Is Christ on Trial in Tennessee?*

Ridge, William Pett.

Ridgeway, Sir (Joseph) West. A British soldier and diplomat, died in London, Apr. 16, 1930. Born May 16, 1844, he joined the Bengal Infantry at the age of 17 and served in the Afghan War in 1879-80, accompanying Lord Roberts to Afghanistan as his political secretary. He was under-secretary to the government of India in Foreign Departments from 1880 to 1884 and His Majesty's commissioner for fixing the frontier between Russia and Afghanistan in 1885. In 1886-87 he was on special diplomatic duty in St. Petersburg and in the latter year was promoted colonel for distinguished service. He was under-secretary for Ireland during 1887-93 and envoy extraordinary to the Sultan of Morocco in 1892-93. The following two years he was governor of the Isle of Man and, from 1896 to 1903, he was governor and commander-in-chief of Ceylon. In 1906 Sir West was appointed chairman of a committee to inquire into the constitutions in the Transvaal and Orange River colonies, work which prepared the way for the Union of South Africa. The same year he was created Knight of the Grand Cross of the Bath, having previously been made Knight Commander of the Bath (1891) and Knight of the Grand Cross of St. Michael and St. George (1900).

Rignano, Eugenio. An Italian philosopher and educator, died Feb. 9, 1930. He was born in Livorno, May 31, 1870. On his graduation from the University of Pisa in 1898 he devoted himself to philosophical studies and

later was appointed professor of philosophy at the University of Pavia. In 1906 he founded *Scientia*, an international journal dealing with the theoretical aspects of science and its relation to other realms of human experience. He was the Michonis lecturer at the Collège de France in 1920, and three years later was named corresponding member of the Institut de France. His works include: *On the Transmissibility of Acquired Characters*; *Hypothesis of a Centro-Epigenesis*; *Biological Memory*; *The Finalistic Aspect of Life*; *What is Life?*; *Man Not a Machine*; *Problems of the Psyche*; and *The Purpose of Man*.

Riker, Andrew Lawrence.

Riso Patrón Sanchez, Luis. A Chilean engineer, died in Santiago, May 30, 1930, at the age of 61. He represented Chile on the Chilean-Argentine boundary commission in 1902 and on the Tacna-Arica arbitration commission to determine the boundary between Chile and Peru from 1925 to 1927. His principal works are: *Reseña general sobre el estado actual de la cartografía americana* (1909) and *Diccionario geográfico de Chile* (1924).

Rivoire, André.

Rixford, Gulian Pickering. An American horticulturist, died in Los Altos, Calif., Oct. 27, 1930. He was born in East Highgate, Vt., Sept. 21, 1838, and was graduated from McGill University in 1864. Removing to California, he was connected with the San Francisco *Evening Bulletin* from 1868 to 1889 as editor and later as business manager. As an amateur horticulturist, he was instrumental in introducing into California the Casaba melon (the seeds of which were first distributed to subscribers to the *Bulletin*), the Smyrna fig, and the telephone pea. He also established the Rixford Experiment Station near Sonoma. In 1908 he became associated with the U. S. Department of Agriculture as physiologist in the bureau of plant industry, retiring in 1930.

Robertson, Rear Admiral Ashley Herman, U. S. N. An American naval officer, died in San Diego, Calif., July 13, 1930. He was born in Ashmore, Ill., Dec. 14, 1867, and was graduated from the U. S. Naval Academy in 1888. Entering the Navy as an ensign in 1890, he was promoted through the grades to rear admiral in 1918. He served on the gunboat *Castine* during the Spanish-American War and was executive officer of the *Terror* in 1905. During 1905-06 he was stationed at the U. S. Naval Academy and during the next three years served on the *Tennessee*. In 1909 he was assigned to duty at the Puget Sound (Wash.) Navy Yard, after which he successively commanded the battleships *California* and *Colorado* and the cruisers *Charleston*, *Denver*, and *San Diego* from 1913 to 1915. After serving at the Naval War College in Newport, R. I., during 1916-17, he became chief of staff of the 1st Naval District in Boston, and on the entrance of the United States into the World War was appointed commander of the *Mount Vernon* (formerly the German liner, *Kronprinzessin Cecilie*), which was used in transporting troops to France. In 1918 he commanded the *New Mexico*, the first electric-driven battleship, and the following year assumed charge of the destroyer force until his appointment as chief of staff of the Naval War College. He became commander of the 11th Naval District in San Diego in 1923, and in 1926 attained the rank of vice admiral as commander of the scouting fleet. He resumed command of the 11th Naval District in 1928, and at the time of his death was third in rank among the rear admirals of the U. S. Navy by virtue of seniority.

Robertson, James Wilson.

Robertson, Thorburn Brailsford.

Rodgers, James Linn. An American consul and foreign trade expert, died Feb. 8, 1930, in Columbus, Ohio, where he was born Sept. 10, 1861. He was educated at Ohio State University. From 1889 to 1895 he served as editor of the *Columbus Dispatch*. In 1905 President Roosevelt appointed him American consul general at Shanghai, China, because of his wide knowledge of international trade conditions. Two years later he was transferred to Havana, Cuba, where he remained 11 years, being appointed in 1916 as special representative of the State Department to the *de facto* Carranza Government in Mexico. He also served as American consul general at Montreal, Canada, from 1918 to 1921. On retiring from the consular service he became connected with the foreign department of the Foundation Company of New York.

Rogers, Flin. An American architect, died in Yonkers, N. Y., June 1, 1930. He was born in Saginaw, Mich., Feb. 4, 1882, and was graduated from the college of architecture, Cornell University, in 1906. From 1907 to 1913 he was a designer with Tracy and Swartwout, New York City; from 1913 to 1919, head designer with E. D. Litchfield, New York City; and from 1919 to 1926, a member of the firm, Litchfield and Rogers. He was engaged in private practice from 1926 until his death. Among the buildings which he helped design were: the St. Paul Public Library; a reference library for James

J. Hill; and the group of new buildings at Macalister College, St. Paul. He also designed and laid out for the government York Ship Village near Camden, N. J.

Rogers, Robert William.

Rolshoven, Julius.

Ross, Bennett Battle.

Rousseau, Rear Admiral Harry Harwood, U. S. N.

Rudolph, Robert Livingston.

Rutherford, William John. A Canadian educator, died in Saskatoon, Saskatchewan, June 1, 1930. He was born in Potadam, N. Y., Jan. 7, 1868, and was educated at the Agricultural College, Guelph, Ont. He taught animal husbandry at the Iowa State College of Agriculture and Mechanic Arts from 1903 to 1906, being called to the Manitoba Agricultural College in Winnipeg in the latter year. In 1906 he was appointed Deputy Minister of Agriculture for Saskatchewan, and the following year became dean of the college of agriculture at the University of Saskatchewan in Saskatoon. He was a member of the Dominion Conservation Commission, the Saskatchewan Educational Commission, and the Advisory Committee on Public Schools Agriculture. In 1920 he served as chairman of the Royal Commission of Inquiry into Farming Conditions in Saskatchewan, and in 1923 as member of the Royal Commission of Inquiry into the Marketing of Grain in Canada. He was the author of *Agriculture for Public Schools*.

Saltzgeber, Gaylord Miller. An American lawyer and public official, died in Van Wert, Ohio, Aug. 25, 1930. He was born in Shelby, Ohio, Mar. 14, 1846, and served during the Civil War with the 3d Ohio Cavalry. Admitted to the bar, he practiced law in Van Wert for 44 years. He was a member of the Ohio State Senate from 1876 to 1880 and U. S. Commissioner of Pensions from 1913 to 1921. He was also commander of the Ohio department of the Grand Army of the Republic in 1922 and commander-in-chief of the national organization in 1923.

Sampson, Martin Wright. An American educator, died in Pittsburgh, Pa., Aug. 22, 1930. He was born in Cincinnati, Ohio, Sept. 7, 1866, and was graduated from the University of Cincinnati in 1888. He later studied in Paris, London, Dublin, Dresden, and Munich. In 1889 he became an instructor in English at the University of Iowa, and in 1891 an assistant professor. After serving as an assistant professor at Stanford University during the next two years, he became in 1893 professor of English at Indiana University, which position he held until his transfer to Cornell University in 1907. At the time of his death he was head of the English department of the college of arts and sciences at that institution. He was joint author with E. O. Holland of *Written and Oral Composition* (1907).

Sanford, Edward Terry.

Sanfuentes Andonaegui, Juan Luis.

Scharlieb, Daine Mary Ann Dacom. A British physician, died Nov. 21, 1930, in London where she was born in 1845. Following her marriage to a barrister practicing in Madras, she decided to help relieve the plight of the women of India and studied medicine at the Madras Medical College and at the Royal Free Hospital and School of Medicine for Women in London. Returning to India in 1883, she became lecturer in midwifery and gynecology at the Madras Medical College and superintendent of the Royal Victoria Hospital for caste and Goshia women. She later practiced in London. She was created a Dame Commander of the Order of the British Empire in 1926. Her works include: *How to Enlighten Our Children* (1918); *The Welfare of the Expectant Mother* (1919); *Straight Talks to Women* (1923); *Reminiscences* (1924); and *The Psychology of Childhood* (1927).

Schildkraut, Rudolf.

Scott-Moncrieff, Charles Kenneth.

Scribner, Charles.

Seager, Henry Rogers.

Sefton, Osbert Cecil Molyneux, Sixth Earl of. A British peer, died in London, June 16, 1930. He was born Feb. 21, 1871, and succeeded to the title on the death of his brother in 1901. During 1905-07 he served as Master of the Horse, and was created a Knight of the Grand Cross of the Royal Victorian Order in 1926. He was one of the most extensive land owners in England, holding about 34,000 acres. These included the Aintree race track, on which the historic grand national steeplechase is run, and most of the land on which the city of Liverpool stands.

Segrave, Sir Henry O'Neal de Hane.

Shandon, Ignatius John O'Brien, First Baron.

Shipman, The Rt. Rev. Herbert.

Sills, Milton. An American motion picture actor, died in Santa Monica, Calif., Sept. 15, 1930. He was born in Chicago, Ill., Jan. 12, 1882, and was graduated from the University of Chicago in 1903. Three years later he started his stage career, appearing in New Palestine, Ohio, in *Dora Thorne*. During 1907-08 he played in the Donald Robertson's Art Theatre in Chicago, and in 1909 came to New York as leading man in *This Woman and This Man*. He remained on Broadway for several

seasons, appearing in *A Happy Marriage*; *The Servant in the House*; *The Fighting Hope*; *Diplomacy*; *Mother*; *The Rack*; *The Governor's Lady*; and *The Law of the Land*. His first motion picture was *The Pit* in which he appeared in 1914. Other films in which he played leading rôles are: *Behold My Wife*; *The Great Moment*; *Adam's Rib*; *A Man Desires*; *Skin Deep*; *The Sea Hawk*; *The Isle of Lost Ships*; *The Unguarded Hour*; *The Lying Truth*; *Puppets*; *The Knock-Out*; *Burning Daylight*; *The Hawk's Nest*; *The Barker*; *Hard-Boiled Haggerty*; *Valley of the Giants*; *The Sea Wolf*; and *Men of Steel*, of which he was author.

Silvain, Eugene.

Silverman, Joseph.

Simpson, Bertram Lenox (Pseudonym, Putnam Weale). A British author, died in Tientsin, China, Nov. 11, 1930. Born in 1877, he was educated for the army at Brighton College. He joined the Chinese Customs Service in 1896 and went through the siege of Peking Legations during the Boxer rebellion in 1900. During the World War he served with the British Expeditionary Forces as interpreter. In June, 1930, he was appointed commissioner of customs in Tientsin. He was the author of several sensational books, including: *The Reshaping of the Far East* (1905); *Indiscreet Letters from Peking* (1907); *The Coming Struggle in Eastern Asia* (1908); *The Fight for the Republic in China* (1917); *The Truth about China and Japan* (1919); *An Indiscreet Chronical from the Pacific* (1922); *Why China Sees Red* (1925); and *China's Crucifixion* (1928).

Simpson, Rear Admiral Edward, U. S. N., Ret. An American naval officer, died in Ruxton, Md., Sept. 6, 1930. He was born in Annapolis, Md., Sept. 16, 1860, and was graduated from the U. S. Naval Academy in 1880. He saw service during the Spanish-American War as Admiral Schley's aide in the battle of Santiago and in the Philippine insurrection during 1900-01. In 1902 he became an executive officer on the battleship *Arkansas*, and in 1905 was assigned to the bureau of ordnance of the Navy Department in Washington. He was commander of the cruiser *Montgomery* during 1908-09, and then became naval attaché at the American embassy in London where he served until 1912. During 1912-14 he was commander of the battleship *Minnesota*, and in 1915 was stationed at the Naval War College in Newport, R. I. He was commandant of the naval stations in Olongapo and Cavite, P. I., during 1916-18 and was cited for meritorious service and promoted to the rank of rear admiral. In 1919 he was appointed hydrographer of the Navy Department, and the following year became commander of the training squadron of the Atlantic Fleet. In 1921 he was stationed at Pearl Harbor, Hawaii, as commander of the 4th Naval District, and in 1923 became commander of the 12th Naval District in San Francisco. He was retired in 1924.

Singleton, Esther.

Skellern, Ross Hall.

Slate, Frederick. An American physicist and educator, died in Berkeley, Calif., Feb. 26, 1930. He was born in London, Jan. 21, 1852, and came to the United States when 12 years old. On graduation from the Brooklyn Polytechnic Institute in 1871, he was employed by the Northwestern Pacific Railroad as a civil engineer. In 1874 he became an instructor in chemistry at the University of California, where he remained until 1877 when he went to Germany for graduate study at the universities of Berlin and Strassburg. In 1879 he returned to the University of California as superintendent of the physics laboratory, and in 1891 became professor of physics, which position he held until his retirement in 1918. The University of California conferred the LL.D. degree on him in 1925. His works include: *Principles of Mechanics* (1900); *Elementary Physics* (1902); and *Fundamental Equations of Dynamics* (1918).

Slattery, The Rt. Rev. Charles Lewis.

Slivinski, Joseph.

Smith, Justin Harvey.

Smith, Sir William Edward. A British naval architect, died in Herne Bay, Kent, England, Sept. 16, 1930. He was born Apr. 4, 1850, and during 1865-68 served an apprenticeship as a shipwright in the dockyards at Woolwich and Portsmouth. In 1873, on completing the course for which he had held a fellowship at the Royal School of Naval Architecture in South Kensington, he was appointed Admiralty naval constructor. He became superintendent of construction, accounts, and shipbuilding contract work in the Admiralty service in 1902, and during the ten years that he held this office contributed materially to the development of the British Navy. He was a former lecturer on naval architecture at the Royal Naval College in Greenwich, and from 1887 until his death had been a representative of the Institution of Naval Architects. He designed the Antarctic exploration ship, *Discovery*, used by Capt. Robert F. Scott in 1900, and was a member of the technical committee for the restoration of H. M. S. *Victory* to her original condition at the battle of Trafalgar. In 1913 he was vice-chairman of the Board of Trade Committee on Load

Line for Merchant Ships, and for several years was chairman of the board of studies in civil and mechanical engineering for London University. He was created a Companion of the Bath in 1908 and was knighted in 1911.

Smith-Dorrien, Gen. Sir Horace Lockwood. Snowden, Thomas. Rear Admiral, U. S. N., retired, died in Washington, D. C., Jan. 27, 1930. He was born in Peekskill, N. Y., Aug. 12, 1857, and was graduated from the U. S. Naval Academy in 1879. He was promoted through the grades, attaining to the rank of rear admiral in 1917. In the Spanish-American War, he served on the *Dolphin*. He was in command of the presidential yacht, the *Mayflower*, in 1908-10. In 1913-14 he was at the Naval War College at Newport, R. I., and in 1915 was placed in command of the Navy Yard and Station at Portsmouth, N. H. The following year he was appointed hydrographer in the Navy Department. After serving as a squadron commander of the Atlantic Fleet during the World War, Admiral Snowden became military governor of Santo Domingo in 1919. He was retired in 1921.

Solomon, Sir William Henry. A British barrister and former Chief Justice of the Union of South Africa, died in Ruthin, North Wales, June 13, 1930. Born in Cape Colony, South Africa, in 1852, he studied at Cambridge and was called to the bar of the Inner Temple in 1876. He later achieved distinction, on his return to South Africa, before the Appeal Bench and served as Judge of the Appellate Division of the Supreme Court from 1910 to 1927. He became Chief Justice of the Union of South Africa in 1927, holding this office until his retirement in October, 1929, on account of ill health. He was knighted in 1907 and also was made a Knight Commander of St. Michael and St. George in 1913 and a Knight Commander of the Star of India in 1914. In 1928 he was appointed a Privy Councillor.

Southwick, George Rinaldo. An American gynecologist, died in Boston, Mass., Jan. 7, 1930. He was born in Sangersfield, N. Y., Sept. 4, 1859, and was graduated from Boston University with the M.D. degree in 1881, studying for the next two years at the Rotunda Hospital in Dublin and in Berlin, and Vienna. After a few years of private practice he became, in 1888, associate professor of obstetrics in the school of medicine of Boston University, and in 1898 was appointed professor of gynecology. He also was connected with the Massachusetts Homeopathic Hospital and the Westborough State Hospital for the Insane as consulting gynecologist. During 1917-18 he was president of the section of surgery and gynecology of the American Institute of Homeopathy, and at various times had been president of medical bodies in the State of Massachusetts.

Sperry, Elmer Ambrose. Spooner, William Archibald. A British educator and clergyman, died in Oxford, Aug. 30, 1930. He was born in North Staffordshire July 22, 1844, and attended Oswestry School and New College, Oxford, where he was elected scholar in 1862 and fellow in 1867. He then took orders in the Church of England, being ordained a deacon in 1872 and priest in 1875. In 1878 he became chaplain to Archbishop Tait and later served as examining chaplain to the Bishop of Peterborough during 1899-1916. In 1903 he became warden of New College, Oxford, which office he held until 1924 when he was appointed honorary fellow. The word "spoonerism," as found in the New English Dictionary, originated from his occasional lingual lapses, but the hundreds of topsyturvy phrases attributed to him were largely the invention of two generations of Oxford undergraduates. His works include: *The Histories of Tacitus* (1891); *Bishop Butler, His Life and Writings* (1901); and "Mémorial of William of Wykham" in *Typical English Churchmen* (1909).

Stahlman, Edward Bushrod. An American newspaper publisher, died in Nashville, Tenn., Aug. 12, 1930. He was born in Mecklenburg, Germany, Sept. 2, 1843, and came to the United States at the age of 11. His first work was as a laborer with the Louisville and Nashville Railroad, repairing Civil War damage. He became freight contracting agent in 1871, general agent in 1876, general freight agent in 1878, general traffic manager in 1880, and vice president in 1885. In the latter year he purchased the Nashville *Banner* to use it in a campaign against the formation of a competitive road, but five years later he had become so interested in newspaper publishing that he severed his railroad connection. During 1881-95, however, he represented the railroads of the South in matters of national legislation affecting railroad interests, and during 1891-95 was commissioner of the Southern Railway and Steamship Association of Atlanta, Ga. He developed the *Banner* into one of the leading newspapers of the South, gaining for it a reputation of fearlessness in political and civic matters.

Stedman, Charles Manly. An American congressman, died in Washington, D. C., Sept. 23, 1930. He was born in Pittsboro, N. C., Jan. 29, 1841, and was graduated from the University of North Carolina in

1861. Admitted to the North Carolina bar in 1867, he practiced in Wilmington until 1898 and in Greensboro thereafter. He was elected a member of the 62d Congress in 1910 and served thereafter in each successive Congress until his death.

Stein, Ludwig.

Sterling, Thomas.

Stimson, John Ward. An American artist and educator, died in Corona, Calif., June 13, 1930. He was born in Paterson, N. J., Dec. 16, 1850, and was graduated from Yale University in 1872. His art education was received at the École des Beaux Arts in Paris and in Italy, Holland, and England. Upon his return to the United States he began illustrating for magazines. He lectured for a year at Princeton University, and for five years was director of the art schools of the Metropolitan Museum of Art in New York City. In 1888 he founded the Artist-Artisan Institute in New York City, of which he was director for 12 years. He was also a director of the Art and Science Institute in Trenton, N. J., and an instructor in the Art Students' League in New York City. His works include: *The Law of Three Primaries*; *Principles of Vital Education*; *The Gate Beautiful*; and *Wandering Chords* (Poems).

Stockbridge, Horace Edward. An American agricultural chemist, died in Atlanta, Ga., Oct. 30, 1930. Born in Hadley, Mass., May 19, 1857, he attended the Massachusetts Agricultural College, Boston University, and the University of Göttingen. From 1885 to 1889 he was stationed in Japan as professor of chemistry and geology at the Imperial College of Agriculture and Engineering and also as chief chemist to the Japanese Government. On his return to the United States he was appointed president of the North Dakota Agricultural College and director of the North Dakota Experiment Station in 1890, holding this office until 1894. He later served as professor of agriculture at the Florida Agricultural College and as director of the State Agricultural Institutes of Florida (1897-1906). He was also one of the founders of the *Southern Ruralist* in Atlanta, Ga., and for 16 years served as its editor. During 1916-17 he was president of the Farmers' National Congress.

Story, William Edward.

Stratemeyer, Edward (Arthur M. Winfield and Capt. Ralph Bonehill). An American author, died in Newark, N. J., May 10, 1930. He was born in Elizabeth, N. J., Oct. 4, 1862, and was educated at high school and by private tutors. He was the author of stories of adventure, many of them patriotic as well, for American boys. The stories published under his own name include the following: *Old Glory Series* (1898-1902); *Soldiers of Fortune Series* (1900-04); *Mexican War Series* (1900-04); *American Boys' Life of William McKinley* (1901); *Colonial Series* (1901-06); *Pan-American Series* (1902-08); *American Boys' Life of Theodore Roosevelt* (1904); *Lakeport Series* (1904-09); and *Dave Porter Series* (1905-19). He also published under the pseudonym Arthur M. Winfield the *Rover Boys Series*, his best known books (1899-1925); *Frontier Series* (1903-07); and *Putnam Hall Series* (1905-12). As Capt. Ralph Bonehill, he wrote *Flag of Freedom Series* (1899-1905), and *Boy Hunters Series* (1906-11).

Straus, Simon William.

Stutz, Harry C.

Swallow, Silas C. An American clergyman and reformer, died in Harrisburg, Pa., Aug. 13, 1930. He was born in Plains, Pa., Mar. 5, 1839, and was ordained to the Methodist Episcopal ministry in 1862, preaching on a circuit of 16 towns. In 1897, as editor of the *Pennsylvania Methodist*, he published an exposé of Pennsylvania politicians. He also edited the *Church Forum* for a number of years. He was Prohibition candidate for State treasurer in 1897, for governor of Pennsylvania in 1898 and 1902, and for President of the United States in 1904.

Swete, E. Lyall.

Swinton, Alan Archibald Campbell.

Symons, (George) Gardner.

Taft, William Howard.

Tappan, Eva March. An American author, died in Worcester, Mass., Jan. 30, 1930. She was born in Blackstone, Mass., Dec. 26, 1854, and was graduated from Vassar College in 1875, later receiving the M.A. degree from the University of Pennsylvania in 1895 and the Ph.D. degree in 1896. Her numerous books on history and literature were widely accepted as textbooks in schools of the United States. Typical of these are: *In the Days of Alfred the Great* (1900); *In the Days of William the Conqueror* (1901); *In the Days of Queen Elizabeth* (1902); *Old Ballads in Prose* (1901); *England's Story* (1901); *Our Country's Story* (1902); *In the Days of Queen Victoria* (1908); *A Short History of England's Literature* (1905); *A Short History of America's Literature* (1906); *The Story of the Greek People* (1908); *European Hero Stories* (1910); *The Story of the Roman People* (1910); *Old-World Hero Stories* (1911); and *When Knights Were Bold* (1912). She also edited *Selections from Emerson* (1898); *The*

Children's Hour (10 vols., 1907); *The World's Story* (14 vols., 1914); *Andrew Carnegie's Own Story for Boys and Girls* (1928); and *American History Stories for Very Young Readers* (1924).

Taylor, Maj.-Gen. Harry, U. S. A., Ret.

Taylor, James Morford. An American mathematician and educator, died in Greenwich, Conn., July 31, 1930. He was born in Holmdel, N. J., Sept. 15, 1843, and was graduated from Colgate University in 1867. Two years later he became professor of mathematics at Colgate, which position he held until his retirement as professor emeritus in 1920. His mathematical textbooks, which were widely used in schools in the United States and England, include: *Elements of the Differential and Integral Calculus* (1884); *College Algebra* (1889); *Academic Algebra* (1893); *Elements of Algebra* (1900); *Plane Trigonometry* (1904); *Plane and Spherical Trigonometry* (1905); and *Five-Place Logarithmic and Trigonometric Tables* (1905).

Temple-Blackwood, Frederick. See Dufferin and Ava, Frederick Temple-Blackwood, Third Marquess of.

Tenney, Charles Daniel. An American clergyman, educator, and diplomat, died in Palo Alto, Calif., Mar. 15, 1930. He was born in Boston, Mass., June 29, 1857, and was graduated from Dartmouth College in 1878 and from the Oberlin Theological Seminary in 1882. Following his ordination as a Congregational minister in the latter year, he was sent as a missionary to China by the American Board of Commissioners for Foreign Missions. He resigned from the missionary service in 1886 to become principal of the Anglo-Chinese School in Tientsin. Later, in 1895, he founded the Imperial Chinese University in Tientsin, of which he was president until 1906. During 1894-96 he acted as American vice consul and interpreter in Tientsin, and during 1900-02 as Chinese language secretary of the Tientsin provisional government. He also organized the high and middle schools in Chihli Province, which under his supervision, from 1902 to 1906, became models for the empire. From 1906 to 1908 he was director of the students sent by the Chinese Government to study at American universities, and in 1909 was a member of the Joint International Opium Commission which met in Shanghai. He was appointed Chinese language secretary of the American Legation at Peking in 1908 and served in this capacity until 1912, when he became American consul at Nanking. In 1914 he resumed the position of secretary of the Legation at Peking, and in 1919 was appointed successively counselor and chargé d'affaires. He returned to the United States on leave of absence in 1920 and retired from the diplomatic service in 1921. He wrote: *Tenny's English Lessons* (1890); *Tenney's English Grammar* (1892); and *Geography of Asia* (1898).

Terry, Marion. A British actress, died Aug. 21, 1930, in London where she was born Oct. 16, 1856. She was the youngest of a famous stage family, which included Kate, Ellen, Florence, and Fred Terry. Her first professional appearance was at the age of 16 as Ophelia in *Hamlet* at the Theatre Royal in Manchester. She made her London debut the following year in *A Game of Rumps* at the Olympic Theatre. During the 50 years (1873-1923) that she appeared on the London stage, she acted in more than 100 plays. The more important of these are: *Money* (1880); *The Red Lamp* (1887); *The Real Little Lord Fauntleroy* (1889); *Lady Windermere's Fan* (1892, 1900, 1911); *The Two Orphans* (1894); *Quality Street* (1902); *Peter's Mother* (1906, 1919); *The Piper* (1910); *Fishpingle* (1916); and *Our Betters* (1923). She also supported E. A. Sothorn in *The Crushed Tragedian* (1878); Henry Irving in *Faust* (1888, 1894) and *The Merchant of Venice* (1894); George Alexander in *Sunlight and Shadow* (1890); Forbes-Robertson in *Michael and His lost Angel* (1896); and Sir Charles Wyndham in *The Physician* (1897) and *Captain Drew on Leave* (1905). On Nov. 16, 1907, she appeared at Windsor Castle in a command performance of *Still Waters Run Deep* before King Edward VII. Her only appearance in the United States was in 1908 when she toured in *Divorce*.

Theobald, Frederic Vincent. A British entomologist, died in Wye, Kent, Mar. 6, 1930. He was born in Kingston-on-Thames, Surrey, in 1868. On graduation from St. John's College, Cambridge, he became extension lecturer in economic zoology at that institution. In 1894, on the opening of the South-Eastern Agricultural College in Wye, he was appointed lecturer in agricultural zoology, and later vice-principal. He also was in charge of the economic zoology section of the British Museum from 1900 to 1903, and during 1900-11 prepared his famous monograph on *Insects of the World for the Colonial Office and Royal Society* (5 vols.). In 1920 he resigned from the South-Eastern Agricultural College to devote his time to research work under the Ministry of Agriculture. His works include: *The Insect and Other Allied Pests of Fruit*; *A Text-*

book of Agricultural Zoology; *Insect Life*; *The Insect Enemies of the Allotment Holder*; *The Enemies of the Rose*; and *The Plant Lice or Aphididae of Great Britain*.

Thomas, Benjamin A. An American surgeon and educator, died in Swarthmore, Pa., May 29, 1930. He was born in Valley Forge, Pa., Nov. 7, 1878, and was graduated from Swarthmore College in 1899 and from the school of medicine of the University of Pennsylvania in 1903. He was appointed assistant instructor in surgery at the University of Pennsylvania in 1906 and instructor in 1910, acting also as surgeon-in-chief of the out-patient department of the university hospital. In 1920 he became professor and vice-dean of urology in the graduate school of medicine at the University of Pennsylvania, holding this chair until his death. During the World War he was attached to the naval hospital of the United States Naval Reserve Force in Philadelphia. He also served at some time as genito-urinary surgeon at the Presbyterian Hospital in New York City and as consulting genito-urinary surgeon at the Milford Hospital in Milford, Del., and for the Pennsylvania Railroad and the Philadelphia Prison. He was co-author of *Genito-Urinary Surgery and Venereal Diseases and Applied Immunology*.

Thompson, Arthur Webster. An American railroad executive and capitalist, died in Pittsburgh, Pa., Nov. 9, 1930. He was born in Erie, Pa., May 8, 1875, and was graduated from Allegheny College in 1897. In 1900 he became associated with the Baltimore & Ohio Railroad, being advanced from assistant division engineer to third vice-president in charge of operations in 1912 and vice-president in charge of traffic and commercial development in 1916. In 1918 he was appointed by the U. S. Government Federal manager of the Baltimore & Ohio and other eastern lines. He left the railroad service in 1919 to enter the public utility field, and from 1926 to 1929 was president of the United Gas Improvement Company of Philadelphia.

Thompson, Robert Means.

Thompson, William Boyce.

Thomson, Christopher Birdwood Thomson, First Baron.

Thulstrup, Thure de.

Tirpitz, Alfred von.

Tosta, Gen. Vicente. A Honduran military leader and statesman, died in Tegucigalpa, Aug. 7, 1930, at the age of 53. He successfully led the uprising of 1919 against the Bertrand government and that of 1924 against the Gutierrez government. He was appointed provisional president of Honduras in 1924 and defeated Gen. Gregoria Ferrera who attempted to overthrow his government. The following year he became Minister of War and Marine under his successor, Dr. Miguel Paz Barahona, and at the time of his death was Minister of the Interior in the cabinet of President Colindres.

Troeistra, Pieter Jelles.

Troop J(ared) G(rassie) Carter. An American lecturer and educator, died in New York City, Feb. 6, 1930. He was born in Bridgetown, N. S., Canada, Mar. 20, 1869, and was graduated from Trinity College, University of Toronto, in 1892. After receiving the M.A. degree from Trinity in 1893, he was sent by the Dominion Government to Australia to report on possibilities of trade development between that country and Canada. From 1894 to 1897 he was editor of *The Week*, a literary and political journal established by Goldwin Smith in Toronto in 1882. In 1898 he became instructor in English at the University of Chicago, being appointed assistant professor the following year and associate professor in 1904. In 1913 he accepted a professorship of English literature at Trinity College, University of Toronto, where he remained until his resignation in 1918 to become lecturer on literary subjects for the University Extension in the United States. His repertory included reviews of books on science, the arts, politics, economics, biography, and philosophy, as well as fiction and the drama. He was an excellent critic as to technique and style of writing. He was also public lecturer for the New York Board of Education and president of the New York Public Lecture Association.

Tubby, Alfred Herbert. A British surgeon, died in London, Feb. 23, 1930. He was born May 23, 1862, and received his medical training at Christ's and Guy's Hospitals and at the Universities of London, Halle, and Leipzig. In 1894 he was elected assistant surgeon at Westminster Hospital, becoming full surgeon four years later. His interest in the orthopedic diseases of children dated from his appointment in 1900 as senior surgeon at the Evelina Hospital for Children. Two years later he became associated with the Royal National Orthopedic Hospital. He was made consulting surgeon at the Evelina Hospital in 1904 and at the Westminster and Royal National Orthopedic Hospitals in 1919. During the World War he was consulting surgeon with the British Mediterranean Expeditionary Force in 1915 and with the Egyptian Expedi-

donary Force during 1915-19, being retired with the rank of Colonel. In 1907 and again in 1921 he was president of the section devoted to diseases of children of the British Medical Association, and during 1912-13 was president of the same section of the Royal Society of Medicine. He was one of the founders of the Society for Study of Disease in Children, acting as chairman of its council for several years, and was a governor and almoner of Christ's Hospital. His works include: *Deformities, a Text-Book on Orthopedic Surgery*; *Surgery of Paralysis* (joint author); *Appendicitis*; and *A Consulting Surgeon in the Near East*.

Tucker, The Rt. Rev. Beverley Dandridge.

Turner, Outhbert Hamilton.

Turner, Herbert Hall.

Turner, James H. An American clergyman and former president of the Maryland College for Women, died in Baltimore, Md., June 25, 1930. He was born in Franklin Co., Va., in 1841, and attended the Roanoke College. At the outbreak of the Civil War he enlisted in the Tenth Virginia Cavalry, with which he served as a lieutenant until the end of the war. He entered the ministry of the Lutheran Church in 1869 and served as pastor in Blacksburg, Va., from 1872 to 1876 and in Burkittsville, Md., from 1876 to 1880. In 1880 he accepted the presidency of the Maryland College for Women, holding this office until his retirement in 1908.

Uchimura, Kanzo. A Japanese Christian leader, died in Tokyo, Mar. 28, 1930. He was born in Saitama in 1861 and was graduated from the Sapporo Agricultural College in 1881. Two years later he came to the United States to study at Amherst College, and on returning to Japan in 1888 became an instructor in the 1st Higher School in Tokyo. After his resignation from this post on account of his belief in Christianity, he became a journalist, founding in 1926 the *Japan Christian Intelligencer*. He also headed a Japanese Christian church and advocated the independence of those churches from foreign mission control. Among his works are: *How I Became a Christian and Japan and the Japanese*.

Valentine, Edward Virginius.

Vannutelli, Vincenzo, Cardinal.

Van Tyne, Claude Halstead.

Vardaman, James Kimble.

Vass, Mgr. Joseph.

Vaulx, Count Henri de la.

Vedreene, John E. An English theatrical manager, died in London, Feb. 13, 1930. He was born July 13, 1867, and was educated at Newport and at Paris. In 1904, with Granville Barker, he leased the Court Theatre in London and there produced many of the early plays of George Bernard Shaw. The Vedreene-Barker Management in 1907 leased the Savoy Theatre and there continued their productions of modern plays. From 1911 to 1919, he was in partnership with Dennis Eadie, leasing with him the Royalty Theatre. In 1920 he became manager for the Little Theatre and in 1922 for the Comedy Theatre. He retired because of ill health in 1925.

Victoria Sophia Maria, Princess of Baden and Queen of Sweden.

Volkelt, Johannes Immanuel.

Vought, Chance Milton.

Voynich, Wilfred Michael (in Polish, Habdank-Woynicz). A British bibliographer, lecturer, and authority on medieval manuscripts, died in New York City, Mar. 19, 1930. He was born in Lithuania in 1865 and was educated at the universities of Warsaw and Moscow. In 1885 he was arrested by the Russian police for participation in the Polish national movement, and after being kept in a Warsaw fortress without trial was sent into exile in eastern Siberia. Five years later he escaped to England, where he became a naturalized British subject. While in exile he acquired a working knowledge of nearly 20 languages which proved a valuable asset in his career as a London book seller and collector of rare volumes. He came to New York in 1915 and was active in a movement to establish in the United States libraries for stimulation of research in the culture of past ages. His literary discoveries were numerous, among them being the celebrated cipher attributed to Roger Bacon in which it was disclosed that this thirteenth-century philosopher and scientist knew and used the telescope and microscope. In 1929 he presented to the Library of Congress a fifteenth-century Latin translation of the letters ascribed to Phalaris, tyrant of Agrigentum, Sicily. He previously had given to the library a fourteenth-century illuminated text of the sixth book of Decretals, prepared by a committee of canonists under Pope Boniface VIII. He contributed to scientific and political periodicals and lectured extensively in the United States and Europe.

Wagner, Cosima.

Wagner, Siegfried.

Ward, Sir Joseph (George), First Baronet.

Warren, Sir (Thomas) Herbert. A British educator, died in Oxford, June 9, 1930. He was born in Bristol, Oct. 21, 1853, and was educated at Clifton College and

at Balliol College, Oxford. In 1877 he was elected a fellow and tutor of Magdalen College, and became president of the college in 1885, holding this office until 1928. He also served as vice-chancellor of the University of Oxford from 1906 to 1910 and as professor of poetry from 1911 to 1918. He identified himself prominently with British educational progress, being appointed in 1896 departmental commissioner for the Treasury to inspect the university colleges of Great Britain and serving until 1906 as a member of the consultative committee of the Board of Education. He labored incessantly to improve the type of undergraduates sent to Magdalen from the English public schools, and in recognition of the high standard which he upheld King George, in 1912, selected Magdalen as the college of the Prince of Wales. The LL.D. degree was conferred on him by Birmingham University; the D.C.L. degree, by Oxford University; and the Litt.D. degree, by Bristol University. He was created a Knight Commander of the Royal Victorian Order in 1914, and a chevalier of the Legion of Honour in 1927. His works include: *Plato's Republic* (i-v, with introduction and notes, 1888); *Education and Equality* (1895); *By Severn Sea and Other Poems* (1897); *Poems of G. J. Romanes* (with introduction, 1896); *Life of Prince Christian Victor of Schleswig-Holstein* (1903); *Magdalen College: an Historical Sketch* (1907); *Death of Virgil: a Poem* (1907); *Essays of Poetry and the Poets* (1909); *Centenary of Tennyson* (1909); *Tennyson's Earlier Poems* (1910); *Oxford and Poetry* (1911); *Robert Bridges, Poet Laureate* (1913); *R. D. Blackmore's Lorna Doone* (1914); *War and Poetry* (1915); *Crewelian Orations* (1915, 1917, 1919); *Life of Harold Tennyson* (1918); and *Virgil and Rome* (1921).

Warren, Winslow. An American lawyer, died in Dedham, Mass., Apr. 3, 1930. He was born in Plymouth, Mass., Mar. 20, 1838, and was graduated from Harvard University in 1858. After receiving a law degree there in 1861, he was admitted to the Massachusetts bar and began the practice of law in Boston. During 1861-69 he was United States commissioner and in 1894-98 was collector for the port of Boston. For many years, he was associate counsel for the Boston & Providence Railroad, after which he was engaged in trustee and advisory corporation work.

Washburn, Albert Henry.

Watase, Shozaburo. A Japanese zoölogist, died Mar. 8, 1930, in Tokyo where he was born in November, 1862. He was graduated from the Sapporo College of Agriculture in 1884 and studied zoölogy for two years at the Imperial University of Tokyo. He then continued his studies in the United States—at the Johns Hopkins University from 1886 to 1890 and at Clark University from 1890 to 1892. After serving as lecturer at the University of Chicago from 1892 to 1899, he returned to Japan as professor of zoölogy at the Imperial University of Tokyo, where he remained until 1924. The Ph.D. degree was conferred on him by the Johns Hopkins University in 1890 and the D.Sc. degree by the Imperial University of Tokyo in 1899. He was Japanese delegate to the International Zoölogical Congress held in Boston in 1907, and during 1911-19 was largely influential in securing legislation and in organizing a society relating to the preservation of the natural and historic monuments of Japan.

Watt, Sir George. A British economist, died in Lockerbie, Dumfriesshire, Scotland, Apr. 2, 1930. He was born in Old Meldrum, Aberdeenshire, Apr. 24, 1851, and was educated at Marischal College, Aberdeen, and at Glasgow University. His excellence in botanical study led to his selection in 1873 as professor of botany at Calcutta University, India, where he remained until 1884. In 1882 he was deputed to the Burma-Manipur Boundary Commission as scientific and medical officer, and two years later joined the Supreme Government Secretariat as scientific assistant secretary. He was also in charge of the Indian section at the Calcutta International Exhibition in 1884, and during 1885-86 was commissioner for India at the Colonial and Indian Exhibition in London. In 1887 he was appointed reporter on economic products to the Government of India, which office he held until 1903. He made a unique contribution to the economic development of the country through the *Dictionary of the Economic Products of India* (9 vols.) which he compiled from 1885 to 1894. He was also governor of the Imperial Institute on behalf of India during 1892; president of the pharmacological section of the Indian Medical Congress in 1894; curator of the Industrial Museum in Calcutta from 1894 to 1903; and editor of the *Agricultural Ledger* from 1892 to 1903. In 1901 he was secretary of the Central Indigenous Drugs Committee of India and edited its important report. After acting as director of the Indian Art Exhibition in Delhi in 1903, he went to London on special duty and retired from the Indian Service in 1906. He then accepted a five-year lectureship on Indian botany at the University of Edinburgh, and in 1912 visited São Thomé, Portuguese West Africa, in order to study cacao cultivation

there and patented a machine for cacao manufacture. He was created a Companion of the Order of the Indian Empire in 1886 and a knight in 1908, and received the LL.D. degree from Aberdeen and Glasgow Universities. In addition to the *Dictionary of the Economic Products of India*, his works include: *Fests and Blights of the Tea Plant*; *Rhia and China Grass*; *Lac and Lac Industries of India*; *Monograph on Primula*; *Indian Art at Delhi in 1903*; *The Wild and Cultivated Cotton Plants of the World*; and *Commercial Products of India*.

Way, Arthur S. A British classical scholar and poet, died in Ventnor, Isle of Wight, Sept. 25, 1930. He was born in Dorking, Surrey, Feb. 13, 1847, and attended Kingswood School, Bath, and Queen's College, Melbourne, Australia, where he was afterward fellow. He was classical lecturer at Queen's College, Taunton, from 1870 to 1876; vice master of Kingswood School from 1876 to 1881; and head master of Wesley College, Melbourne, Australia, from 1882 to 1892. In 1894 he became examiner in Latin to the Central Welsh Board of Secondary Education, which position he held until 1904. In 1913 he was acting head master of Mill Hill School. His translations of classical and medieval poetry include: *Odes of Horace* (1876); *Odyssey of Homer* (1880); *Iliad* (1889); *Tragedies of Euripides* (1894-98); *Epodes of Horace* (1898); *Apollonius Rhodius' Tale of the Argonauts* (1901); *Aechylus* (1906); *Prometheus and the Suppliant Maidens* (1907); *Orestes* (1908); *Sophocles* (1909, 1914); *The Nibelungenlied* (1911); *The Cyclops of Euripides* (1912); *Virgil's Georgics* (1912); *The Chanson de Roland* (1913); *Virgil's Aeneid* (1916, 1924); *Sappho and the Vigil of Venus* (1922); *Pindar* (1922); *Aristophanes* (1927); and *Odes of Bacchylides and Virgil* (1929).

Wayne, Arthur Trezevant. An American ornithologist, died at Torcher's Bluff, near Charleston, S. C., May 5, 1930. He was born in Blackville, S. C., Jan. 1, 1863, and was graduated from Charleston High School in 1880. After 1878, he was engaged in ornithological researches, rediscovering in South Carolina Swanson's Warbler (1884) and Bachman's Warbler (1901). He added tropical species to the South Carolina fauna and 44 species of birds to the avifauna of the state. Mr. Wayne was represented in ornithological nomenclature by Wayne's Clapper Rail (*Rallus Crepitans Wagneri*). He was honorary curator of the division of birds in the Charleston Museum and was the author of *Birds of South Carolina* (1910).

Weale, Putnam. See Simpson, Bertram Lenox.

Weaver, Sir Lawrence. An English architect, author, and war-time agricultural administrator, died in London, Jan. 10, 1930. He was born in Clifton, Bristol, July 2, 1876, and was educated at Clifton College. His training as an architect was followed by some 14 years of experience as manager and director of various manufacturing and contracting firms. In 1910 he turned to journalism, acting as architectural editor of *Country Life* until 1916. During the World War, after service in the Anti-Aircraft Corps of the Royal Naval Volunteer Reserve, he became controller of supplies in the food production department of the Ministry of Agriculture (1917), commercial secretary of the Board of Agriculture (1918), and director-general of the land department and second secretary of the Ministry of Agriculture (1919-22). In all these posts his great ability as an organizer was demonstrated. During this period he also founded the National Institute of Agricultural Botany and served as chairman of the council from 1919 to 1924. He was created a Knight of the British Empire in 1920, and was director of the United Kingdom exhibits at the British Empire Exhibition held in Wembley, 1923-25. At the time of his death he was director of the London Press Exchange, one of the largest advertising agencies in England. His published works include: *English Leadwork: Its Art and History*; *Small Country Houses of Today* (2 vols.); *Lutyens Houses and Gardens*; *Memorials and Monuments*; *The Story of the Royal Scots*; *Sir Christopher Wren*; *Exhibitions and Arts of Display*; and *Tradition and Modernity in Plasterwork*.

Webb, Sir Aston.

Weems, Julius Buel. An American chemist, died in Ashland, Va., Jan. 25, 1930. He was born in Baltimore, Md., Aug. 27, 1865. Following his graduation from the Maryland Agricultural College in 1888, he studied at the Johns Hopkins and at Clark Universities, receiving the Ph.D. degree from the latter institution in 1894. For the next ten years he was professor of agricultural chemistry and chemist of the experimental station at Iowa State College. In 1904 he became consulting and analytical chemist with the Agricultural Department of the State of Virginia; in 1911, investigator of farm life problems; and in 1915, chief chemist of this department.

Wesselsky, Gabriel de. A Russian journalist and diplomatist, died in Bournemouth, England, Aug. 28, 1930.

He was born in Tsarskoe Selo, Russia, in 1841 and attended the Training School of Ensigns of the Guard in St. Petersburg (later Leningrad) and the University of Heidelberg. Entering the Russian Army in 1858, he served for some time as a lieutenant in the 2d Rifles Imperial Guard. In 1864 he was appointed a secretary in the Russian Foreign Office, and the following year acted as secretary in composing the *Diplomatic History of Russia* for Alexander III, who was then heir to the throne. In 1866 he presented to Alexander II a Memoir urging an understanding with Great Britain and France to put a limit to the ambitious advances of Prussia. He embarked on his journalistic career in 1867, traveling during the next three years in the Near East. During the insurrection of Bosnia and Herzegovina against Turkey in 1875-76 he organized the International Committee of Assistance to the Bosno-Herzegovinian Refugees, with headquarters in Paris, and pleaded the cause of the insurgents in the European press. After he was charged by the Russian Government with a mission of pacification, the Bosno-Herzegovinians gave him full power to represent them, and he succeeded in obtaining from the Porte, or Turkish Government, the promise of autonomy for the provinces. Two years later, after serving in the Montenegrin and Russian armies against Turkey, he represented Bosnia and Herzegovina at the Congress of Berlin, where Austria-Hungary was authorized to occupy and administer the territory. In 1882 De Wesselsky became foreign correspondent for the *Novos Vremya*, being stationed in Vienna until 1887, in Berlin until his expulsion as an enemy in 1892, and in London until his death. He was president of the Foreign Press Association from 1896 to 1911. He successfully advocated an Anglo-Russian understanding which was culminated in 1907 and resulted in the formation of the Triple Entente of Great Britain, France, and Russia. During the World War he entered the British service in the Ministry of Information and was later attached to the staff of the Foreign Office in an advisory capacity. In 1919 he attended the Paris Peace Conference with the British delegation. His publications include: *The Problem of Asia*; *The Russian Revolution*; *Anglo-Russian Relations*; *Russia and Democracy* (1915); *The German Peril and the Grand Alliance* (1916); *Serbia's Role in History and Culture*; *Bosnia and Herzegovina*; and *The Enigma of Peterhof*.

Weyerhaeuser, Charles Augustus. An American lumber manufacturer, died Feb. 15, 1930, in Bombay, India, while on a trip around the world. He was born in Coal Valley, Ill., Apr. 2, 1866, and was educated at Phillips Academy in Andover, Mass. He began in the lumber business at Rock Island, Ill., and, at the time of his death, was president of the Potlatch (Idaho) Lumber Co., the Pine Tree Lumber Co., and managing director of other lumber companies, with an office in St. Paul, Minn. With his three brothers, he continued and expanded the vast lumber business of the West begun by his father.

Weyler, Gen. Valeriano. Marquis of Teneriffe.

Wheatley, John. A Scottish statesman, died in Glasgow, May 11, 1930. He was born in 1869, the son of an Irish laborer, and was educated in the village schools of Lanarkshire, Scotland. As a boy he worked in a mine. After 1922, he was a Labor member of Parliament for the Shettleston Division of Glasgow. He was a Minister of Health in the Labor government of 1924 and was in charge of the housing bill. His extreme views brought him into opposition with the Parliamentary Labor party, with the result that he became leader of the rebel section of the Labor Left Wing. He was the author of many pamphlets on Labor and Socialist questions.

Whibley, Charles. An English essayist, died in Hyères, France, Mar. 4, 1930, at the age of 70. He was born in Kent and was educated at the Bristol Grammar School and at Jesus College, Cambridge University. He wrote for the *National Observer*, the *Pall Mall Gazette*, and the *Outlook*. Later he contributed to *Blackwood's Magazine* an unsigned monthly article, "Musings without Method." Mr. Whibley was of the tradition of Defoe in his manner of combining literary criticism with political opinion. He was a member of the Tory party, a man of strong and settled convictions, which he expressed fearlessly. In his literary life he was greatly influenced by William Henley, whom he aided in the publication of the *Tudor Translations*. His works include *The Paganry of Life* (1900); *Literary Portraits* (1904); *American Sketches* (1908); *Studies in Frankness* (1912); *Essays in Biography* (1913); *The Letters of an Englishman* (1915); *Political Portraits* (1917); *Lord Manners and His Friends* (1925). In 1925 he edited the *Collected Essays of W. P. Ker*. He was the Leslie Stephen lecturer at Cambridge University in 1917.

Whipple, Sherman Leland. An American lawyer, died in Brookline, Mass., Oct. 20, 1930. Born in New Lon-

don, N. H., Mar. 4, 1862, he was graduated from the Yale law school in 1884. He practiced in Boston from 1885, being engaged principally as trial lawyer. In 1917 he was special counsel to the Congressional committee that investigated the leak of advance information concerning the proposed peace terms in the World War. During 1918-19 he was general counsel for the U. S. Shipping Board and the Emergency Fleet Corporation.

Whitney, Fred C. An American theatrical producer, died in Los Angeles, Calif., June 4, 1930. Born in 1865, he commenced producing comic operas in 1892, his first productions being *The Fencing Master* and *The Algerians*. Two years later he organized the Whitney Opera Company, which opened in New York with *Rob Roy*. His subsequent productions include: *Quo Vadis*; *The Normandy Wedding*; *Dolly Varden*; *When Johnny Comes Marching Home*; *Love's Lottery*; *The Rose of the Alhambra*; *The Chocolate Soldier*; and *The Spring Maid*.

Whitney, Harry Payne. An American financier and active sportsman, interested particularly in racing and polo, died Oct. 26, 1930, in New York City where he was born Apr. 29, 1872. He increased a large fortune which he inherited from his father, William Collins Whitney. He was president and director of the Whitney Realty Company and also director of the Guaranty Trust Company, Metropolitan Opera Company, Westchester Racing Association, and Sinclair Consolidated Oil Corporation.

Whytal, Russ. An American actor and playwright, died in New York City June 24, 1930. He was born in Boston, Mass., June 20, 1860, and made his first appearance on the stage in the Boston Museum in 1882, where he remained five years. He subsequently toured for some years in his own plays: *For Fair Virginia*; *Taps*; *Agatha Dene*; and *Night*. His outstanding successes on Broadway, from 1907 to 1927, were in *The Winking Hour*; *The Climax*; *The Pigeon*; *Common Clay*; *Redemption*; *The Letter of the Law*; *Spanish Love*; *Romeo and Juliet*; *The Enemy*; and *The Garden of Eden*.

Wiborg, Frank Bestow. An American printing ink manufacturer, died in New York City, May 12, 1930. He was born in Cleveland, Ohio, Apr. 30, 1855, and was graduated from Chickering Institute in Cincinnati, Ohio, in 1874. Formerly vice president of the Ault & Wiborg Co. of Cincinnati, manufacturers of printing ink, he was vice president of the New York branch of the company at the time of his death. He wrote *Travels of an Unofficial Attaché* (1904); *A Commercial Traveler in South America* (1905); and *Printing Ink—A History, with Treatise on Modern Methods of Manufacture and Use* (1926).

Wilbraham, Edward William Bootle. Third Earl of Lathom and Fourth Baron Skelmersdale. An English playwright, died in London, Feb. 7, 1930. Born May 16, 1895, he was educated at Eton and at Christ Church, College, Oxford. In 1910 he succeeded to his father's title, becoming the third Earl of Lathom. Although most of his plays were given only before private audiences, the following were produced in New York and London theatres: *Ostriches* (1925); *The Way You Look at It* (1926); *Wet Paint* (1926); *Puppence Coloured* (1927); and *Twenty Houses in a Row* (1928). Lord Lathom was often deliberately shocking, writing in the tradition of Oscar Wilde but without Wilde's lightness of touch.

Wiley, Harvey Washington.

Williams, Alfred Brockenbrough. An American editor, died in Washington, D. C., Mar. 11, 1930. He was born in Hanover Co., Va., Jan. 10, 1856, and was educated in private schools. As correspondent for the Charleston (S. C.) *News and Courier*, he went to Liberia with a ship of Negro emigrants in 1878 and so effectively exposed the mismanagement of the enterprise that it was abandoned. For the same paper, he made a study of convict camps in the South and, by his articles, did much toward destroying the leasing system. He edited the Greenville (S. C.) *News* during 1880-96 and was with the New York *Advertiser* and the New York *Times* from 1896 to 1900. In 1901 he became editor of the Richmond (Va.) *News* and, during 1903-10 he edited the Richmond *News-Leader*. From 1910 to 1915, he was editor and part owner of the *Morning Times* and the *Evening World News* of Roanoke, Va., and, in 1915-16, he was owner and editor of the Richmond (Va.) *Evening Journal*. At the time of his death, he was an associate editor of the *Southern Churchman*, a periodical for members of the Protestant Episcopal Church.

Williams, Frank Martin.

Williams, Fritz.

Williamson, James. See Ashton, James Williamson, First Baron of.

Wilson, Robert Dick. An American philologist and theologian, died in Philadelphia, Pa., Oct. 11, 1930. He was born in Indiana, Pa., Feb. 4, 1856, and attended Princeton University, Western Theological Seminary,

and the University of Berlin. He was professor of Old Testament at the Western Theological Seminary, 1885-1900, and professor of Semitic philology and Old Testament introduction at the Princeton Theological Seminary, from 1900-1929. He was also one of the founders of the Westminster Theological Seminary in Philadelphia. His writings include: *Elements of Syriac Grammar* (1890); *Hebrew Syntax* (1902); *Studies in the Book of Daniel* (1916); *Is the Higher Criticism Scholarly?* (1922); and *Scientific Old Testament Criticism* (1933).

Winfield, Arthur M. See Stratemeyer, Edward.

Winkler, Max.

Winslow, Herbert Hall. An American playwright, died in Hastings-on-Hudson, N. Y., June 1, 1930. He was born in Keokuk, Iowa, Nov. 23, 1865. In 1885 he became editor of his own publication, *Winslow's Monthly*. His first play, *The Silent Partner*, was produced in New York in 1890. Other productions included: *The Vinegar Buyer* and *Swell Elegant Jones*, which were played more than 3000 times by Ezra Kendall; *A Barrel of Money*; *A Knotty Affair*; *Down in Infamy*; *The Great Northwest*; *The Spellbinder*; *the Southerner*; *A Rolling Stone*.

Wolf, Lucien.

Wollaston, Alexander Frederick Richmond. A British explorer, naturalist, and educator, died in Cambridge, June 3, 1930. He was born in 1875 and was graduated from King's College, Cambridge, in 1896. On completing the medical course at the London Hospital in 1903, he became a member of the Royal College of Surgeons and a licentiate of the Royal College of Physicians. He began his explorations in 1905 as a member of the two-year British Museum Expedition to Ruwenzori, Central Africa, his chief object being the collection of plants and animals. He was the first to ascend what was then supposed to be the highest point of Ruwenzori and which was named in his honor Wollaston Peak. In 1909 he joined the British Ornithological Expedition to the Mima River, Dutch New Guinea, where he visited the Utaikwa River and decided on that route to the Snow Mountains for the expedition of which he was the leader in 1912. His companion was C. Boden Kloss, curator of the museum of Kuala Lumpur, Federated Malay States, and they succeeded in climbing to within 500 feet below the summit ridge of Snow Mountains.

In 1914 the Gill Memorial was awarded to Professor Wollaston by the Royal Geographical Society in recognition of his achievements, and he was planning a third expedition to Dutch New Guinea when the World War broke out. He served as surgeon on the Northern Patrol and in German East Africa and later on the Murman Coast, receiving the Distinguished Service Cross. In 1920 he was elected a fellow of King's College, Cambridge, and in 1928 was appointed tutor. He was chosen to be medical officer and naturalist on the first Mount Everest Expedition, led by Col. Howard Bury in 1921, and in 1925 received the Patron's Medal of the Royal Geographical Society for his explorations. His works include: *From Ruwenzori to the Congo*; *Pygmies and Papuans*; and *The Life of Alfred Newton, 1829-1907*.

Woodberry, George Edward.

Worman, James Henry.

Woynicz, Wilfred Michael Habdank-. See Voynich, Wilfred Michael.

Wright, Joseph.

Wylie, David Gourley. An American clergyman, died in Stony Brook, N. Y., Aug. 26, 1930. He was born in New Richmond, Ohio, May 15, 1857, and was graduated from Geneva College in 1879 and from the Union Theological Seminary in 1888. Ordained to the Presbyterian ministry, he served as pastor in New York City for more than 40 years, being called to the Canal Street Church in 1884, the Knox Church in 1886, and the Scotch Church in 1891. In 1914 he was elected general secretary of the Board of Church Erection of the Presbyterian Church in the United States of America. He was also a member of the executive committee of the General Assembly of the Presbyterian Church, secretary of the Board of National Missions of that denomination, and past president of the Lord's Day Alliance, which was organized to preserve one day a week as a day of rest. During the World War he was a member of the Presbyterian National Service Committee.

Young, Sir George. A British publicist, died July 4, 1930, in Cookham, Berkshire, where he was born Sept. 15, 1837. Educated at Eton and at Trinity College, Cambridge, he became a barrister of Lincoln's Inn in 1864. He served on the Royal Commission on Coolie Immigration to British Guiana in 1870 and on the Friendly Societies Commission during 1871-73. In 1875 he was secretary to the Factory and Workshops Acts Commission, and in 1881 to the Irish Land Acts Commission. He was appointed a charity commissioner under the Endowed Schools Acts in 1882, and served as Chief Charity Commissioner for England and Wales during 1908-06. From 1881 to 1886 he was president

of the Senate of University College, London, and subsequently assisted in the establishment of Reading University. Prior to his death he was chairman of the Maidenhead Bench and of the Berkshire Higher Education Sub-Committee. He succeeded his father as third Baronet in 1848. His publications include: *Report on Friendly and Benefit Societies, Southern and Eastern Counties of England* (1874); *The Dramas of Sophocles Rendered in English Verse, Dramatic and Lyric* (1888); *Poems from Victor Hugo* (1902); and *An English Prosody on Inductive Lines* (1928). He also edited the works of his uncle, Winthrop Mackworth Praed.

NEGRI SEMBILAN, nã'grẽ sem'belãn'. A federation of nine divisions, constituting a state in the Federated Malay States. See **FEDERATED MALAY STATES**.

NEJD. See **ARABIA**.

NEPAL, nẽ-pól'. An independent kingdom in the Himalayas between Tibet and British India, under British influence. The area is about 54,000 square miles, the population about 5,600,000. Capital, Kathmandu (80,000 inhabitants); reigning sovereign in 1930, Maharajadhiraja Tribhubana Bir Bikram. The chief products and exports are cattle, hides and skins, opium, gums and resins, jute, grains, and clarified butter. There are valuable forests in southern Nepal. The Government is a military oligarchy, under a partially hereditary Prime Minister. Prime Minister in 1930, Gen. Bhim Shamsher Jang Rana, who assumed office Dec. 16, 1929.

In April, 1930, a Nepalese army was reported marching against Lhasa, capital of Tibet, following the failure of the Dalai Lama to pay the 10,000-rupee annual tribute guaranteed Nepal by a treaty signed in 1850.

NETHERLAND EAST INDIES. See **DUTCH EAST INDIES**.

NETHERLANDS, THE, OR **HOLLAND**. A constitutional monarchy of Europe, bounded by the North Sea on the west and north; on the east by Germany, and on the south by Belgium. Capital, The Hague; reigning Sovereign in 1930, Queen Wilhelmina Helena Pauline Maria.

AREA AND POPULATION. In January, 1929, the Netherlands had a land area of 12,603 square miles and a population estimated at 7,731,172, as compared with 6,865,314 at the census of 1920. The draining of the Zuider Zee to form a new Province of 523,000 acres was started in 1924 and was scheduled for completion in 1939. In 1929, 47.14 per cent of the population was urban and 52.86 per cent rural. Births in 1928 totaled 176,028; deaths, 73,316; marriages, 59,128. Emigrants in the same year totaled 2804 (3340 in 1927), most of whom went to North America. The population of the chief cities on Jan. 1, 1929, was: Amsterdam, 743,404; Rotterdam, 577,694; The Hague, 425,119; Utrecht, 151,648; Haarlem, 115,497; Groningen, 102,789.

EDUCATION. Primary education is free and compulsory for children between the ages of 7 and 13. Of the conscripts called out in 1928, only 0.25 per cent were illiterate. In 1925-26, there were 3694 public elementary schools, with 484,264 pupils; 3740 private elementary schools, with 592,568 pupils; 195 middle-class schools, with 32,397 pupils; 603 schools for working people, with 102,655 pupils; and four public universities (Leiden, Utrecht, Groningen, and Amsterdam), with 6755 students; besides various technical, professional, and infant schools.

PRODUCTION. Intensive agriculture and animal husbandry are the main factors in Dutch national economy. In 1928, the cultivable area was about 930,000 hectares (1 hectare equals 2.47 acres),

or 28.5 per cent of the total; permanent grass and pasture, 1,278,000 hectares, or 39.1 per cent; and wood and forest, 240,000 hectares, or 7.3 per cent. Production of the chief crops in 1929, with comparative figures for 1928 in parentheses, was as follows in quintals (1 quintal equals 220.46 pounds): Wheat, 1,270,000 (1,996,191); rye, 3,374,000 (4,402,777); oats, 3,670,000 (3,599,951); barley, 791,000 (978,388); potatoes for human consumption, 25,441,500 (27,095,565); potatoes for animal consumption, 11,509,650 (11,553,980); sugar beets, 12,655,000 (22,887,210). The production of linseed in 1928 was 127,994 quintals and of flax, 138,904 quintals. The livestock census of 1921 showed 2,062,771 cattle, 1,519,245 swine, 668,211 sheep, and 363,668 horses. Butter production rose from 60,600 metric tons in 1921 to 85,300 metric tons in 1928; cheese, from 97,700 to 132,200 metric tons in the same period. A special commission, appointed in the spring of 1930 to study the agricultural depression in Holland, found that, taking 100 as a basis for the period 1924 to 1928, agricultural prices as of March, 1930, had declined by 49 per cent, while the cost of production had shown no decrease.

A total of 5154 vessels were engaged in the fisheries in 1928, the value of the herring catch being 13,068,823 florins (1 florin, or guilder equaled about \$.40).

Mineral production, except for coal, is comparatively unimportant. In 1929 the output of black coal was 11,575,000 metric tons (10,694,000 in 1928); of brown coal, 157,000 tons (197,000 in 1928); and of salt, 45,200 tons (41,900 in 1928). Coke production (1928) was 1,130,000 tons. The important Dutch shipbuilding, machinery, and textile industries are dependent upon the Dutch East Indies for a substantial part of their business. In 1929, shipments to the East Indies were valued at 172,292,000 florins, or 8 per cent of the total exports. The output of the shipyards in 1929 was 29 steamships of 55,425 tons and 48 motor vessels, of 131,092 tons. Dutch cotton spinning factories in 1928 counted 1,168,000 spindles and 54,300 looms; in the wool textile industries there were 254,000 spindles and 4800 looms. Other industrial establishments included 297 distilleries, 12 sugar refineries, 8 beet-sugar factories, 14 salt works, 172 breweries, and 3074 tobacco factories. The number of unemployed members of unemployment insurance societies in June, 1930, was 25,356, or 6.1 per cent of the total membership.

COMMERCE. Holland's consistently unfavorable balance of visible trade became more pronounced in 1929. Imports for home consumption (excluding bullion and specie) rose to 2,752,298,000 florins from 2,683,904,000 florins in 1928; exports of domestic produce increased to 1,989,490,000 florins from 1,986,185,000 florins in 1928; and the unfavorable balance of trade increased to 762,808,000 florins from 697,719,000 florins in 1928. The excess of imports is generally offset by returns on foreign investments and the earnings of Dutch shipping. Dutch investments in the Dutch East Indies in 1928 were estimated at 3,000,000,000 florins and the actual remittances to the Netherlands were about 210,000,000 florins, not including interest on the Indies State loans, aggregating over 1,000,000,000 florins, the greater part of which were in Dutch hands.

FINANCE. The budget for 1930 estimated total receipts at 648,893,000 florins, including 621,-

122,000 florins of ordinary and 27,771,000 florins of extraordinary revenue. Total expenditures were placed at 708,735,000 florins, including 611,982,000 florins of ordinary and 96,753,000 florins of extraordinary expenditures. The anticipated deficit was 59,842,000 florins. Actual returns ordinarily show an improvement over estimates. In the ordinary accounts for the years 1923-28, the combined estimates of budget deficits totaled 141,578,000 florins, while actual accounts showed a surplus of 227,721,000 florins. Including capital accounts, the estimated budget deficit for the same period of 603,657,000 florins was converted into an actual deficit of only 23,767,000 florins.

The budget for 1931, as introduced into Parliament, contemplated ordinary expenditures of 612,543,000 florins, ordinary revenues, 603,447,000 florins; extraordinary expenditures, 155,357,000 florins; extraordinary revenues, 53,859,000 florins. The anticipated total deficit was 110,594,000 florins, of which 9,096,000 florins were under ordinary and 101,498,000 under extraordinary (or capital) service.

The total public debt, which is all held internally, amounted to 2,676,308,881 florins in September, 1930, and was divided into a floating debt of 235,077,631 florins and a consolidated debt of 2,441,231,250 florins. The amount allotted for the service of the debt in 1931 was 84,792,972 florins, or 1,530,674 florins more than in 1930.

COMMUNICATIONS. A total of 24,610 vessels, with a tonnage of 33,766,000 entered the ports of the Netherlands in 1928 and 24,890 vessels of 33,679,000 tons cleared. The Dutch mercantile marine at the beginning of 1930 included 467 vessels aggregating 1,998,000 gross tons, as compared with 462 vessels of 1,961,000 tons at the beginning of 1929. Rotterdam is the chief port. A new harbor at Dordrecht, admitting ships with a draught of 26 feet at high tide, was opened by Queen Wilhelmina on Sept. 25, 1930. The opening at IJmuiden on Apr. 29, 1930, of what was said to be the largest lock in the world made Amsterdam accessible to the largest ships afloat. The lock cost \$7,500,000 and took 10 years to complete. See **CANALS**.

The two principal railways had a total length of 2278 miles (1928). In the same year all Dutch railways carried 57,578,000 passengers and reported a total income of 170,010,000 florins. Other transportation facilities included 2000 miles of canals, about 3000 miles of highways, and 1919 miles of tramway lines. The mileage of commercial air transports in 1929 was 1,233,000, passenger traffic in passenger-miles was 4,355,000, and express and mail traffic in ton-miles was 251,000,000.

GOVERNMENT. Executive power is vested in the Sovereign and legislative power conjointly in the Sovereign and the Parliament, which is called the States-General and consists of two houses. The upper House is composed of 50 members, elected by the Provinces, and the lower House of 100 deputies, elected by direct suffrage. There is a consultative State Council of 14 members, appointed by the Sovereign. Queen Wilhelmina was born Aug. 31, 1880, succeeded to the throne Nov. 23, 1890, on the death of her father, Willem III, and was crowned Sept. 6, 1898, after she became of age. The Ministry in 1930 was composed as follows: President of the Council of Ministers, Minister of the Interior and of Agriculture, Dr. Ch. J. M. Ruys de Beerenbrouck (appointed Aug. 10, 1929); Foreign Affairs, Dr. F.

Beelaerts van Blokland; Finance, Dr. D. J. de Geer; Justice, Dr. J. Donner; Colonies, S. de Graaf; Defense, Dr. L. N. Deckers; Public Works, Dr. P. J. Reymer; Labor, Commerce, and Industry, Dr. J. Th. Verschuur; Instruction, Science, and Arts, Dr. J. Terpstra. The composition of the upper Chamber following the elections of 1929 was: Catholics, 16; Social Democrats, 11; Protestant party, 7; Anti-Revolutionists, 6; Liberty Union, 6; Democrats, 4. In the lower Chamber the standing of the parties was: Catholics, 30; Social Democrats, 24; Anti-Revolutionists, 12; Christian Historicals, 11; Liberty Union, 8; Democrats, 7; other parties, 8.

HISTORY. Efforts to ameliorate the effect upon Holland of the world economic crisis was the principal concern of the nation in 1930. This was the main theme of Queen Wilhelmina's address from the throne at the opening of Parliament Sept. 16, 1930. For the first time since 1914, she delivered the address in person. The message urged that utmost care be taken to mitigate the effects of the depression in the Dutch East Indies, where active Communist propaganda had stirred native unrest.

Charges by one of the two Communist deputies that the Pope was fomenting war against Russia resulted in the deputy's ejection from the lower Chamber of Parliament October 24. The Chamber authorized the construction of a 5250-ton cruiser for service in the Dutch East Indies and of a smaller ship for the maintenance of order in the Dutch West Indies. The need for naval protection was demonstrated in 1929, when Venezuelan insurgents captured Willemstad, the capital of Curaçao, and made the Dutch governor of the island prisoner. For the reclamation of the Zuider Zee, see **RECLAMATION**.

NEUTRALS, RIGHTS OF. See **INTERNATIONAL LAW**.

NEVADA. **POPULATION.** According to the Fifteenth Census, the population of the State on Apr. 1, 1930, was 91,058. On Jan. 1, 1920, it was 77,407. Capital, Carson City.

AGRICULTURE. The following table gives the acreage, production, and value of the principal crops in 1929 and 1930:

| Crop | Year | Acreage | Prod. Bu. | Value |
|----------|------|---------|-----------|-------------|
| Hay | 1930 | 370,000 | 677,000* | \$5,911,000 |
| | 1929 | 369,000 | 638,000* | 9,470,000 |
| Potatoes | 1930 | 3,000 | 525,000 | 578,000 |
| | 1929 | 4,000 | 680,000 | 1,020,000 |
| Wheat | 1930 | 15,000 | 386,000 | 403,000 |
| | 1929 | 16,000 | 404,000 | 520,000 |

* Tons.

Farms in the State numbered 3437 in 1930; in 1925, 3883; and in 1920, 3163. The area of irrigated lands totaled 487,241 acres in 1929, as against 561,447 in 1919.

MINERAL PRODUCTION. The mine production of gold, silver, and copper was somewhat lower for 1929 than for 1928, while that of lead and zinc, particularly the latter, was higher. As higher average prices for copper, lead, and zinc prevailed in 1929, the total value of the product of the five metals rose, to \$33,030,875 for 1929, from \$31,033,776 for 1928. Copper production was 140,138,809 pounds for 1929, 158,876,883 pounds for 1928; in value, it was \$22,878,271 for 1928. Zinc production rose notably, to 16,929,749 pounds for 1929, from 6,796,713 for 1928, in which year the product was, as to total value, \$414,599. The quantity of lead mined was 19,692,568 pounds

in 1929 and 15,747,444 pounds in 1928; the value, for 1928, was \$913,352. There were produced, in 1929, 163,711 fine ounces of gold, as against 175,158 in 1928, the product of 1928 having a value of \$3,620,833. Silver production was, for 1929, 4,923,526 fine ounces, as against 5,481,574, in value \$3,206,721, for 1928. Gypsum, the only other mineral listed as producing regularly at a yearly rate in excess of \$600,000, yielded 278,405 short tons in 1928 and 327,365 in 1927; in value, \$1,424,455 for 1928 and \$1,484,171 for 1927. The aggregate value of minerals produced in the State was, for 1928, \$34,881,787; for 1927, \$26,753,295.

The value of gold, silver, copper, lead, and zinc in Nevada decreased from \$33,030,237 in 1929 to about \$17,531,800 in 1930, according to U. S. Bureau of Mines. Compared with 1929 production there were decreases in the output of all metals except lead and zinc. The gold output in Nevada decreased from \$3,384,211 in 1929 to about \$2,729,000 in 1930. The silver production decreased from 4,923,526 ounces in 1929 to about 4,174,000 ounces in 1930 and the value from \$2,624,239 to about \$1,607,000. The Tonopah district produced about 1,903,000 ounces of silver, a decrease, compared with the output of 1,965,595 ounces in 1929. The copper output decreased from 140,138,809 pounds in 1929 to about 85,189,000 pounds in 1930 and in value from \$24,664,430 to about \$10,563,400.

The lead output increased from 10,692,568 pounds in 1929 to about 23,507,000 in 1930, but the value decreased from \$1,240,632 to about \$1,222,400. The zinc recovered from ore mined in Nevada increased from 16,920,083 pounds to about 30,000,000 pounds and from \$1,116,725 in value to about \$1,410,000. This large output of zinc was surpassed only once before, in 1916.

FINANCE. State expenditures in the year ended Dec. 31, 1928, as reported by the U. S. Department of Commerce, were: for maintenance and operation of governmental departments, \$2,684,900 (of which \$423,247 was for local education); for interest on debt, \$92,870; for permanent improvements, \$1,420,886; total, \$4,208,656 (of which \$1,884,436 was for highways, \$560,535 being for maintenance and \$1,323,901 for construction). Revenues were \$3,933,268. Of these, property and special taxes formed 37.6 per cent; departmental earnings and remuneration to the State for officers' services, 5.9; sales of licenses, 14.5 (including taxes of \$271,678 on sale of gasoline). The State's funded debt outstanding on Dec. 31, 1928, was \$1,735,000. Net of sinking-fund assets, it was \$1,597,532. On property bearing an assessed valuation of \$205,186,046 were levied in the year State taxes of \$1,429,479.

TRANSPORTATION. The total number of miles of railroad line under operation on Jan. 1, 1930, was 2122.65. No construction of line or trackage in 1930 was reported.

EDUCATION. A preliminary revision of the elementary course of study for the public schools was brought virtually to completion during the year. A similar revision of the course of high-school study was reported as less advanced but under way.

There were enrolled in the public schools of the State, in the school year 1929-1930, 18,041 pupils. Of these, 13,029 were in elementary grades or courses, and 3762 were in high schools; there were also 650 kindergarten pupils. Expenditures of the year for public-school education, capital

outlay included, totaled \$2,920,105. The average salaries of teachers for the year was \$1571.

ELECTIONS. Governor Fred B. Balzar, Republican, was reelected on November 4. The Republican majority in the Senate of the State Legislature was preserved, but the Democrats gained a bare majority in the Assembly.

OFFICERS. Governor, Fred B. Balzar; Lieutenant-Governor, Morley Griswold; Secretary of State, W. G. Greathouse; Controller, Edward C. Peterson; Treasurer, George B. Russell; Attorney-General, Gray Washburn; Superintendent of Public Instruction, Walter Anderson.

JUDICIARY. Supreme Court: Chief Justice, Edward A. Ducker; Associate Justices, Ben W. Coleman, J. A. Sanders.

NEVADA, UNIVERSITY OF. A coeducational State institution of higher education in Reno, Nev.; founded in 1874. There was an enrollment of 969 students for the autumn term of 1930, of whom 577 were men and 392 were women. These were distributed among the various departments of the university as follows: Arts and sciences, 637; normal school, 31; engineering, 218; agriculture, 43; and home economics, 40. The summer session of 1930 had a registration of 149. There were 74 members on the faculty. The productive funds of the university amounted to \$335,100, and the income for the year to \$727,650. The library contained 52,500 volumes. During the year Mackay Science Hall, the gift of Clarence H. Mackay of New York City as a memorial to his father, John William Mackay, was erected at a cost of \$415,000. President, Walter E. Clark, Ph.D., LL.D.

NEVILLE, MAJ.-GEN. WENDELL CUSHING, U. S. M. C. An American marine officer, died in Edgewater Beach, Md., July 8, 1930. He was born in Portsmouth, Va., May 12, 1870, and attended the U. S. Naval Academy from 1886 to 1890. In 1892 he was commissioned a 2d lieutenant in the U. S. Marine Corps and was promoted through the grades to major general in 1920. He served during the Spanish-American War, taking part in the battle of Guantanamo Bay for which he was brevetted a captain. He also participated in the Boxer campaign in China and the capture of Peking. After the Philippine insurrection he was appointed military governor of the province of Basilan. In 1906, as major, he commanded the marines in the occupation of Cuba by the United States forces. During the engagement at Vera Cruz, Mexico, in 1914 he commanded the 2d regiment of marines, and the following year was stationed in Peking, China, as commander of the American Legation guard. On the entrance of the United States into the World War he became commander of the 5th regiment in the 4th brigade of marines of the famous 2d division, participating in the occupation of the Toulon sector and in the Aisne-Marne offensive. Later, as commander of the 4th brigade, he participated in the battles of Soissons, St. Mihiel, and Meuse-Argonne, and after the Armistice took part in the march to the Rhine and the occupation of Coblenz. In 1923 he was appointed commander of the department of the Pacific of the U. S. Marine Corps, and in 1929 commandant of the headquarters in Washington. He received the Congressional Medal of Honor in 1914 and the Distinguished Service Medals of the Army and Navy. The French government also honored him with five Croix de Guerre (three with palms and two with bronze stars) and made him an officer of the Legion of Honor.

NEW BRUNSWICK (brūnz'wīk). One of the Maritime Provinces of Canada, bounded on the east by the Gulf of St. Lawrence and Nova Scotia, on the north by Quebec, and on the west by the State of Maine. The area is 27,985 square miles and the population on June 1, 1930, was estimated at 423,400 (387,876 at the census of 1921). The chief cities, with their populations in 1921, are Saint John, 47,166; Moncton, 17,488; and Fredericton (the capital), 8114. In 1928, there were 10,024 births, 4926 deaths, and 3138 marriages. The enrollment in the provincially-controlled schools (1928) was 82,170.

Agriculture, mining, manufacturing, fishing, and lumbering are the principal industries. In 1929, the area devoted to field crops was 908,659 acres and the yield was valued at \$23,835,000 (\$18,275,000 from 900,376 acres in 1928). There are 21,476 square miles of forests, half of which are owned by the Province. Timber cut in 1928-29 totaled 273,000,000 cubic feet, of which 56,000,000 cubic feet were manufactured into pulp and paper. The 1929-30 cut was estimated at 212,000,000 cubic feet. The fish catch in 1928 was valued at \$5,001,641. Mineral production (1929) rose to \$2,371,137, the coal output totaling 219,188 tons. Copper, antimony, and gypsum are mined also. In 1928, 794 industrial establishments, employing 17,963 persons, had a gross output valued at \$67,413,742. Port records for 1929 showed exports of \$72,851,601 and imports for consumption of \$24,764,939.

Government is vested in a lieutenant governor and a legislative assembly of 48 members elected for five years. Ordinary revenues in 1929-30 were \$6,568,750; ordinary expenditures, \$7,218,856. The net debt in 1930 was \$40,240,520. During 1929, when tourist traffic from the United States increased 22 per cent, \$5,795,745 was expended on highways. In 1930, there were 1367 miles of main highways, 3268 miles of secondary, and 8187 miles of branch and local roads. Lieutenant Governor in 1930, W. F. Todd; Premier and Attorney-General, J. B. M. Baxter.

Premier Baxter and his Conservative government were returned to power in the provincial election held June 19, 1930. The main issues were the Government's introduction of state control of liquor without reference to the people, its programme for extending the highway system, and its water-power policy. In the Dominion election of July 28, 1930, the Province returned 10 Conservatives and 1 Liberal to the House of Commons at Ottawa. See CANADA.

NEW BRUNSWICK, N. J., Two-HUNDRED AND FIFTIETH ANNIVERSARY OF FOUNDING OF. See CELEBRATIONS.

NEW CALEDONIA, kāl'e-dō'n'ā. A French colony, comprising the island of New Caledonia, the southernmost of the Melanesian Islands, lying about 875 miles east of Australia, and the following dependencies: Isle of Pines, Wallis Archipelago, Loyalty Islands, Huon Islands, and Fotuna and Alofi. The island of New Caledonia has a length greater than 248 miles and an average width of 31 miles. Area, 8548 square miles. Population, according to the census of 1926, 57,630, of whom 14,983 were free, 1281 of convict origin, and 27,490 Melanesians and Polynesians. Capital, Nouméa, with 9336 inhabitants in 1921. Coffee, copra, cotton, manioc, corn, bananas, tobacco, and pineapples form the principal agricultural products. The mineral resources include cobalt, chrome, nickel, iron, and manganese; also

antimony, mercury, silver, gold, lead, copper, and cinnabar. In 1928 the value of mineral exports was 16,549,523 francs. The other leading exports include coffee, copper, copra, guano, and preserved meats. In 1928, imports totaled 159,939,000 francs, and exports, 98,844,090 francs. The budget for 1928 totaled 27,630,200 francs. Vessels entering the ports in 1928 numbered 139, of 244,902 tons. The colony is administered by a governor assisted by a privy council, made up of officials, and by an elected council-general. Governor in 1930, M. d'Arboussier (acting).

NEWCOMB, H. SOPHIE, COLLEGE FOR WOMEN. See TULANE UNIVERSITY.

NEWFOUNDLAND, nü'fūnd-lānd'. A large island in the northeastern part of the Gulf of St. Lawrence, forming one of the British dominions. Area, 42,734 square miles; population in 1929, 270,564, as compared with 259,358 at census of 1921. Labrador, the most easterly part of North America, is a dependency of Newfoundland. It has an area of 110,000 square miles and a population in 1928 of 4086. Capital of Newfoundland, St. John's, with a population in 1929 of 58,306. Other towns, with their populations in 1921, were Bonavista, 4025; Harbor Grace, 3825; Carbonear, 3320. Between 1925 and 1929, the average annual births totaled 6947 and the deaths 3799, leaving an annual excess of births of 3148. Immigrants in 1928 numbered 13,611; emigrants, 15,573. The schools, practically all of which are conducted by the various religious bodies, numbered 1139 in 1926, with a total attendance of 59,088; expenditure on education for the year was \$977,590.

PRODUCTION. Agriculture, fishing, mining, lumbering, and manufacturing are the chief industries. Farm land is limited, totaling 188,000 acres in 1921; improved land, 89,000 acres; forests, 9,600,000 acres. The leading crops are hay, potatoes, turnips, and cabbages. Iron-ore deposits are estimated at 3,600,000,000 tons. Copper ore and pyrites are worked also. In 1929, the iron-ore output declined to 1,516,999 tons, valued at \$2,503,048. Newsprint production in 1929 totaled 253,500 tons, valued at \$15,235,000. Fifty-one Newfoundland vessels, with 932 men, were engaged in the Bank cod fishery in 1928, the catch totaling 123,675 quintals of dry fish, valued at \$989,000. The seal catch in 1929-30 was placed at about 200,000, as compared with 201,856 in 1928-29. The fishing industry was depressed in 1930 by unfavorable prices in foreign markets for salt fish.

COMMERCE. For the fiscal year ended June 30, 1929, imports totaled \$29,237,381 and exports \$36,251,990. Preliminary returns for the calendar year 1929 showed exports of \$36,200,000, or \$3,500,000 more than in 1928, and imports of \$29,000,000. Imports came mainly from Canada, \$11,800,000; the United States, \$9,900,000; and the United Kingdom, \$6,200,000. The United States, Canada, and the United Kingdom, in the order named, took the bulk of the exports. Imports were chiefly staple foodstuffs and finished manufactures; exports were iron ore, newsprint, pulpwood, and furs.

FINANCE. In the budget for the fiscal year ended June 30, 1930, receipts were estimated at \$11,070,000 and expenditures at \$11,462,000. For the preceding year, actual revenues were \$10,026,000 and expenditures \$11,133,000, the deficit totaling \$1,107,000. The net funded debt on June 30, 1929, amounted to 81,666,000 Newfoundland dollars (each equivalent to \$1 in United States

currency). An additional loan of \$6,000,000 (25 years at 5½ per cent) was floated in London in July, 1929.

COMMUNICATIONS. Railways in operation (1929) comprised 905 miles of Government line and 89 miles of private line. Highways on Jan. 1, 1930, included 731 miles suitable for motor-vehicle traffic, of which 111 miles were constructed during 1929. A fleet of 11 steamers maintained communication between the island ports and the continent. The total tonnage of vessels entered and cleared in 1928-29 was 2,936,648. Shipping registered in Newfoundland on Jan. 1, 1929, comprised 2935 vessels of all types of 154,157 tons.

GOVERNMENT. Executive power is vested in a governor, assisted by an executive council of not more than 10 members, and legislative power, in a council of not more than 24 members and an elected house of representatives of 40 members. Women have the franchise. Governor and commander-in-chief in 1929, Sir John Middleton, appointed in August, 1928. The Ministry constituted in November, 1928, was composed as follows: Prime Minister and Minister of Justice, Sir R. A. Squires; Colonial Secretary, A. Barnes; Finance and Customs, P. J. Cashin; Posts and Telegraphs, W. W. Halfyard; Ministers without Portfolios: Sir W. F. Coaker, Dr. A. Campbell, F. G. Bradley, Dr. H. M. Mosdell, P. J. Lewis, T. K. Cook. Other Ministers not in the cabinet were: Marine and Fisheries, H. B. C. Lake; Public Works, R. Hibbs; Agriculture and Mines, F. J. Downey. See **LABORATOR**.

NEW GUINEA, g'n'f. The name applied to both an island in the East Indies and to those territories in the western Pacific, including a portion of the island, which were transferred from Germany to Australia, under mandate of the League of Nations, by the Treaty of Versailles. The area of the island of New Guinea, which ranks after Australia and Greenland as the third island in size in the world, is estimated at from 310,000 to 335,000 square miles, and the population at slightly below 1,000,000. The northeastern portion, formerly Kaiser Wilhelm Island, is included in the Australian mandated area; the section west of 140° E. longitude belongs to the Dutch East Indies; and the southeastern part constitutes the colony of Papua, or British Guinea, also administered by Australia. See **DUTCH EAST INDIES, GERMAN COLONIES, and PAPUA**.

The Territory of New Guinea under Australian mandate consists of that section of the island known as North-East New Guinea, the Bismarck Archipelago (New Britain, New Ireland, Lavonagai, and the Admiralty Islands), and the Solomon Island group. Area, about 91,000 square miles. The estimated native population was 456,941 and the non-indigenous population (estimated June 30, 1929) was 3928, of whom 1808 were British and 1253 Chinese. Agriculture and mining are the principal occupations. Coffee, coconuts, cacao, kapok, fruits, yams, taro, and sago are the chief crops. Of the known considerable mineral deposits in North-East New Guinea only gold is extracted, due to the lack of transportation facilities. Pearl and shell fisheries are operated from some of the islands. In 1928-29 imports were valued at £869,514, exports at £1,146,112. Revenues totaled £350,351 and expenditures, £377,507. The net tonnage entered and cleared in the same year was 274,470 tons. The territory is administered by an Australian official from the

seat of government at Rabaul, New Britain. Administrator in 1930, Brigadier-General E. A. Wisdom.

NEW HAMPSHIRE. POPULATION. According to the Fifteenth Census, the population of the State on Apr. 1, 1930, was 465,293. The population on Jan. 1, 1920, was 443,083. The capital is Concord.

AGRICULTURE. The following table gives the acreage, production, and value of the principal crops in 1929 and 1930:

| Crop | Year | Acreage | Prod. Bu. | Value |
|----------------|------|---------|-----------|-------------|
| Hay | 1930 | 397,000 | 536,000* | \$7,263,000 |
| | 1929 | 477,000 | 679,000* | 9,091,000 |
| Potatoes | 1930 | 11,000 | 2,365,000 | 2,483,000 |
| | 1929 | 10,000 | 1,660,000 | 2,656,000 |
| Corn | 1930 | 13,000 | 585,000 | 614,000 |
| | 1929 | 18,000 | 533,000 | 586,000 |

* Tons.

The number of farms in the State fell to 14,859 for 1930, from 21,065 for 1925 and 20,523 for 1920. By percentage, the reduction from 1925 to 1930 was 29.5, the heaviest proportionate loss incurred in the same period by any of the States.

MINERAL PRODUCTION. The chief item in the State's list of mineral products, stone, was somewhat less actively quarried in 1928, for which year the total quantity was 166,040 short tons, as against 178,300 for 1927; the yearly values of the stone product were high in proportion to the tonnage, being \$1,423,426 for 1928 and \$1,584,262 for 1927. There was in 1928 a conspicuous rise in the output of sand and gravel, to 1,636,621 short tons for that year, from 863,618 for 1927; by value, to \$1,018,547 for 1928, from \$653,214 for 1927. Clay products attained the value of \$881,023 for 1928; for 1927, of \$811,626. Crude feldspar was mined in some quantity, 30,343 long tons in 1928; by value, \$236,224. The value of the entire mineral production of the State attained \$3,816,065 for 1928; for 1927, \$3,447,105.

FINANCE. State expenditures in the year ended June 30, 1929, as reported by the U. S. Department of Commerce, were: for maintenance and operation of governmental departments, \$7,836,419 (of which \$610,486 was for local education); for interest on debt, \$133,372; for permanent improvements, 3,043,267; total, \$11,013,058 (of which 5,610,878 was for highways, \$3,242,536 being for maintenance and \$2,368,342 for construction). Revenues were \$692,857. Of these, property and special taxes formed 34.4 per cent; departmental earnings and remuneration to the State for officers' services, 9.2; sales of licenses, 46.3 (including taxes \$1,907,494 on sales of gasoline). The State's funded debt, outstanding and net alike, on June 30, 1929, was \$3,851,636. On property bearing an assessed valuation of \$673,175,733 were levied State taxes of \$2,990,507.

TRANSPORTATION. The total number of miles of railroad line under operation on Jan. 1, 1930, was 1165.62. No construction of additional line or trackage in 1930 was reported.

EDUCATION. The practice was followed in 1930 of rendering exercise in the actual work of teaching an extensive part of the training of teachers for the rural high schools. Five of these institutions were operated under the practice departments of the normal schools at Keene and Plymouth. Thus, according to Commissioner of Education Pringle's statement in the *Journal* of the National Education Association, 18 weeks of actual teaching were provided for each of the

teachers prepared. For elementary grades a new programme of study was drawn up through the collaboration of teachers, superintendents, and the State's elementary-school agent. For the academic year 1929-30, the number of persons of school age, from 5 to 16 years, was reported as 91,549. Apart from 31,655 listed as enrolled in private schools, there were, in the public schools, 76,452 enrolled pupils. Of these, 56,230 were in elementary schools; 6064 in junior high schools; and 14,158 in high schools. The year's expenditures for public-school education totaled \$7,750,843. Salaries of divers groups of teachers, for the year, averaged as follows: men, secondary, \$2149; women, secondary, \$1467; men, elementary, \$1642; women, elementary, \$1104.

CHARITIES AND CORRECTIONS. Amended in divers respects by the State laws of 1929, the central authority in 1930 for the care and custody of persons rested in the State Board of Public Welfare. It was composed of the Governor, the secretary of the State Board of Health, and five nominee members, one chosen every year to serve five years. The Board had charge of the supervision of all neglected, delinquent or defective children. It inspected all State and county charitable and correctional institutions. It distributed aid to dependent mothers. The State institutions, with the numbers of their respective inmates as of June 30, 1930, were: New Hampshire State Hospital (insane), Concord, 1698; Laconia State School (feeble-minded children), 507; New Hampshire State Industrial School (children under custody), Manchester, 139 boys and 71 girls; New Hampshire State Prison, Concord, 151 men and 4 women; Soldiers' Home, Tilton; New Hampshire State Sanatorium (consumptives), Glencliff, 96.

LEGISLATION. The State Legislature, summoned in special session by Governor Tobey to consider a reform of the system of taxation in accordance with the report of its interim tax commission, convened on February 18 and adjourned on February 28. It failed to enact the proposed measures. The idea of the proposed reform was to reduce the tax burden of the rural part of the population, which had been found to be paying more than its estimated proper share of the State's yearly revenue of approximately \$22,000,000. To that end it had been proposed to relieve the State's subdivisions of their share of the expense of maintaining trunk thoroughfares and State-aided roads; also, to render growing timber exempt from annual taxation, to which it was subject in the same manner as real estate. In order to make good the loss that such changes would cause the State treasury, it was recommended that the Legislature impose a tax on the franchises of gas and electric utilities (including hydroelectric) and a personal and corporation income tax. Prior to the meeting of the Legislature the State Supreme Court delivered an extensive opinion in January on the features of the tax plan, suggesting desirable legal features for bills.

The urban element in the Legislature was not generally friendly to a recasting of the State's financial system that would shift burdens from the country to the cities, particularly the populous manufacturing centres. Finding it impracticable to carry out the programme, the backers of the new plan abandoned their efforts for the time being, counting on renewing them at the regular legislative session to be held during 1931.

Constitutional Convention. The eleventh constitutional convention of the State, attended by 416 delegates, convened on June 4 and adjourned on June 13. It submitted to the people by the process of referendum five amendments to the State constitution. These provided that the Legislature might allow absentees to vote at the biennial elections; that it might impose an estate tax equal to the credit allowed the State under the Federal estate tax; that the Governor might disapprove or reduce items or parts of items in appropriation bills; that the Legislature might exempt from any income tax any amount of income that it might deem it just to exempt; that members of the State House of Representatives be elected by towns or other specified places on the basis of one Representative for the first 600 inhabitants, and one for each additional 1500, places of less than 600 inhabitants having representation for a proportionate part of the time. The amendment as to income tax exemptions was designed to remove a constitutional limit on such exemptions of \$1200 for single individuals and \$2000 for married ones.

POLITICAL AND OTHER EVENTS. One of the most prominent textile companies of the State, the Amoskeag Manufacturing Company, with mills at Manchester, gave sign of improved prosperity by declaring on February 6 its first dividend subsequent to 1924 and by granting a bonus to 10,000 employees. Economic conditions in the State, however, were not consistently of the best, in 1930, and the difficulties of the Merrimac River Savings Bank at Manchester caused its temporary closing on June 9 by court order. Nashua suffered a loss of an estimated \$5,000,000 on May 4 by a fire that destroyed several industrial plants and about 200 dwellings. On the Connecticut River, between Littleton, N. H., and St. Johnsbury, Vt., the dam and hydroelectric works of the Fifteen Mile Falls development of the New England Power Association were completed and were put in operation, from the White House at Washington, by President Hoover. The dam rises 175 feet above the bed of the river and the plant was designed to furnish 140,000 kilowatts of electrical energy of which a great part was to be transmitted to Boston. The dispute between the State and the Boston and Maine Railroad over the latter's alleged failure to fulfill the agreement of 1917 with the State as to its policy of upkeep was reported in October to have been compromised.

ELECTIONS. United States Senator Henry W. Keyes, Republican, was elected to a third term. Former Governor John G. Winant, Republican, was elected to a second term in that office, despite an established precedent against repeating terms in the governorship. Albert W. Noone, Democrat, served his party by running as its candidate for both Governor and Senator. The two Representatives, Republicans, were reelected. Five proposed amendments to the State constitution, among them that to allow an estate tax and that to permit statutory income tax exemptions, were defeated.

OFFICERS. Governor, Charles W. Tobey; Secretary of State, Enoch D. Fuller; State Treasurer, Henry E. Chamberlin, succeeded, on his decease, by Charles T. Patten; Attorney-General, Ralph W. Davis; Commissioner of Education, James N. Pringle.

JUDICIARY. Supreme Court: The Chief Justice in 1930 was Robert J. Peaslee; the Asso-

ciate Justices were John E. Allen, Thomas L. Marble, Oliver W. Branch, Leslie P. Snow.

NEW HAMPSHIRE, UNIVERSITY OF. A co-educational State institution of higher learning in Durham, N. H.: founded in 1806 in Hanover, N. H., as part of Dartmouth College, transferred to Durham as State College in 1893, and made the State university in 1923. It consists of a college of liberal arts, a college of agriculture, and a college of technology. The 1930-31 enrollment was 1594, of whom 1118 were men and 476 women. The summer session had a registration of 354 students. The faculty numbered 155. The endowment amounted to \$1,253,104, and the income for the year totaled \$1,633,059. The fund accruing under the millage law of 1925, which provided an annual amount equal to one mill for each dollar for the assessed valuation of the State, amounted in 1929-30 to \$654,850. This, together with income from other sources, was sufficient for the maintenance of the institution and for the gradual construction of a complete physical plant in accordance with a comprehensive plan for the development of the university. Charles H. Blood, class of 1880, of Boston gave \$125,000 in 1930 for the construction of an infirmary and rest house for students and members of the faculty. The library contained 66,845 volumes. President, Edward Morgan Lewis, LL.D., Litt.D.

NEW HEBRIDES, hēb'ri-dez. A group of islands in Melanesia, including Espiritu Santo, Malekula, Efate or Sandwich Island, Epi, Erromanga, Tanna, and Anietyūm. The group is under the joint administration of France and Great Britain, according to conventions of February, 1906, and Mar. 18, 1922. Capital, Port Vila. The area is approximately 5700 square miles and the population about 60,000, of whom in 1928, 2051 were British and 779 French. Many missionary schools have been established, chiefly by the Presbyterian church. The area under cultivation is planted chiefly with coconuts, cacao, cotton, and coffee. Bananas, oranges, and all tropical fruits grow well. The imports in 1928 amounted to £374,797 and the exports were valued at £346,081, of which about one-fourth were British. Joint revenue in 1928, £27,932; expenditure, £28,777. Direct steamship communication is maintained with France, via Tahiti and Panama. British High Commissioner, in 1930, Sir A. G. M. Fletcher; French High Commissioner, M. d'Arbousier; British Resident Commissioner, G. A. Joy; French Resident Commissioner, M. Thaly (acting).

NEW JERSEY. POPULATION. According to the Fifteenth Census, the population of the State on Apr. 1, 1930, was 4,041,334. The population on Jan. 1, 1920, was 3,155,900. The capital is Trenton.

AGRICULTURE. The accompanying table gives

| Crop | Year | Acreage | Prod. Bu. | Value |
|--------------------|------|---------|-----------|-------------|
| Potatoes | 1930 | 43,000 | 8,260,000 | \$7,847,000 |
| | 1929 | 44,000 | 5,340,000 | 8,544,000 |
| Hay | 1930 | 229,000 | 342,000* | 7,192,000 |
| | 1929 | 259,000 | 388,000* | 7,002,000 |
| Corn | 1930 | 175,000 | 6,300,000 | 5,985,000 |
| | 1929 | 179,000 | 6,444,000 | 6,508,000 |
| Peaches | 1930 | ..... | 1,788,000 | 3,040,000 |
| | 1929 | ..... | 2,600,000 | 2,990,000 |
| Sweet potatoes . . | 1930 | 15,000 | 1,995,000 | 2,894,000 |
| | 1929 | 14,000 | 1,960,000 | 2,744,000 |
| Wheat | 1930 | 52,000 | 1,222,000 | 1,063,000 |
| | 1929 | 55,000 | 1,045,000 | 1,285,000 |

* Tons.

the acreage, production, and value of the principal crops as reported for 1929 and 1930.

Farms in the State numbered 24,563 in 1930, having declined from the 29,671 of 1925 and the 29,702 of 1920.

MINERAL PRODUCTION. The yearly total of the clay products of the State, regularly forming the greater part of its entire mineral industry, declined again for 1928, to \$39,379,278, from \$43,099,769 for 1927. This reduction of output occurred chiefly in the structural classes, brick and tile, although the production of pottery also made a moderate decline. Brick and tile production for 1928 was more than \$2,000,000 below that for 1927. New Jersey mined about two-thirds of the Eastern States' yearly production (309,096,000 pounds in 1929 and 288,090,000 in 1928) of zinc. The zinc product of the State was thus, for 1929, somewhat in excess of \$13,000,000 as to value. Separate statistics were not given out by the U. S. Bureau of Mines in its yearly Preliminary Summary for the considerable cement output of the State. The mining of iron ore in 1929, to the quantity of 285,115 long tons, did not keep up the unusual pace of 1928, when 350,616 tons were mined; the yearly value of iron-ore shipments was, for 1929, \$1,157,848, and for 1928, \$1,357,877. Stone production and that of sand and gravel, both increasing in 1928, attained for that year totals in each case in excess of \$4,000,000. The total value of mineral products native to the State was, for 1928, \$70,865,363; for 1927, \$73,090,810.

FINANCE. State expenditures in the year ended June 30, 1929, as reported by the U. S. Department of Commerce were: for maintenance and operation of governmental departments, \$53,189,712 (of which \$19,347,894 was for local education); for interest on debt, \$3,745,754; for permanent improvements, \$32,865,042; total, \$90,842,857 (of which \$34,109,235 was for highways, \$7,044,031 being for maintenance and \$27,065,204 for construction). Revenues were \$91,068,090. Of these, property and special taxes formed 53.8 per cent; departmental earnings and remuneration to the State for officers' services, 5.1; sales of licenses, 28.4 (including taxes of \$8,808,518 on sales of gasoline). The State's funded debt outstanding on June 30, 1929 was \$88,216,000. Net of sinking-fund assets, was \$64,025,682. On property bearing an assessed valuation of \$6,682,073,036 were levied in the year 1929-30 State taxes totaling \$38,907,253.

TRANSPORTATION. The total number of miles of railroad line under operation on Jan. 1, 1930, was 2296.70. No construction of additional line or trackage in 1930 was reported.

EDUCATION. A report on public education in the State was placed before the Legislature by a commission that had been charged to survey the subject. While no immediate extensive legislative action followed, the report was regarded as furnishing a useful basis for what might be determined later. There were enrolled in the public schools in the year ended on June 30, 1930, 898,399 pupils. Those in vocational, continuative, evening, summer, and other special schools excepted, the enrollment in the regular day schools totaled 785,225. Of this total, 113,132 were in high-school grades. The year's expenditures for public-school education were: current, \$80,376,095; total, including capital outlay and debt service, \$151,769,009. For the year, the average salary of all day-school teachers totaled \$2060.

CHARITIES AND CORRECTIONS. The central authority of the State in the administration of institutions and activities for the care or custody of persons rested in 1930 in the Department of Institutions and Agencies. It supervised, coordinated, and prepared budget requests for the divers branches of State welfare work and had authority of inspection over private, municipal, and county institutions. The Department's governing body, the State Board of Control, was composed of nine non-salaried appointees serving terms of eight years. It had the appointment of a board of managers for each of the State institutions, and likewise of the Commissioner of the Department, who served as its chief executive officer. It maintained separate divisions or bureaus for parole activities, for the investigation of improperly circumstanced children, for the planning of educative training of persons admitted to institutions and for inspection of institutions. For the mentally affected the State maintained Graystone Park State Hospital, 4015 inmates in November, 1930, and Trenton State Hospital, 2651. For mental defectives, the State School for the Feeble-Minded, Vineland, 1123 (females); State Colony for Feeble-Minded Males, New Lisbon, 503; State Colony for Feeble-Minded Males, Woodbine, 419; North Jersey Training School (females), Totowa, 437. For epileptics, the State Village for Epileptics, Skillman, 1102. For the tubercular, the State Sanatorium for Tuberculous Diseases, Glen Gardner, 415. The prisons were: State Prison, Trenton, 1475; State Prison Farm, Leesburg, 218; State Prison Farm, Bordentown, 205. There were three reformatories: New Jersey Reformatory (male), Rahway, 696; New Jersey Reformatory (male), Annandale, 319; New Jersey Reformatory (female), Clinton. Juvenile delinquents were kept at the State Home for Boys, Jamesburg, 626, and the State Home for Girls, Trenton, 281. For the shelter of veterans were the Home for Disabled Soldiers, Kearny, 56, and the Home for Disabled Soldiers, Sailors, Marines, and their Wives and Widows, Vineland, 195.

LEGISLATION. The legislative session of 1929, which had been extended for the purpose of continuing its proceedings against Mayor Hague of Jersey City, the State's chief Democratic stronghold, was prolonged until Jan. 7, 1930. The review of the proceedings as to Hague's liability to punishment for contempt of the Legislature, because of his refusal to answer its questions as to how he had made his money, was pending in the State Court of Errors and Appeals, and the Legislature could proceed no further until the court had acted. On May 19 the court finally rendered a decision favorable to Hague, confirming the legality of his refusal to answer the ten questions as to his private affairs asked in 1928.

The regular annual session of the Legislature convened on January 14 and adjourned on April 16. It revised the election laws to some extent, but abandoned a plan to alter the primary election system in such a way as to prevent the alleged and much attacked practice of Democrats' voting in the Republican primaries of Hudson County. The restrictions on building and loan associations were strengthened. Provision was made for a State bond issue of \$100,000,000, subject to approval in a referendum vote. New Jersey took the initiative among the States in passing an act to regulate advertising on roadside billboards. This act, the Jones Law, required a

license for billboards, prohibited those that might endanger traffic or damage adjacent property and laid a tax of 3 cents a square foot on billboards. It prohibited them on sites within 500 feet of highway intersections and placed their regulation in the hands of the Motor Vehicle Commissioner. Exception was made in favor of signs along the Boardwalk at Atlantic City. Regulations were enacted to restrict the locations for the establishment of radio broadcasting stations.

Paralleling legislation in New York, the Legislature abolished its Holland Tunnel Commission and transferred the powers of that commission to the Port of New York Authority, of which the membership was doubled. The salary of the Governor was raised to \$20,000, from \$10,000 a year, to start with the end of the current term. A blow was leveled at Hudson County political control by the abolition of the Hudson County Boulevard Commission and the Hudson County Park Commission, for which was substituted a single county commission of five members appointed by the Governor. The State budget was reduced to about \$28,411,000, a figure below that of the budget for the year current. In connection with the legislation for the \$100,000,000 bond issue provision was made that \$65,000,000 of its proceeds should go to highway construction, \$18,000,000 to the elimination of grade crossings, \$10,000,000 to institutional buildings, and \$7,000,000 to the purchase of water-supply sites. The Legislature renewed a proposal that the State should buy the right of way for a ship canal across the State from Raritan Bay to Bordentown, on condition that the U. S. government finance the construction of the canal. A law was passed limiting the issues of municipal bonds to 15 per cent of the assessed taxable values. It was found to leave certain municipalities in difficulties and was modified by a special session of the Legislature held for the purpose on September 8. The State Attorney-General rendered an opinion that another of the session's laws affecting bond issues, that providing for county issues of highway bonds subject to their approval by the State Highway Commission and its undertaking to reimburse, was unconstitutional.

Another extra session was called to convene on November 18, for the purpose of acting on the recommendations of the Abell Committee, which had made an extended study of the workings of the political institutions of the State.

POLITICAL AND OTHER EVENTS. The campaign of Dwight W. Morrow, Republican, banker and ex-ambassador to Mexico, for U. S. Senator, was conspicuous because of this candidate's close relations with the Federal Administration and on account of its marking his first entrance into a competition for elective office. Mr. Morrow declared himself in favor of the repeal of the Eighteenth Amendment. At Paterson on June 6 he stated it to be his opinion that Germany had been charged unfairly with the whole responsibility for the war of 1914-18. He won by an ample margin at the primaries on June 17. At the Republican State convention on June 24 he required the adoption of a platform declaration for the repeal of the Prohibition amendment.

As master appointed by the United States Supreme Court to take testimony in the action brought by New Jersey for an order to forbid New York State to divert 600,000,000 gallons of water a day, for the use of New York City, from the headwaters of the Delaware River,

Charles N. Burch conducted numerous hearings. Brig.-Gen. George B. Pillsbury, U. S. A., assistant to the Chief of Engineers, testified that diversion would not harm navigation in the Philadelphia area. Testimony was given on both sides with regard to possible detriment to oyster beds near the mouth of the river.

Testimony at great length was likewise given before Earl M. Steer, examiner for the Interstate Commerce Commission, relating to the application of New Jersey for the termination of free lightage in New York harbor.

Communists were active in Newark, and one of their meetings was raided on February 15. Nine were prosecuted on a charge of advocating the destruction of the Government. It was ruled in the Essex County Court of Quarter Sessions that certain of the defendants' witnesses, as non-believers in God, might not testify. The factory of the Michelin Tire Company at Milltown, which had employed as many as 1800 persons, was permanently shut down on September 10 because of adverse conditions in the tire industry. The Lackawanna railroad system completed the electrification of its shorter suburban routes, putting its first electric trains in operation early in September. The Erie Railroad raised its main tracks through Paterson, doing away with grade crossings at some 20 intersections with streets.

ELECTIONS. Dwight W. Morrow, Republican, was elected U. S. Senator both for the unexpired and for the ensuing full term. According to the unofficial totals he defeated Alexander Simpson, Democrat, for the full term by 584,173 votes to 393,048. His margin over the vote of Miss Thelma Parkinson, Democrat, for the short term was approximately the same. Nine Republican and three Democratic Representatives were elected. The Legislature remained strongly Republican in both branches. The popular vote approved proposals for three issues of State bonds, totaling \$100,000,000. They were: for highways and grade crossings, \$83,000,000, approval carrying an increase in the gasoline tax to 3 cents, from 2 cents; institutional buildings, \$10,000,000; acquisition of water rights, \$7,000,000.

OFFICERS. Governor, Morgan F. Larson; Secretary of State, Joseph F. S. Fitzpatrick; Treasurer, Albert C. Middleton; Comptroller, John McCutcheon; Attorney-General, William A. Stevens; Commissioner of Education, Charles H. Elliott.

JUDICIARY. Chancellor, Edwin Robert Walker; Supreme Court, William S. Gummere (Chief Justice), Thomas W. Trenchard, Charles W. Parker, Luther A. Campbell, Frank T. Lloyd, Clarence E. Case, Joseph L. Bodine, Peter F. Daly, Ralph W. E. Donges.

NEW JERUSALEM, CHURCH OF THE. An organization which is also known as the New Church, and popularly called Swedenborgian because based upon the statement of Christianity set forth in the writings of Emanuel Swedenborg, Swedish scientist, philosopher, theologian, and seer (1688-1772). The two bodies that now compose it in the United States are the General Church of the New Jerusalem and the General Convention of the New Jerusalem, while in Great Britain the General Conference of the New Church corresponds to the General Convention in the United States. The first New Church society in America was founded in Baltimore in 1792, and the General Convention of the New Jerusalem in the United States was organized in

1817. In 1890 a considerable number withdrew, forming later the General Church of the New Jerusalem.

THE GENERAL CHURCH OF THE NEW JERUSALEM. This body was organized in 1897 under episcopal government with headquarters in Bryn Athyn, Pa., where the church maintains: A cathedral church of unusual architectural interest; the Academy of the New Church, with departments from kindergarten to junior college; and theological and normal schools, with an enrollment of 285 in 1930. The General Church differs from the older bodies in the New Church mainly in its stricter attitude toward the theological writings of Swedenborg (considering them to be the Gospel or Word of the Lord at his Second Advent) and in the endeavor to establish parochial schools. It had an international adult membership in 1930 of 2012 with 3 bishops, 39 pastors, 3 ministers, and 24 societies, 15 of which were in the United States and Canada, 2 in England, and others in Sweden, Holland, Belgium, France, Natal, New South Wales, and Brazil. A native mission was carried on in South Africa, with headquarters at Alpha, Orange Free State, which reported 771 adult members (natives), 5 native pastors, and 6 native ministers. Among the periodicals published by the General Church are *New Church Life*, its official monthly magazine, *New Church Sermons*, *The Journal of Education*, and *The Bulletin*.

THE GENERAL CONVENTION OF THE NEW JERUSALEM IN THE UNITED STATES OF AMERICA. In 1930, the General Convention consisted of about 6000 communicant members, united into 89 societies, territorially organized as 12 associations and 7 independent societies. The ministerial membership was 120; and the amount expended for missions and benevolences for the year ending Mar. 31, 1930, was \$40,000. Educational institutions of the General Convention included a theological school in Cambridge, Mass., a junior college in Urbana, Ohio, and the Waltham School for Girls, Waltham, Mass. Periodicals included the *New Church Messenger*, weekly, Brooklyn, N. Y.; the *New Church Review*, quarterly, Boston, Mass.; the *New Church League Journal*, monthly, Boston, Mass.; *The Helper*, weekly, Philadelphia, Pa.; and *Sunday Afternoons*, weekly, Boston, Mass. In 1930 the Convention held its 109th annual meeting at its church in Boston, June 21-24, approximately 600 delegates and visitors from all parts of the world being in attendance. The officers elected were: President, the Rev. Paul Sperry, Washington, D. C.; vice-president, Ezra Hyde Alden, Philadelphia, Pa.; treasurer, Albert P. Carter, Boston, Mass.; and secretaries, B. W. Whittemore, Boston, and J. Woodruff Saul, Chicago.

NEW MEXICO. POPULATION. According to the Fifteenth Census, the population of the State on Apr. 1, 1930, was 423,317. The population on Jan. 1, 1920, was 360,350. The capital is Santa Fé.

AGRICULTURE. The table on page 560 gives the acreage, production, and value of the principal crops in 1929 and 1930.

The farms in the State numbered 31,393 in 1930, as against 31,687 in 1925 and 29,844 in 1920. The area of irrigated lands totaled 551,420 acres in 1929, as against 538,377 in 1919.

MINERAL PRODUCTION. The mine production of copper again increased, attaining 97,717,262 pounds for 1929, as against 89,854,646 for 1928;

| Crop | Year | Acreage | Prod. Bu. | Value |
|----------------|------|---------|----------------------|-----------|
| Cotton | 1930 | 127,000 | 100,000 ^a | \$..... |
| | 1929 | 130,000 | 90,000 ^a | |
| Hay | 1930 | 225,000 | 419,000 ^b | 5,285,000 |
| | 1929 | 231,000 | 478,000 ^b | 8,541,000 |
| Dry beans | 1930 | 227,000 | 726,000 | 1,089,000 |
| | 1929 | 225,000 | 1,688,000 | 4,389,000 |
| Corn | 1930 | 215,000 | 3,010,000 | 2,318,000 |
| | 1929 | 209,000 | 4,180,000 | 3,720,000 |
| Wheat | 1930 | 206,000 | 1,921,000 | 1,181,000 |
| | 1929 | 305,000 | 5,742,000 | 5,495,000 |
| Grain sorghums | 1930 | 208,000 | 1,689,000 | 760,000 |
| | 1929 | 203,000 | 4,466,000 | 2,903,000 |

^a Bales. ^b Tons.

in value it was \$17,198,238 for 1929 and \$12,939,069 for 1928. Copper thus held a long lead over other mineral products of the State, in order of value for 1929. Coal, second in importance, was mined to the quantity of 2,622,769 net tons in 1929 and 2,711,851 in 1928; by value, \$8,314,000 in 1929 and \$8,636,000 in 1928. The production of zinc increased to 68,910,000 pounds for 1929, from 62,406,000 for 1928; by value, to \$4,548,000 for 1929, from \$3,806,766 for 1928. Lead, less important as to the yearly total of value produced, nevertheless made a substantial increase to 22,260,811 pounds mined in 1929, from 15,610,501 in 1928; the value for 1929 was \$1,402,431, as against \$905,409 for 1928. Gold was mined to the value of \$727,162 in 1929 and, in 1928, of \$680,360. The production of silver was 1,121,746 fine ounces for 1929, as against 827,793 for 1928; by value, \$597,784 for 1929 and \$484,259 for 1928. The aggregate value of gold, silver, copper, lead, and zinc produced was \$24,473,675 for 1929, sharply above the \$18,815,863 for 1928. Petroleum, the only other considerable mineral product, increased its yield to 1,689,000 barrels for 1929, from 943,000 for 1928; the yearly value of petroleum produced was \$2,100,000 (estimated) for 1929 and \$1,280,000 for 1928. The total value of the mineral products of the State was \$30,426,840 for 1928; for 1927, \$28,608,776.

The output of gold, silver, copper, lead, and zinc from New Mexico ores and gravels in 1930 in terms of recovered and estimated recoverable metal was estimated at 31,556 ounces of gold, 1,091,000 ounces of silver, 20,867,000 pounds of lead, 67,790,000 pounds of copper, and 68,277,000 pounds of zinc, according to the U. S. Bureau of Mines. These figures were to be compared with a production in 1929 of 35,176.5 ounces of gold, 1,121,546 ounces of silver, 22,260,811 pounds of lead, 97,717,262 pounds of copper, and 68,910,000 pounds of zinc, and showed decreases of 3,620.5 ounces (\$74,842) in gold, 30,546 ounces of silver, 1,393,811 pounds of lead, 29,927,262 pounds of copper, and 633,000 pounds of zinc. The gross value of the New Mexico metal production at average yearly prices of \$20.67 per ounce of gold, \$0.385 per ounce of silver, \$0.052 per pound of lead, \$0.124 per pound of copper, and \$0.047 per pound of zinc, in 1930 was gold \$652,320, silver \$420,035, lead \$1,085,084, copper \$8,405,960, and zinc \$3,209,019, with a total of \$13,772,418, as compared with \$24,473,675 in 1929, a decrease for 1930 of \$10,701,257, or 44 per cent. In quantity, zinc surpassed the output of copper, but in value copper continued to be the most important metal produced in New Mexico.

FINANCE. State expenditures in the year ended June 30, 1928, as reported by the U. S. Department of Commerce, were: for maintenance and operation of governmental departments,

\$5,402,316 (of which \$1,029,596 was for local education); for interest on debt, \$281,659; for permanent improvements, \$3,970,082; total, \$9,654,057 (of which \$4,579,360 was for highways, \$1,277,050 being for maintenance and \$3,302,310 for construction). Revenues were \$8,408,434. Of these, property and special taxes formed 31.6 per cent; departmental earnings and remuneration to the State for officers' services, 11.7; sales of licenses, 27.2 (including taxes of \$1,656,706 on sales of gasoline). The State's funded debt outstanding on June 30, 1928, was \$2,998,000. Net of sinking-fund assets, it was \$2,762,481. On property bearing an assessed valuation of \$316,468,567 were levied in the year State taxes of \$2,508,496.

TRANSPORTATION. The total number of miles of railroad line under operation on Jan. 1, 1930, was 2874.64. There were built, in 1930, 73.48 miles of additional first track.

EDUCATION. In addition to preparing a new course of study for the elementary schools, the authorities drew up the State's first standard course of high-school study. It was reported in the *Journal* of the National Education Association that an elementary training school for teachers had been established at Albuquerque with assistance from the Rockefeller Foundation and from Senator Bronson Cutting. There were enrolled in the public schools of the State, in 1930, 98,752 pupils. Of these, 87,004 were in elementary and 11,658 in high-school grades. The total expenditures for public-school education in the year ended June 30, 1929, were \$7,497,762.

POLITICAL AND OTHER EVENTS. New Mexico joined with Colorado, Utah, Wyoming, and Montana in bringing action in the courts of the District of Columbia for writs of mandamus to compel the Secretary of the Interior to reinstate or accept applications for filing under the Leasing Act of 1920. This act, which made it possible for petroleum operators to develop wells on Federal lands, had been suspended from operation in these States by an executive order. The suspension was unpopular with part of the inhabitants of New Mexico, who regarded it as likely to retard the growth of the State. In the Carlsbad Cavern, at Carlsbad, an extensive newly discovered area was explored. About 40 miles southwest of Carlsbad was found a cave with mortuary relics, supposedly some 2000 years old, of the so-called Basket Maker race.

ELECTIONS. Arthur Seligman, Democrat, was elected Governor, defeating C. M. Botts, Republican, by a vote unofficially reported as 61,110 to 53,077. Senator Sam G. Bratton, Democrat, was reelected by 68,064 votes to his Republican opponent Holt's 46,787 (unofficial). A Democratic Representative was likewise elected. The voters rejected proposed State constitutional amendments to allow the exchange of State public lands for Federal public lands; to empower the State Board of Education to elect the State School Superintendent; and to impose a tobacco tax.

OFFICERS. Governor, R. C. Dillon; Lieutenant Governor, Mrs. E. A. Perrault (acting); Secretary of State, Mrs. E. A. Perrault; State Auditor, Victoriano Ulibarri; Treasurer, Emerson Watts; Attorney-General, M. A. Otero; Superintendent of Public Instruction, Anastasio Montoya.

JUDICIARY. Supreme Court: The Chief Justice in 1930 was Howard L. Bickley; the Associate Justices were John C. Watson, Frank W. Parker, John F. Simms, Charles C. Catron.

NEW ORLEANS. See BRIDGES; LOUISIANA.

NEW SOUTH WALES. One of the six original States of the Commonwealth of Australia, located in the southeast part of the continent. Area, exclusive of the Federal Territory, 309,432 square miles; population, excluding aborigines, according to the census of 1921, 2,100,371; estimated, Mar. 31, 1930, 2,483,645. The Federal Territory in 1930 had an area of 940 square miles and 9045 inhabitants. Sydney, the capital, had a population in 1921, of 905,047, including suburbs and shipping; estimated Jan. 1, 1930, at 1,238,660. Other towns with their populations in 1929 were: Newcastle and suburbs, 103,180; Broken Hill, 23,260; Auburn, 18,530. The movement of population in 1929 was: Births, 52,671; deaths, 24,582; marriages, 19,535. Education is controlled by the State and instruction is compulsory between the ages of 7 and 14. At the beginning of 1929, there were 3156 government schools, with 362,549 pupils enrolled. There were 739 private schools, of which 491 were Roman Catholic, with 89,280 students.

The area under wheat, the principal crop, in 1929-30 was 3,902,200 acres, and the final official estimate of the yield was 33,948,000 bushels (49,257,000 bushels in 1928-29). Other grains, oranges and other citrus fruits, potatoes, tobacco, sugar cane, bananas, and apples are raised. The total area under cultivation in 1928 was 4,914,515 acres (4,597,296 acres in 1927) and the total value of all crops was £17,018,170 (£22,098,100 in 1927). There were in 1929 about 50,740,000 sheep, which produced 484,753,597 pounds of wool during 1928-29. Mineral production (1929) was estimated at £10,145,164 (£12,600,668 in 1928). New South Wales is the chief industrial State of the Commonwealth. In 1928-29, there were 8465 industrial establishments, employing 180,806 workers, with a total gross output valued at £185,298,575, of which £73,627,441 represented the value added by manufacture. In 1929-30, the estimated value of direct overseas exports leaving the ports of the state was £35,748,815 and the value of imports was £57,142,375. Vessels entering in 1928-29 totaled 2865 of 8,516,000 net tons.

For the year ended June 30, 1929, the state revenues totaled £51,241,737 and the expenditures £51,066,805. The gross state debt on June 30, 1930, was £270,630,848, and the interest payable upon it amounted to £13,586,793 annually. There were (1929) 5940 miles of state railways, with gross earnings for the year of £19,616,000 and operating expenses of £14,978,000. Main highways extended 14,000 miles. The great arch of the Sydney Harbor Bridge, the largest single arch in the world, was completed in August, 1930. See BRIDGES.

Executive power is vested in a governor assisted by a cabinet, and legislative power in a bicameral legislature, consisting of a legislative council and a legislative assembly. The legislative council, which must not consist of less than 21 members, is appointed for life by the Crown, and consisted of 96 members in 1930. There are 90 members in the Legislative Assembly. Governor in 1930, Sir Philip Game; Premier, T. R. Bavin. See AUSTRALIA.

HISTORY. The State Labor party, headed by J. T. Lang, won an unexpected victory in the bitterly contested election of Oct. 25, 1930. The Labor leader campaigned on a platform opposing the so-called Niemeyer programme of financial retrenchment. For repercussions of the Labor

victory in Federal politics, see AUSTRALIA under History. Asserting that the election had given him a mandate to abolish the Legislative Council, or upper house of the State Parliament, Premier Lang demanded that the Governor appoint enough new members of the Legislative Council to out-vote his opponents. The Governor refused and a new election was in prospect to determine the issue.

Settlement of the strike in the northern coal-fields, which had been closed down for 15 months, was announced in May, 1930. The union miners ended by accepting the wage agreement they had rejected in December, 1929, against the advice of their own leaders. A State Royal Commission, appointed to inquire into the condition of the industry, recommended the establishment of a coal board, with power to determine wages and hours, fix selling prices, and eliminate uneconomic mines.

NEW YORK. POPULATION. According to the Fifteenth Census the population of the State on Apr. 1, 1930, was 12,588,066. A census by the State was taken in 1925. This showed a population of 11,162,151, compared with 10,385,227 by the Federal census in 1920. The population of New York City, according to revised figures of the Census of 1930, was 6,981,927; in 1920 it was 5,620,048. The Borough of Manhattan declined in population to 1,872,145 in 1930, from 2,284,103 in 1920. The Borough of Brooklyn rose to 2,604,549 in 1930, from 2,018,356 in 1920 and became the most populous borough. The Borough of Queens had 1,079,357 inhabitants in 1930, as against 469,042 in 1920, and achieved the highest gross gain of population for any of the city's boroughs. Bronx Borough had 1,266,506 inhabitants in 1930. The capital is Albany.

AGRICULTURE. The following table gives the acreage, production, and value of the principal crops in 1929 and 1930:

| Crop | Year | Acreage | Prod. Bu. | Value |
|-----------|------|-----------|------------|--------------|
| Hay | 1930 | 4,408,000 | 5,666,000* | \$81,205,000 |
| | 1929 | 4,697,000 | 6,738,000* | 81,898,000 |
| Potatoes | 1930 | 251,000 | 29,116,000 | 26,204,000 |
| | 1929 | 270,000 | 24,840,000 | 36,018,000 |
| Corn | 1930 | 657,000 | 19,710,000 | 17,739,000 |
| | 1929 | 670,000 | 20,837,000 | 21,462,000 |
| Oats | 1930 | 1,077,000 | 45,234,000 | 19,903,000 |
| | 1929 | 979,000 | 24,377,000 | 14,139,000 |
| Apples | 1930 | ..... | 27,683,000 | 22,146,000 |
| | 1929 | ..... | 16,520,000 | 23,954,000 |
| Wheat | 1930 | 263,000 | 4,800,000 | 3,809,000 |
| | 1929 | 281,000 | 4,488,000 | 5,565,000 |
| Barley | 1930 | 144,000 | 4,608,000 | 2,857,000 |
| | 1929 | 155,000 | 3,426,000 | 2,878,000 |
| Buckwheat | 1930 | 210,000 | 3,465,000 | 2,772,000 |
| | 1929 | 198,000 | 3,168,000 | 3,168,000 |

* Tons.

The farms in the State numbered 160,120 in 1930, the total having declined from 188,754 for 1925 and 193,195 for 1920.

MINERAL PRODUCTION. The total of the State's native mineral products, with allowance for the avoidance of duplications, was \$108,025,720 for 1928; for 1927, \$112,209,533. Some of the most important of the State's mineral industries, however, pertained to the treatment of minerals imported from elsewhere and therefore did not figure in the above totals. Notably the production of pig iron exceeded in yearly value any other of the listed mineral industries, but mainly the iron ore used in this process came from outside the State. Blast furnaces shipped, in 1929, 2,626,771 long tons of pig iron and in 1928, 2,369,814;

by value, \$46,960,186 in 1929 and \$39,923,960. In close connection with the iron industry were produced from non-native coal 4,299,470 short tons of coke in 1929, and 3,802,657 in 1928; in value, \$25,305,915 for 1929 and \$25,033,649 for 1928. The production of ferro-alloys, also important, amounted to 209,688 long tons in 1928, as against 114,242 in 1927; in value, \$17,441,639 for 1928 and \$12,138,392 for 1927.

In the industries based essentially on native minerals, on the other hand, clay products held the lead, attaining \$22,474,405 for 1928 and \$25,476,896 for 1927. Cement mills shipped, in 1929, 10,742,992 barrels of cement and, in 1928, 10,983,950; by value, in 1929, \$15,597,868 and, in 1928, \$16,748,773. The stone production, mainly of the lower-cost varieties of stone, amounted for 1928 to 10,743,470 short tons, in value \$15,785,511. Sand and gravel were dug in 1928 to the value of \$12,572,634. The petroleum production rose both in quantity and in value; in quantity, to 3,346,000 barrels for 1929, from 2,603,000 for 1928; in value, to \$13,200,000 for 1929 (estimated), from \$8,750,000 for 1928. Second only to Michigan in the salt industry, New York produced, in 1929, 2,194,590 short tons of salt, as against 2,085,230 in 1928; by value \$6,470,051 in 1929 and \$6,400,933 in 1928. The output of natural gas, while secondary in proportion to the State's chief industries, was on the rise in 1928, attaining 7,224,000 M cubic feet, as against 5,908,000 M in 1927; in value it was \$4,827,000 for 1928 and \$3,841,000 for 1927. The quantity of iron ore mined rose to 875,564 long tons for 1929, from 767,743 for 1928; the value, to \$3,941,985 for 1929, from \$2,906,055 for 1928. Talc, zinc, and slate also were produced in 1928, each to a total value of over \$1,000,000.

FINANCE. State expenditures in the year ended June 30, 1929, as reported by the U. S. Department of Commerce, were: for maintenance and operation of governmental departments, \$182,389,014 (of which \$78,658,650 was for local education); for interest on debt, \$14,805,997; for permanent improvements, \$56,252,306; total, \$253,447,317 (of which \$54,608,232 was for highways, \$27,170,250 being for maintenance and \$27,437,982 for construction). Revenues were \$272,940,372. Of these, property and special taxes formed 59 per cent; departmental earnings and remuneration to the State for officers' services, 2.9; sales of licenses, 29. The State's funded debt outstanding on June 30, 1929, was \$360,764,309. Net of sinking-fund assets, it was \$255,782,785. On property bearing an assessed valuation of \$25,332,627,968 were levied in the year State taxes of \$14,699,944.

TRANSPORTATION. The total number of miles of railroad line under operation on Jan. 1, 1930, was 8330.78. There were built, in 1930, 5.50 miles of first, 3.20 of second, 10.90 of third, and 7.70 of fourth track.

EDUCATION. Satisfactory progress during the year was stated in the *Journal* of the National Education Association to have occurred in the movement for the substitution of centralized rural school facilities for the one-teacher rural school. For the year 1928-1929, the population of school age was estimated at 3,658,341. There were enrolled in the public schools 2,096,337 pupils. Of these, 1,712,109 were in elementary and 384,228 in high-school grades. The year's expenditures for public-school education were: current, \$244,684,860; total, including capital outlays,

\$376,071,512. Salaries paid teachers in the year averaged \$2314 for the entire State. They differed widely, however, in different types of subdivisions; for cities, the average was \$2748; for villages, \$1907; for towns, \$1312.

CHARITIES AND CORRECTIONS. The State Department of Social Welfare, which succeeded the Department of Charities in accordance with an act of 1929, had charge of a great part but not all of the State's relations with the institutionalized. At its head were the State Board of Social Welfare, a body of 12 appointive members, appointed for terms of eight years and serving on a per-diem basis, and a Commissioner of Social Welfare, the chief departmental executive. The Department, through its respective divisions, carried on the registration and assistance of the blind, administered the law for the relief of the aged, dealt with child welfare and wayward minors, supervised public and private eleemosynary homes, administered assistance to the State's Indian wards and to non-resident dependents, and oversaw the administration of State institutions within the scope of the Department. Under its charge were: State Training School for Girls, Hudson; State Agricultural and Industrial School (delinquent boys), Industry; Thomas Indian School, Iroquois; State Hospital for the Treatment of Incipient Pulmonary Tuberculosis, Raybrook; State Reconstruction Home (indigent children), West Haverstraw; State Woman's Relief Corps Home (soldiers and soldiers' mothers, wives, widows, and daughters), Oxford; New York State Training School for Boys (under construction), Warwick. Under the system of State relief for the aged established by act of 1930, all qualified needy citizens of 70 years or over, residents of the State for 10 years, were made eligible for monetary aid to be paid by the welfare districts severally, and the function of approving such payments, with a view to their reimbursement by the State, was vested in the Department of Social Welfare. Boards of Child Welfare in the counties distributed, in 1929, \$8,139,733 in allowances for the support of 51,205 dependent children in their own homes.

The Department of Correction, headed by a commissioner appointed by the Governor, managed the State prisons and reformatories and certain institutions for special types of prisoners. From it was severed in 1930 the parole division, which was transferred to the Executive Department. The average daily penal population for the fiscal year 1929 was 10,359. The institutions under the Department of Correction were: Auburn Prison, Auburn; Clinton Prison, Dannemora; Great Meadows Prison, Comstock; Sing Sing Prison, Ossining; Dannemora State Hospital and Matteawan State Hospital (both for the criminal insane); State Reformatory, Elmira; State Training School, Albion; State Reformatory for Women, Bedford Hills; Institution for Defective Delinquents, Napanoch.

Exclusive of the criminal insane in the institutions above named, the State had in its charge on June 30, 1929, 50,156 institutionalized mental patients. These were in 14 State hospitals, serving as many districts, and the hospitals were under the control of a State Department of Mental Hygiene. They were situated at Binghamton, Brooklyn, Buffalo, Central Islip, Gowanda, Wingdale, Poughkeepsie, Kings Park, New York, Middletown, Rochester, Ogdensburg, Utica, and Willard. Institutions for mental defectives, under

the same department, were State schools for mental defectives at Syracuse, Rome, Newark, and Thiells, and the Craig Colony for Epileptics at Sonyea.

LEGISLATION. The State Legislature convened in regular annual session on January 1 and adjourned on April 11. It passed the highest budget in the history of the State, provided for a heavy bond issue to finance a building programme, altered the law for the treatment of the criminal in some respects, enacted measures of agricultural relief, old age assistance and reforestation at State expense, created a commission to treat of the disposal of the State's undeveloped water power, attempted to reshape the State's system for the regulation of public utilities, reorganized, jointly with New Jersey, the authority for constructing means of communication between the two States, initiated a constitutional amendment for ceding the State canal system, and enacted measures directly affecting New York City.

The regular budget, supplemented by special appropriation bills to cover original budget items on which Governor and Legislature had been unable to agree, totaled \$317,742,406, to be met out of the proceeds of current revenue. The expenditure in the ensuing fiscal year of some \$10,000,000 to be derived from bonds, for permanent public improvements, was also authorized.

The water-power act was the outcome of a long controversy between Governor and Legislature, which had begun under Governor Smith. The Republican majority in the Legislature at last gave way to the demands of Governor Roosevelt, similar to those of his predecessor, and passed a measure empowering the Governor to name a commission of five, to report to the next succeeding regular session a plan for the development and sale of electric current to be derived from water-power sites on and near the St. Lawrence River. The bill, moreover, declared that such sites should remain inalienably in the ownership and control of the State. It was the intention that the commission should determine whether the development of the sites by the State itself and the sale of the resulting power would be feasible, in the first place, and that only in the event that this was found impracticable should some other method of development and of sale be recommended.

The Mastick Old-Age Security Act, an advanced step in State legislation for public contribution to the support of the aged, was the product of a legislative commission and of some years of previous agitation. It provided pensions to the expected average of \$240 a year, to be paid, in half, by the State to all persons who were citizens of the State, 70 years of age or over, and unable to earn a living. The measure was to be administered by local authorities, and the grant was to become effective on Jan. 1, 1931. About 51,000 persons were estimated as likely to come under its provisions. Counties were to contribute equally with the State to the pension payments within their limits. One of the purposes of the act was to substitute monetary support for the institutionalization of aged indigents. See OLD AGE PENSIONS.

The bill for recasting the State's system for the regulation of public utilities passed the Legislature but was vetoed. The effort to change the utility law grew out of the difficulty that had been found in New York, as among other States, in maintaining State control over such corporations, in view of their tendency to take matters

away from State jurisdiction and to Federal courts. A commission was formed to study the means to meet the situation, but it divided sharply on grounds of principle, the minority standing with Governor Roosevelt in favor of supporting the public interests above all and giving little favor to the utilities, while the majority, in touch with the Republican wing of the Legislature, sought a more judicial attitude, with an ideal of impartiality between the public and the corporations. The two sections of this legislative commission made clashing recommendations. A series of bills in accordance with the majority view were introduced.

The Legislature passed a measure to create a People's Counsel, an official to be attached to the office of the Attorney-General and to present before the Public Service Commission the case of the public in any formal dispute; also a measure to establish a system of ten-year contracts between municipalities and public utility concerns, to be formed with the aid of the Commission. The Governor vetoed both these measures as not sufficiently in the public interest, and expressed the view that the Public Service Commission itself, and not a separate counsel, should press the public's interests.

A move to discard the State's canal system by surrendering it to the Federal Government was rendered possible by the report of the Chief of Engineers, U. S. Army, published on April 5, favoring such a transfer and subsequent development of the canals to a depth of 13 feet at a cost of \$26,000,000. The Governor lost no time in addressing to the Legislature a message recommending that it pass a resolution for a constitutional amendment that would permit the cession of the Erie and Oswego canals to the United States. This resolution, initiating an amendment to be ratified later, was promptly passed.

A project to build between New York City and the New Jersey shore a second vehicular tube system under the North River was held back by a conflict of functions between the two bi-State bodies having power to conduct such works. This conflict was finally settled by an agreement between the administrations and legislative leaders of both States to abolish one agency, consisting of the respective tunnel commissions of the two States, and to enlarge the remaining agency, the joint Port Authority, and transfer to it the work of the abolished commissions. The five Hoffstadter-Moffat acts, providing for this plan and authorizing the construction of the new vehicular tunnel, were duly passed. Three former members of the New York Bridge and Tunnel Commission, the abolished body, were added to the three New York members of the Port Authority, the change thus having the nature of a merger of the two.

The overcrowded condition of the insane hospitals of the State was alleged by Governor Roosevelt in a special message to require an appropriation of \$18,300,000 in order that additional quarters affording 6000 beds might be built as soon as possible. The appropriation was duly passed.

As in the three years preceding, there were important enactments for dealing with crime. The State Crime Commission continued its labors by recommending the creation of a full-time Parole Board, to replace the ex-officio board then operating. An act was accordingly passed providing for a Parole Board of three full-time members, with

a maintenance appropriation and a staff, the whole to form a division of the executive department. Other measures made appropriation for the replacement of old blocks of cells, greater allowances to prisoners for food, clothing and cash on release. A bond issue of \$50,000,000, of which much was to be spent on prison construction, was voted. The Legislature created a temporary commission of seven members to be appointed jointly by the Governor and the Legislative leaders, to formulate a policy for the treatment of the State's prisoners.

Agricultural measures carrying \$330,070 were enacted. One of these provided a system of State inspection and control of milk and cream and was designed to protect producers against irregular or "bootleg" purveying of these articles. In accordance with the policy favored by the State Reforestation Commission the Legislature proposed a constitutional amendment to permit the State to pledge its credit for the acquisition and reforestation in the course of 15 years, of 1,000,000 acres of idle lands, at the cost of \$20,000,000. The law for the elimination of railroad grade crossings was modified, it being specified that the "prevailing wages" at the place where work was done must be paid.

Four banking bills amending the law for the regulation of bankers in minor respects were enacted, in a partial response to a demand for better regulation, roused by the disclosures of 1929 in connection with the failure of the City Trust Company. The chief of these measures extended the powers of supervision of the State Superintendent of Banks to all private, unchartered bankers or firms describing themselves as in the banking business, paying interest on daily balances of less than \$7500, or accepting deposits of less than \$1000. Another act made provision to prevent ignorance on the part of bank directors of their institutions' relations with the Superintendent of Banks.

The only important fiscal legislation of the year was a further amendment of the law for the taxation of decedents' estates, supplementary to the Fearon Act of 1929. By the Mastic-Pratt Act the exemptions for small estates were raised materially and the Federal law for the taxation of estates was paralleled so as to simplify the making of returns. A companion act set up a method for apportioning the State tax among beneficiaries instead of charging it to the residuary estate. The law on libel was modified to exempt from liability editors, etc., of newspapers who had published only fair and true report of public official proceedings containing the matter giving basis to the complaint.

An important measure relating to New York City was passed but vetoed; this was a bill authorizing the Governor to appoint a commission to investigate the affairs of the City. Governor Roosevelt in rendering his veto declared that the Legislature had full power to institute an investigation of its own if it so wished and intimated that in seeking to shift the responsibility to him it was taking a needless step actuated by political purpose (the intention to embarrass him politically). A number of amendments to the Multiple Dwelling Law of 1929 were enacted, chiefly to mitigate hardships that builders alleged against the original act. New York City was authorized by act to issue \$25,000,000 of its bonds to pay the cost of purchasing lands for parks and playgrounds. The Tenth Municipal

Court District was created in Manhattan to serve specifically the district of Harlem inhabited chiefly by Negroes. The municipal Board of Trade and Transportation received power to construct under-water tunnels between the city boroughs; thus it acquired the desired authority to proceed with tunnels under the Narrows and between Manhattan and Queens. A measure to enable the city to finance a unified rapid-transit system by promoting a quasi-public corporation to issue tax-exempt bonds for costs of acquisition of lines failed of passage.

POLITICAL AND OTHER EVENTS. The industrial depression of 1930 was severely felt in New York City and the other manufacturing centres of the State. Governor Roosevelt sought to mitigate such trouble by appointing at the end of March a committee to study the situation and develop a plan for industrial stabilization and the cure of unemployment. The government of New York City maintained a public employment agency, which was swamped with applicants, but supplied situations for many of them, through the cooperation of employers. Governor Roosevelt declared on August 27, before the State Federation of Labor, in favor of legislation to assure a State-supervised system of unemployment insurance. See UNEMPLOYMENT.

In naming the members of the Water Power Commission created by the act of 1930 Governor Roosevelt was handicapped by the removal of Charles Evans Hughes to the Supreme Court and the refusal of ex-Governor Alfred E. Smith to serve. He named as chairman of the Commission Prof. Robert N. Haig and selected other members favorable to his views, including Julius Henry Cohen and ex-Lieutenant-Governor Conway. The Commission in turn appointed a board of engineering experts, headed by Gen. Edgar Jadwin, Ret. U. S. A., to advise it.

Among the chief physical changes in the State during the year was the creation, near Conklingville, at the cost of \$12,000,000, of a power dam impounding the Sacandaga River and forming a lake of 42.3 square miles in extent, approximately equal to Lake George, storing 224,000,000,000 gallons of water. A vehicular bridge over the Hudson River between Poughkeepsie and Highlands, the Mid-Hudson Bridge, was completed, and was opened on August 25. It had been built at State cost, the expenditure being about \$5,800,000. It is a high suspension bridge of 3000-foot span, and was put in operation under a system of toll charges designed to extinguish its cost. Its purpose was to supply a needed east-and-west link for highway travel across the State and to bring the cities of the Hudson valley into closer touch with one another.

A conflict over telephone rates in the State occurred when the New York Telephone Company, fortified by a favorable decision from a statutory court, declared on January 20 a sharp increase in its charges, estimated as likely to add \$14,000,000 to its yearly receipts, without the sanction of the State Public Service Commission. William A. Prendergast, chairman of the Commission, resigned soon afterward, differing with the Governor, who sought to bring the Commission to take a more aggressive policy. He was replaced by Milo R. Maltbie. The Commission meanwhile took the new telephone rates under advisement and ordered a partial reduction, which was made by the company. (See also *Legislation*, above.) Several of the chief railroad companies brought

action against the statute of 1930 requiring the payment of the "prevailing wages" on work for the elimination of grade crossings.

In New York City the business depression that marked the year was accompanied by severe unemployment and by some demonstrations of unrest. There, as in other chief cities of the Nation, the members of the Communist party paraded on March 6. Insisting on marching to the City Hall, the paraders clashed with the police in Union Square. The police dispersed the paraders, some 2000 in number, who had permission to gather in the square but no license to parade through the streets. William Z. Foster and five other leaders were arrested for inciting to disorder; he and four others received penitentiary sentences. Police Commissioner Whalen gave out on March 10 a list of persons alleged to be operating in industrial plants as Communist organizers and inciters. There went into operation as a part of the city police department in January an agency known as the Crime Prevention Bureau. Its function was to deal with delinquents and other young persons likely to be drawn into criminal lives. The method was to keep such subjects under friendly surveillance and to help them to get regular and reputable work. In the first seven months of operation the Bureau was estimated to have handled about 3000 cases likely to have gone otherwise to courts and institutions. The city authorities also conducted during the year an active service in procuring employment for workless persons, who applied to the number of many thousands.

Progress on the suspension bridge over the Hudson River to Fort Lee, during the year, took the form of constructing the 5000-foot wire cables, which were spun in their site. The first of the cables was finished early in August. The suit of the Interborough Rapid Transit Company for a ten-cent fare, sent by the U. S. Supreme Court to the State courts, in 1929, was decided against the company in the State Supreme Court (not in New York the court of highest appeal). Thereafter the city authorities sought by negotiation to agree with both the Interborough and the Brooklyn-Manhattan Transit system upon prices at which the city might acquire their subway properties for unification with the city-owned subway system then nearing completion. Preliminary work was begun in the summer on the projected Thirty-eighth Street Vehicular Tunnel, to be constructed by the city to supply a connection, under the East River, between Manhattan and the boroughs of Queens and Brooklyn. The related plan of an express highway from the Grand Army Plaza in Brooklyn to the Astoria approach of the Triborough Bridge, to cost \$40,000,000 was broached.

The first section of the elevated express highway for motor traffic, along the western edge of Manhattan Island, under construction for the government of New York City, was completed, and was opened for traffic on November 13. It extended from Canal Street to Twenty-second Street, along West Street. It consisted of a viaduct of about a mile and one-half in length, with a structure of steel framework supporting a roadway 70 feet in width. The entire first section cost about \$6,500,000.

The Municipal Assembly of New York City passed an act creating a department of city planning, to form part of the city government. The intended work of this department was to co-

ordinate different plans for the development of the city. With the Federal Secretary of the Treasury the city government reached an agreement for the removal of the old Federal Building on Park Row, the return of the site to the city, and the delivery by the city, to the Federal Government, of sites of a new Federal Office and Postal Building on the block bounded by Vesey, Barclay, and Church streets and West Broadway and a Federal Court Building near the civic centre. The carrying out of the bargain was expected to cost the city about \$1,500,000 in cash.

A police Magistrate, George F. Ewald, was forced to resign on July 14 because of charges that he had procured or sought to influence his appointment by a payment of \$10,000 made in the form of a loan from Ewald's wife to one Martin J. Healy, a Tammany district leader, in 1927. As Ewald had been appointed by Mayor Walker the case roused a demand for a general inquiry into the possibility of money payments to influence appointments to places on the lower bench. Governor Roosevelt, called upon to act, directed the Appellate Division to investigate the magistrates' courts. Acting on the reports that District Attorney Crain of New York County, though he had laid the matter of the Ewald appointment and its attending circumstances before a grand jury, had failed to press for indictments, the Governor also directed State Attorney-General Ward to supersede Crain in the investigation of the matter.

Previously to the appearance of the Ewald case Mayor Walker had sought to dismiss lightly the charges of corruption among officials during his administration, speaking of evidences of wrongdoing as mere "fingermarks on the wall." Shortly after the Ewald disclosures, however, he changed his attitude; on August 27 in a public address he pledged his efforts to do away with graft and invited complaints, promising that they would be thoroughly investigated. In June the Municipal Assembly, the Mayor concurring, had voted an increase of salaries, to the total of \$519,000, among some 200 of the better-paid officials, and this move had been widely criticized. Late in September were published figures tending to show that Superintendent of Schools William J. O'Shea and others in the public-school system had prepared textbooks that had been used to the extent of many thousand copies in the city schools and that had thus become to them a source of large royalties.

The Bank of the United States, having 61 branches in New York City, suspended on December 11, owing about \$161,000,000 to over 400,000 depositors, mostly persons of small means. The failure was called the greatest in American banking history.

Features in the business development of the city were the opening of the Chrysler Building, an office structure at Forty-second Street and Lexington Avenue, 67 stories in height, and the opening, at 80 Wall Street, of the New York Mining Exchange, a stock exchange for the securities of mining companies.

See OLD AGE PENSIONS; WORKMEN'S COMPENSATION.

ELECTIONS. Governor Franklin D. Roosevelt, Democrat, was reelected by an unprecedented plurality of some 725,000, receiving according to official report 1,770,342 votes to 1,045,341 for his Republican opponent, Charles H. Tuttle. There were elected 23 Democratic and 20 Republican

Representatives. The Republicans retained control of both houses of the State Legislature by reduced majorities. An independent candidate in favor of Prohibition, Robert Paris Carroll, ran for Governor on the demand chiefly of Republicans antagonized by the stand that Tuttle had taken against Prohibition. He received but a scattering vote of 190,666 votes (official). See PROHIBITION.

The popular vote authorized an issue of \$50,000,000 of State bonds, to be issued prior to 1936 at not over \$20,000,000 in any one year, for the construction of mental hospitals and of correctional buildings.

OFFICERS. Governor, Franklin D. Roosevelt; Lieutenant-Governor, Herbert H. Lehman; Secretary of State, Edward J. Flynn; Comptroller, Morris S. Tremaine; Attorney-General, Hamilton Ward; Commissioner of Education, Frank P. Graves.

JUDICIARY. Court of Appeals: Chief Judge, Benjamin N. Cardozo; Associate Judges, Cuthbert W. Pound, Frederick E. Crane, Irving Lehman, Henry T. Kellogg, John F. O'Brien, Irving G. Hubbs.

NEW YORK CITY. See CRIME.

NEW YORK UNIVERSITY. A nonsectarian institution for the higher education of men and women in New York City; chartered in 1831. It comprises the following divisions: At University Heights, a college of arts and pure science; college of engineering; Guggenheim School of Aeronautics. At Washington Square, the graduate school; school of law; school of commerce, accounts, and finance; Washington Square college; school of education; school of retailing; college of fine arts; university extension division; and the Institute of Education. At the Wall Street division, the graduate school of business administration and courses in the school of commerce, accounts, and finance. The Medical college is on East Twenty-sixth Street, and the dental college on East Twenty-third Street.

The enrollment for the year 1929-30 in all divisions of the university, after deducting all duplications, was 41,968. The enrollment in the different degree-conferring units was as follows: University college of arts and pure science, 1013; school of law, 1574; University and Bellevue Hospital Medical College, 507; college of engineering, 781; graduate school, 806; school of education, including both graduate and undergraduate divisions, 7234; school of commerce, accounts, and finance, including the Wall Street division, 9989; Washington Square college, 6925; graduate school of business administration, 1068; school of retailing, 1152; college of fine arts, 1727; and college of dentistry, 377. In other divisions, the enrollment was as follows: University extension division, 4105; Institute of Education, 2474; life-insurance training courses, 159; public-health (correspondence) courses, 279. The faculty numbered 1702.

The productive funds for the year 1929-30 amounted to \$6,739,848, and the income was \$236,641. The total income of \$6,988,187 was derived as follows: Student fees, \$5,855,783; dormitory rents, \$20,572; gifts, \$463,115; other income, \$412,075; and income from endowments, \$236,641. Among the gifts was \$100,000 from Mr. and Mrs. R. T. Crane, Jr., to establish the Cornelius and Florence Crane Therapeutics Endowment Fund for the medical college. In February, 1930, a 12-story building for the school of education,

erected at a cost of \$1,750,000, was dedicated at Washington Square. The libraries contained 337,479 volumes. Chancellor, Elmer Ellsworth Brown, Ph.D., LL.D.

NEW ZEALAND, zē'land. A self-governing British dominion in the southern Pacific Ocean, about 1200 miles southeast of Australia; consisting mainly of two islands, North and South islands, but comprising also Stewart Island and Catham Island and a number of small islands. Capital, Wellington.

AREA AND POPULATION. New Zealand has an area of 103,568 square miles (103,862 square miles, including outlying and annexed islands). The population on Mar. 31, 1930, was 1,488,612, or 221,114 more than at the census of 1921. In 1926, there were 63,670 Maoris. The urban population represented 51.6 per cent of the total. For the five-year period 1925 to 1929, births averaged 27,691 annually, deaths, 11,717; and the excess of births, 15,974. The average birth rate per 1000 inhabitants was 20.2 and the death rate 8.5. The chief cities, with estimated populations on Apr. 1, 1929, are: Wellington, 105,170; Auckland, 101,275; Christchurch, 87,990; Dunedin, 67,020.

EDUCATION. School attendance is compulsory between the ages of 7 and 14. In 1928, there were 254,487 pupils in primary schools, 28,942 in secondary schools, 10,963 in technical schools, and 4896 in the four universities at Dunedin, Christchurch, and Wellington (two).

PRODUCTION. Animal husbandry is the leading industry. Only 3 per cent of the total area, or 1,886,000 acres, were under cultivation in 1928; there were 16,871 acres of permanent meadow and improved pasture; 326,000 acres of trees, shrubs, and bushes; and about 13,000,000 acres of forests. Production of the leading animal products, in thousands of pounds, for 1928-29 was: Creamery butter, 5984; pork, bacon, and ham, 62,026; mutton and lamb (dressed), 433,571; beef and veal (dressed), 286,250; wool, 243,056. Cereal production is usually supplemented by imports. For the 1928-29 crop year, the wheat crop was valued at \$13,164,000; oats, \$11,637,000; hay, \$20,540,000. Production of the chief crops in 1928-29, in bushels, was: Wheat, 8,833,000 (7,100,000 in 1929-30); barley, 814,000 (708,000); threshed oats, 3,065,000 (3,150,000); corn, 456,000; potatoes, 4,615,000; peas and beans, 532,000; linseed, 46,000. Hay production totaled 703,000 long tons and grass and clover seed, 20,104,000 pounds. In 1929, livestock included 2,051,000 sheep, 3,446,000 cattle, 557,000 swine, 33,000 goats, and 299,000 horses.

Crops in 1930 were bountiful, but increased yields were more than offset by lower prices. Revenue produced by wool shrank to £8,000,000 from £16,000,000 in 1929 and the price of butter fell during the year from 169 to 100 shillings per hundredweight. At the end of 1930, the Dominion faced a serious unemployment problem and farmers were demanding a moratorium on farm mortgages.

Coal, gold, and silver are the leading mineral products, the output in 1927-28 being: coal, 2,437,000 long tons; gold and silver bullion, 532,914 troy ounces. Water-power reserves, estimated at 2,500,000 horse power, have been rapidly developed. State-developed hydro-electric horse power in use in 1928-29 totaled 157,418. Manufacturing consists mainly in the preparation of animal products for market. The factory output for the year ended Mar. 31, 1928, was valued at

\$428,000,000, of which \$158,000,000 represented the value added in process of manufacture. There were 5166 industrial establishments, employing 81,756 workers.

COMMERCE. General imports showed a marked increase in the calendar year 1929 to £48,798,000 from £44,886,000 in 1928, while exports declined to £54,186,000 from £54,660,000. The favorable balance of trade was £5,388,000 in 1929, as against £9,774,000 in 1928. The United Kingdom in 1929 was again New Zealand's best market, taking 74 per cent of all exports, as against 6.6 per cent for the United States, 6 per cent for Canada, and 4.2 per cent for Australia. The United Kingdom supplied 46.2 per cent of all imports; the United States, 19 per cent (18 in 1928); and Australia, 6.7 per cent. Imports from the United States totaled \$45,355,000, while exports to that country were \$17,779,000. Wool, butter, frozen meats, and hides and skins were the principal exports; the chief imports were automobiles, mineral oils, apparel, drugs and chemicals, electrical machinery and apparatus, and cotton and silk piece goods.

Both imports and exports showed marked recessions in 1930, exports for the year being valued at £44,940,700 and imports at £43,000,000. Imports from the United States were valued at £7,391,360 (£9,328,300 in 1929), while imports from the United Kingdom were £21,000,000 (£22,569,000 in 1929).

FINANCE. The ordinary budget for the fiscal year ended Mar. 31, 1930, estimated receipts at £25,172,000 and expenditures at £24,910,000, of which £10,568,000 was allotted for the service of the debt. Provisional returns indicated a surplus of £500,000 more than anticipated. For the 1930-31 fiscal year, however, the Government faced an estimated budget deficit of £3,000,000. Actual ordinary receipts in 1928-29 were £23,600,000 and actual ordinary expenditures £24,177,000. The public-works fund, not included in the ordinary budget, had receipts of £12,590,000 in 1928-29, mostly from loans. The gross public debt on Mar. 31, 1929, stood at £264,192,000, of which £153,515,000 were held externally.

COMMUNICATIONS. Of the 3287 miles of railway line in operation in 1929, all except 116 miles were state owned and operated. In 1928-29, the railways carried 25,575,000 passengers and 7,623,000 long tons of freight, earning gross receipts of £7,525,000. In 1930, New Zealand had 48,433 miles of highways, of which 30,629 were macadam and 16,073 unimproved earth. Motor transportation lines on Jan. 1, 1930, operated 2452 vehicles, or 12.5 per cent more than on July 1, 1929. Entrances of vessels in the foreign trade in 1928 numbered 601, of 2,181,000 net registered tons; clearances, 605, of 2,210,000 tons. The merchant marine in 1928 comprised 560 vessels, of 194,304 gross tons capacity, including 181,800 tons of steam or other power vessels. The telephone and telegraph systems are operated by the state.

GOVERNMENT. Executive power rests with a Governor General appointed by the Crown on recommendation of the Dominion government, and legislative power in the Governor General and a general assembly of two houses, namely, the Legislative Council of 41 members, appointed for seven years, and the House of Representatives of 80 members, elected for three years by direct suffrage. Governor General in 1930, Lord Bledisloe (Charles Bathurst), appointed in 1929. The Cabinet appointed December, 1928, was com-

posed as follows: Prime Minister, Minister of Finance, Stamp Duties, Postmaster-General, Sir Joseph G. Ward; Lands and Agriculture, G. W. Forbes; Justice, T. K. Sidey; Native Affairs and Cook Islands, Sir Apirana Ngata; Education, H. Atmore; Labor, Mines, and Transport, W. A. Veitch; Public Works, E. A. Ransom; Railways, Customs, State Forests, W. B. Taverner; Industries and Commerce, J. B. Donald; Internal Affairs, P. A. de la Perrelle; Defense, Marine, and War Pensions, J. G. Cobbe; Health, A. J. Stallworthy.

HISTORY. Politically, the most important development of the year was the resignation of Sir Joseph Ward (q.v.) as Premier on May 15. His death on July 7 brought to a close a distinguished political career of nearly half a century. Sir Joseph was succeeded as Prime Minister by George William Forbes, the Minister of Lands and Agriculture. A farmer and a member of Parliament for 22 years, Mr. Forbes was known as a staunch advocate of close settlement as a solution of the Dominion's unemployment problem. The reorganized Forbes Cabinet contained two new Ministers, S. G. Smith, Minister of Labor and Immigration; and A. J. Murdoch, Minister of Agriculture and Mines. In his statement of policy, Premier Forbes stressed unemployment remedies, closer land settlement, and measures for economy and sound government finance.

The Premier's first budget, approved by Parliament in July, provided for a considerable increase in tariff rates to offset anticipated losses in revenue from declining imports, to further the protection of local industry, and to provide additional preference to imports from other parts of the British Empire. The new tariff, which became effective July 22, was expected to yield an additional £800,000 in revenue. The preference accorded Canadian products was revoked following the announcement of an increase in the Canadian duty on New Zealand butter, effective October 1. Parliament also placed an ad valorem tax of 10 per cent on British and of 25 per cent on foreign sound films, increased the income-tax rate by 10 per cent, and abolished the special land tax imposed in 1929. Instead all farmers owning or occupying land of over £7500 unimproved value were made liable to income tax on the same basis as other sections of the community. A Government bill introduced into Parliament August 19 proposed to levy \$7.50 from each male worker to create an unemployment insurance fund. The number of unemployed was then estimated at about 10,000. For New Zealand's difficulties in Western Samoa, see SAMOA. See also GREAT BRITAIN under *History*. For a comprehensive study of the Dominion, consult J. B. Condliffe, *New Zealand in the Making: A Survey of Economic and Social Development* (Chicago, 1930).

NICARAGUA, nē'kà-rā'gwā. The largest of the Central American republics. It is bounded on the north by Honduras, on the east by the Caribbean Sea, on the south by Costa Rica, and on the west by the Pacific Ocean. Capital, Managua.

AREA AND POPULATION. The area is estimated at about 51,660 square miles, of which 4500 square miles are lake area. Population, according to the census of 1920, 638,118; estimated at 750,000 in 1929. The population of the east coast had a large Negro element from the West Indies. The proportion of pure white blood was about 10 per cent. The eastern and western sections differed

greatly and there was very little communication between them. The population of the principal cities at the 1920 census, with latest estimates in parentheses, was: Managua, 27,839 (50,000 in 1929); León, 38,318 (50,000); Granada, 16,773 (25,000); Matagalpa, 10,271 (7000); and Masaya, 10,287 (18,000).

EDUCATION. In 1929, about 29,819 were enrolled in the elementary schools (23,496 in government and 6323 in municipal and private schools). The enrollment in all secondary, vocational, and normal schools, was 1472. About 62 per cent of the population was illiterate.

PRODUCTION. Nicaragua is primarily an agricultural country, whose chief products are bananas, coffee, sugar, and coconuts. Corn, rice, and beans are subsidiary crops. Coffee normally accounts for about one-half the total value of exports and is the main factor in the national economy. Coffee production was estimated at 45,000,000 pounds in 1930-31 (preliminary) and 37,500,000 pounds in 1929-30; sugar, about 16,000 tons in 1930 and 10,000 in 1929. Banana shipments in 1929 totaled 4,092,388 bunches. The forests contain valuable mahogany, cedar, dyewoods, and gums, but conditions in 1930 were unfavorable for their exploitation. Mining is comparatively unimportant, the principal minerals found being gold, silver, copper, and precious stones. Gold exports were \$291,000 in 1929 (\$363,000 in 1928).

COMMERCE. Nicaraguan foreign trade declined to a total of \$22,669,966 in 1929 from \$25,043,663 in 1928, according to the report of the Collector General of Customs. Imports were valued at \$11,797,440 (\$13,350,451 in 1928) and exports at \$10,872,526 (\$11,693,212 in 1928). Exports went chiefly to the United States, \$5,752,038; Germany, \$1,292,848; France, \$894,400; and the Netherlands, \$870,893. The chief sources of imports were: United States, \$7,389,738; United Kingdom, \$1,275,800; Germany, \$1,085,920. The chief imports were cotton manufactures, iron and steel, machinery, wheat flour, and chemicals and drugs. Exports included coffee, sugar, bananas, hides and skins, mahogany, and gold and silver.

FINANCE. In his message to Congress of Dec. 15, 1929, President Moncada said that his first year in office, ending Dec. 31, 1929, would show a Treasury surplus of \$2,400,000 without taking into account the profits of the Pacific Railway and the National Bank. Total receipts were reported at \$6,000,000. The adverse effect of the depression caused by lower coffee prices and the withdrawal of American marines forced the Government to reduce the 1930 budget by \$1,000,000. Salaries of public officials were cut from 5 to 20 per cent. The bonded debt at the close of 1929 was approximately \$4,500,000. The Mortgage Bank of Nicaragua, created to facilitate agricultural loans, was opened in June, 1930. The International Acceptance Bank of New York became fiscal agent and depository of the Nicaraguan National Bank following the withdrawal of W. and J. Seligman, New York bankers, on Dec. 31, 1929. American investments in Nicaragua in 1930 were estimated at \$13,002,000.

COMMUNICATIONS. Of 166 miles of railway in operation in 1929, 147 miles were owned by the Government. For the year ended June 30, 1929, the railways carried 887,000 passengers and 115,000 metric tons of freight, earning gross receipts of \$1,324,000. Construction of 72 miles of new line from León to Sauce was commenced Apr. 1, 1930,

and another line connecting Lake Nicaragua with the Pacific (from San Jorge to San Juan del Sur) was started July 11, 1930. The Pacific Railway also commenced the construction of a highway linking the Atlantic with the Pacific. About 100 miles of motor highways were constructed during President Moncada's first 18 months in office; total mileage in 1930, 350. A total of 640 steam vessels, of 896,952 net registered tons, entered the ports in 1929 from foreign ports.

GOVERNMENT. Executive power is vested in a president, acting through a responsible ministry, and legislative power in a Congress with two chambers, the Senate of 24 members elected for six years and the Chamber of Deputies of 43 members elected for four years. At the beginning of 1930, there was a nominally Conservative majority in both houses of Congress. President in 1930, José María Moncada (Liberal), elected Nov. 4, 1928, for a four-year term.

HISTORY. The failure of the American intervention to eliminate the armed opposition of guerrilla bands was tragically attested on Dec. 31, 1930, when eight American marines were killed during a surprise attack upon a patrol of 10 between Ocotal and Apali in the Department of Neuva Segovia. These casualties brought to about 50 the number of marines killed in action against Augustino Sandino's guerrillas since the campaign against him was started in May, 1927. Sandino had been forced to leave Nicaragua in June, 1929. His return, after a year in Mexico, was followed in the latter half of 1930 by a decided increase in the number of clashes between insurgent or bandit groups and patrols of marines and national guardsmen. Sandino's effort to unite the bandit forces for a demonstration against the United States was frustrated by marine bombing planes at Saraguasca Hill. His scattered forces continued surprise attacks on national-guard and marine patrols and raids upon the isolated communities and coffee plantations of the northern Provinces. An offensive against guerrillas, carried on by the Guardia Nacional, supported by the marines, from Jan. 1 to Sept. 15, 1930, resulted in 85 "contacts," the death of 128 bandits, and the wounding of 158, according to a report of Gen. Douglas C. McDougal, commander of the Guardia. The increased efficiency of the Guardia permitted the reduction of marine forces in Nicaragua from 2215 on Sept. 1, 1929, to 1384 on Sept. 1, 1930.

The Congressional elections of Nov. 2, 1930, in which one-half of the Deputies and one-third of the Senators were elected, were held under the supervision of the National Board of Elections, of which Capt. Alfred W. Johnson, U. S. N., was chairman. Captain Johnson had been nominated for the post by the U. S. State Department, in accordance with an agreement reached by the Nicaraguan parties. The Conservatives had threatened to boycott the elections so long as a Nicaraguan was chairman of the electoral board. The voting took place without disorder, under the supervision of the Guardia and marines, and resulted in a clear majority for the Liberals in both houses of Congress. The Liberals elected seven Senators and sixteen Deputies; the Conservatives, two Senators and six Deputies. Both sides acknowledged that the election had been impartially conducted, except in the Conservative stronghold of Granada, where the Liberal victory was attributed to bribery. Martial law, which was raised on July 8, 1930, in the Departments of Estero, Neuvo Se-

govia, Jinotega, and Matagalpa to insure free elections, was reestablished Nov. 13, 1930, as a result of bandit operations.

While President Moncada had admittedly accomplished much for the material progress of Nicaragua, evidence of an apparent intention to perpetuate his power by extraconstitutional methods developed during the year. The Senate, by a vote of 17 to 7, on April 1 approved a number of amendments to the Constitution, which would extend the terms of deputies from four to six years, of Senators from six to nine years, and of the President and Vice President from four to six years. Others provided for the substitution of a literacy test for the existing system of manhood suffrage, the abolition of trial by jury, and made legal the American participation in Customs collection, the Guardia Nacional, and the election machinery. The amendments, however, failed to secure the necessary two-thirds majority in the Chamber of Deputies. Critics of Moncada contended that the general effect of the amendments would be to increase the oligarchic nature of the government.

The President was charged also with going further than any other Central American President then in office in violating the freedom of the press, imprisoning and deporting his opponents, and in otherwise ignoring constitutional rights of citizens. The Conservatives charged that Moncada had forced no less than 100 Nicaraguans to leave the country.

It was announced Oct. 13, 1930, that all topographic work had been completed in connection with the Nicaraguan Canal survey undertaken in 1929 by a force of U. S. Engineers. Other details of the survey were expected to be completed by June, 1931. At the request of the Nicaraguan Government, the engineering force also undertook a survey of a possible seaport at Nacascolo in the Gulf of Fonseca. The United States, under the treaty of 1914 with Nicaragua, was authorized to establish a naval base on the Gulf of Fonseca for the defense of the Panama Canal.

Other events of the year were the boundary negotiations with Honduras (see *HONDURAS* under *History*), the state funeral on October 12 accorded the remains of J. Santos Zelaya, former dictator, who died in New York in 1917, the ratification by Congress on April 4 of the treaty with Colombia signed Mar. 24, 1928, and the arrival in Managua on April 12 of a new United States Minister, Matthew E. Hanna.

NICHOLS, WILLIAM HENRY. An American manufacturing chemist, died in Honolulu, Feb. 22, 1930, while on a vacation in Hawaii. Born in Brooklyn, N. Y., Jan. 9, 1862, he was a student at the Polytechnic Institute of that city during 1865-68 and was graduated from the New York University in 1870. After graduation he began his work as a manufacturing chemist, copper refiner, and smelter, founding with his father the G. H. Nichols Company, which became in 1890 the Nichols Copper Company of New York City. From 1890 to 1918, he was president of the Nichols Copper Company and, after that date, director. He was president of the General Chemical Company, also of New York, from 1899 to 1907, chairman of the board of directors from 1907 to 1920, and director until his death. In 1917 he was appointed chairman of the committee on chemicals for the Council of National Defense. The Italian Government twice decorated him.

NICKEL. In view of the fact that the ores mined at Sudbury, Ontario, by the International Nickel Company carry large amounts of copper, it was not strange that the fall in the price of the latter metal during the year had a marked effect on the nickel situation. Canada, which produces some nine-tenths of the world's supply, had a production in 1930 of 103,782,009 pounds, valued at \$24,449,000, as against 110,275,912 pounds valued at \$27,115,461 in 1929. For the first three quarters of the year, production was in excess of the previous year, but with the demand falling off there was a reduction of output. A significant event of the year was the completion of the Frood Mine and plant of the International Nickel Company, which had cost over \$30,000,000. The ore of this mine is rich in copper with a normal amount of nickel, there being an increase in the former in 1930 over 1929. The International Nickel Company ships from Canada matte for refining in Wales and also for the production of Monel metal, malleable nickel and nickel products at Huntington, West Virginia.

In 1930 the imports of nickel into the United States were valued at \$12,872,163, as against \$19,418,910 in 1929. Of this total, ore and matte, 20,593,361 pounds, were valued at \$2,940,074, while nickel and alloys in the form of pig, ingots, etc., amounted to 38,323,029 pounds, valued at \$9,600,404. In 1929 ore and matte imports were 28,981,343 pounds, valued at \$2,122,277, and nickel and alloys in the forms of pig, ingots, etc., was 64,420,873 pounds valued at \$16,447,707. The United States produces a small amount of nickel, the Bureau of Mines reporting the nickel content of nickel salts and metallic nickel in 1929 at 340 tons valued at \$297,273. Besides Canada New Caledonia was the only other leading producer of nickel, but its output was small in comparison with the Sudbury district. See *METALLURGY*.

NIDAROS. The name substituted for Trondhjem, Norway, on Jan. 1, 1930. See *NORWAY* under *History*.

NIGERIA, COLONY AND PROTECTORATE OF. A West African territory, belonging to Great Britain; divided into the Northern and Southern Provinces. The area is approximately 335,700 square miles and the population, 18,960,574, of whom 10,783,303 were in the Northern Provinces (area, 258,000 square miles). There were 5200 Europeans. For administrative purposes the British portion of the mandated territory of Cameroon is attached to Nigeria. The seat of government is at Lagos. In 1928 there were 3237 Government, assisted, and non-assisted schools, with an average attendance of 139,409, besides about 31,587 Mohammedan schools with 393,039 pupils.

The chief products and exports are palm oil and kernels, cotton lint, cacao, and mahogany. Livestock on Jan. 1, 1930, included 3,350,000 cattle, 2,000,000 sheep, and 5,000,000 goats. Iron, lead, and tin are worked by the natives, and gold, silver, lignite, monazite, galena, and manganese ore are found. Nigeria ranks sixth among tin-producing countries, the total exports in 1928 amounting to 13,070 tons. For 1928, imports increased by £1,000,000 to £16,663,625 and exports rose by almost the same amount to £17,206,933. Vessels entered and cleared aggregated 3,871,850 tons. For the year ended Mar. 31, 1929, revenue totaled £6,031,270; expenditure, £7,495,058 (in-

cluding £792,396 for railway construction); the public debt, £23,559,209. In 1930 there were 1090 miles of railway line in operation, with 799 additional miles of line approaching completion.

The administration is in the hands of a governor and an executive and legislative council. Governor in 1930, Sir G. Thomson.

The special commission appointed in February, 1930, to investigate the causes of serious native riots of the preceding December, reported in August that the main cause was the widespread but unfounded belief that the Government was about to impose a tax on women. Troops fired on rioters on 13 occasions, according to the report, which found the firing unjustified. Total casualties were 20 women killed or died of wounds and 25 other women wounded.

NITRATE. See CHILE under *Production and History*.

NITROGEN, FIXATION OF. See FERTILIZERS.

NOBEL PRIZES. The Nobel Prizes for 1930 were presented in Stockholm on December 10 to the following persons who, in accordance with the will of Alfred B. Nobel, the Swedish inventor and philanthropist, were considered to have made the greatest contributions towards the progress of the world and the welfare of mankind: Sir Chandrasekhara Venkata Raman (physics); Prof. Hans Fischer (chemistry); Dr. Karl Landsteiner (medicine); Sinclair Lewis (literature); and the Most Rev. Lars Olof Jonathan (Nathan) Soederblom, Archbishop of Upsala (peace). The peace award for 1929 was also presented on this occasion to Frank B. Kellogg, former U. S. Secretary of State. The award in literature is made by the Swedish Academy; the award in physics and chemistry by the Royal (Swedish) Academy of Sciences; the award in medicine by the Caroline Institute (the faculty of medicine in Stockholm); and the peace award by a committee of five, elected by the Norwegian Storting. The prizes were each worth about \$48,000.

Sir Chandrasekhara Venkata Raman, the recipient of the prize in physics, was honored for his important discovery of the diffusion of light, whereby the light of a single color, or wave-length, shining on certain transparent substances is partly changed to other colors. The phenomenon, known as the Raman effect and first announced in 1928, has opened up an entirely new field in the study of molecular structure. Sir Chandrasekhara was born in India, Nov. 7, 1888, and was graduated from the Presidency College in Madras in 1904. After holding various scientific research positions, he was appointed in 1917 Sir Taraknath Palit professor of physics at Calcutta University. In 1924 he served for a time as research associate at the California Institute of Technology. In 1928 he was general president of the Indian Science Congress, and was knighted the following year.

The award of the prize in chemistry to Prof. Hans Fischer of Munich, Germany, was in recognition of his contributions to the chemistry of living matter through researches on human blood. He was born in Hoechst-am-Main, July 27, 1881, and attended the Universities of Lausanne and Marburg. After holding several professorships at the Universities of Munich, Innsbruck, and Vienna, he was appointed in 1921 head of the Organic Chemical Institute of the Munich Technical High School.

Dr. Karl Landsteiner, the recipient of the 1930 prize in medicine, was honored for his eminent

work as a bacteriologist and pathologist with the Rockefeller Institute for Medical Research in New York. The prize was awarded for his discovery that human blood is of four different types and that blood of one type does not always mix with blood of another type. Dr. Landsteiner was born in Vienna, Austria, June 14, 1868, and was graduated from the University of Vienna with the M.D. degree in 1891. Before becoming associated with the Rockefeller Institute in 1922, he was professor of pathology at the University of Vienna.

Sinclair Lewis, the novelist, was the first American winner of the Nobel Prize in literature. He was born in Sauk Centre, Minn., Feb. 7, 1885, and was graduated from Yale University in 1907, gaining his early writing experience as a reporter. In his novels he became noted for his delineation of American life in Middle Western cities and towns.

The Most Rev. L. O. J. (Nathan) Soederblom, the Lutheran churchman, to whom the Nobel Peace Prize for 1930 was awarded, had been untiring in his efforts to unify the churches of northern Europe in the cause of international peace. Born in Trönö, Sweden, Jan. 15, 1866, he became in 1901 professor of relative history at the University of Uppsala, and from 1912 to 1914 was professor of comparative religions at the University of Leipzig. In 1914 he was made Archbishop of Uppsala and Vice-Chancellor of the University of Uppsala. In 1925 he was one of the leaders of the Christian Conference on Life and Work held in Stockholm, and two years later was one of the moving spirits of the World Conference on Faith and Order in Lausanne, Switzerland.

Frank B. Kellogg, the winner of the Nobel Peace Prize for 1929, was co-author with Aristide Briand of the pact for the "outlawry of war" during his term as Secretary of State of the United States. He was born in Potsdam, N. Y., Dec. 22, 1856. In 1924 he was appointed Ambassador to the Court of St. James's, but was recalled the following year to serve as Secretary of State in President Coolidge's cabinet. In 1930 he was appointed a justice of the Permanent Court of International Justice at The Hague.

NON-FEDERATED MALAY STATES. A group of states in Malaysia under British protection, including Johore, Kedah, Perlis, Kelantan, and Trengganu in the Malay Peninsula. Total area, 27,355 square miles; total population, 1,149,395 in 1921 and 1,240,000 (estimated) in 1930.

NORMAL SCHOOLS. See EDUCATION IN THE UNITED STATES; UNIVERSITIES AND COLLEGES.

NORMAND, MABEL. An American motion picture actress, died in Monrovia, Calif., Feb. 23, 1930. She was born in Boston, Mass., Nov. 16, 1894, and made her motion picture debut in 1911. Later she became one of the leading players in the Keystone Comedies in many of which she played opposite Charles Chaplin. Some of the films in which she was featured were: *Extra Girl*; *One Hour Married*; *Raggedy Rose*; *Sis Hopkins*; *When Doctors Disagree*; *What Happened to Rosa*; *Head over Heels*; *Molly-O*; *Oh, Mabel, Behave*; and *Suzanna*.

NORTH CAROLINA. POPULATION. According to the Fifteenth Census, the population of the State on Apr. 1, 1930, was 3,170,276. The population according to the census of Jan. 1, 1920, was 2,559,123. The capital is Raleigh.

AGRICULTURE. The table on page 571 gives the

acreage, production, and value of the principal crops harvested during the years 1929 and 1930.

| Crop | Year | Acreage | Prod. Bu. | Value |
|------------------|------|-----------|--------------------------|--------------|
| Tobacco .. | 1930 | 779,000 | 535,195,000 ^a | \$73,322,000 |
| | 1929 | 764,000 | 502,600,000 ^a | 91,473,000 |
| Cotton ... | 1930 | 1,031,000 | 795,000 ^b | ..... |
| | 1929 | 1,782,000 | 735,000 ^b | 61,372,000 |
| Corn | 1930 | 2,530,000 | 51,865,000 | 48,234,000 |
| | 1929 | 2,259,000 | 50,828,000 | 50,828,000 |
| Hay | 1930 | 931,000 | 794,000 ^c | 15,080,000 |
| | 1929 | 865,000 | 836,000 ^c | 14,641,000 |
| Peanuts .. | 1930 | 232,000 | 208,800,000 ^c | 6,890,000 |
| | 1929 | 245,000 | 249,900,000 ^c | 9,996,000 |
| Potatoes .. | 1930 | 90,000 | 8,839,000 | 10,607,000 |
| | 1929 | 74,000 | 8,207,000 | 9,848,000 |
| Sweet potatoes . | 1930 | 98,000 | 9,506,000 | 8,555,000 |
| | 1929 | 78,000 | 9,126,000 | 8,213,000 |
| Wheat ... | 1930 | 343,000 | 4,288,000 | 4,674,000 |
| | 1929 | 457,000 | 5,347,000 | 7,539,000 |
| Oats | 1930 | 286,000 | 6,521,000 | 4,434,000 |
| | 1929 | 258,000 | 6,192,000 | 4,644,000 |

^a Pounds. ^b Bales. ^c Tons.

The number of farms in the State was 279,723 in 1930; in 1925, 283,482; and in 1920, 269,763.

MINERAL PRODUCTION. Stone, the chief of the State's mineral products as listed by yearly value, yielded 2,126,560 short tons in 1928 and 2,250,870 in 1927; in value, \$4,690,949 for 1928 and \$4,913,177 for 1927. The value of clay products totaled \$3,826,493 for 1928 and \$3,860,950 for 1927. A secondary but fairly steady producer of copper, North Carolina mined 8,207,000 pounds of this metal in 1928 and, in 1927, 5,443,115; by value, \$1,181,808 for 1928 and \$713,048 for 1927. Of crude feldspar were dug, in 1928, 105,560 long tons, in value \$630,042. The only other mineral industry listed as exceeding \$500,000 a year was the production of sand and gravel. The total value of the mineral products of the State was \$11,480,406 for 1928; for 1927, \$11,703,671.

TRANSPORTATION. The total number of miles of railroad line under operation on Jan. 1, 1930, was 5188.79. No construction of additional line or trackage in 1930 was reported.

EDUCATION. Much work was done in the course of the year, by a committee of public information under the auspices of the State Education Association, to court the firm support of public opinion for the public-school system. The State's population of persons of school age was estimated for the academic year 1929-1930, at 1,031,947. There were enrolled in the public schools in that year 866,939 pupils. Of these, 750,002 were in the lower grades, from the first to the seventh, inclusive, and 116,937 were in grades from the eighth to the eleventh. For the year 1928-1929, the expenditures for public-school education were: current, \$27,961,532; capital outlay, \$7,979,787; debt service, \$5,689,082. For that year the salaries of teachers averaged \$821.

CHARITIES AND CORRECTIONS. General functions with regard to the care and custody of persons, under the system operating in 1930, rested in the State Board of Charities and Public Welfare; but this board exercised only investigative and supervisory duties over the charitable and penal institutions, which were directed by their several organizations. The State Board was composed of seven unremunerated members, of whom three were women. Its staff included a Commissioner of Public Welfare, a penal inspector, and directors for the divers divisions of activity. These divisions included child welfare, the organization of county work, the care of mental health and hy-

giene, and special work among Negroes. The Board administered the Mothers' Aid Fund of the State. The chief State institutions, with their populations as reported about the end of the year, were: Eastern Carolina Training School (delinquents), Rocky Mount, 90; Stonewall Jackson Manual Training and Industrial School (delinquent), Concord, 470; State Home and Industrial School for Girls (delinquent), Samarcand, 250; Morrison Training School (delinquent Negro boys); Hoffman, 165; North Carolina Home for Colored Girls (delinquent), 15; Caswell Training School (feeble-minded), Kinston, 650; North Carolina Orthopedic Hospital, Gastonia, 150; State Hospital (insane), Raleigh, 1825; State Hospital (insane), Morganton, 1857; State Hospital (insane), Goldsboro, 1727; Soldiers' Home, Raleigh, 41; Confederate Woman's Home, Fayetteville, 43; State Prison, Raleigh, 2317; State Farm Colony for Women (delinquent), Kinston, 30.

POLITICAL AND OTHER EVENTS. Senator Furnifold McL. Simmons, who had refused to support the Smith Presidential ticket in 1928 and had played a great part in carrying the State for Hoover, was heavily defeated on June 7 for the Democratic nomination to succeed himself, in the State primaries. His chief opponent was Josiah W. Bailey, upon whose record for party regularity the Simmons group made counterattacks. Bailey received a large majority in the primary election on June 7.

The State Supreme Court affirmed on August 20 the convictions brought in the Mecklenburg Superior Court in 1929 against seven agitators who had been charged with complicity in the killing of O. F. Aderholt, chief of police of Gastonia, in the course of the Gastonia textile strike. The defendants had in the meantime all jumped their bail. The Civil Liberties Union, which had made itself responsible for bail to the total of \$27,000 sought to prevent the forfeiture of the bonds but its motion to that effect was denied. A memorial to Henry Timrod the poet was dedicated in Calvary Church at Fletcher, on August 17. At Manteo was dedicated on August 18, on the site of the colony sent out by Sir Walter Raleigh, a gateway to mark the memory of Virginia Dare, reputed the first white child born in the New World of English parents.

ELECTIONS. Josiah W. Bailey, Democrat, was elected Senator on November 4, defeating George W. Pritchard, Republican, by a majority of about 120,000 in a light vote. A delegation of 10 Representatives, all Democratic, was likewise elected. A proposed amendment of the State Constitution, to authorize the classification of property for taxation at divers rates, was defeated.

OFFICIALS. Governor, O. Max Gardner; Lieutenant-Governor, R. T. Fountain; Secretary of State, J. A. Hartness; Treasurer, Nathan O'Berry; Auditor, Baxter Durham; Attorney-General, Dennis G. Brummitt; Superintendent of Public Instruction, A. T. Allen.

JUDICIARY. Supreme Court: Chief Justice, Walter P. Stacy; Associate Justices, W. J. Adams, Heriot Clarkson, George W. Connor, W. J. Brogden.

NORTH CAROLINA, THE UNIVERSITY OF. A State institution for the higher education of men and, with restrictions as to admission, of women in Chapel Hill, N. C.; founded in 1795. The enrollment in the autumn of 1930 was 2764 regular students, with 3892 in extension courses. There were 2247 registered for the 1930 summer

session. The faculty had 222 members. The productive funds of the institution amounted to \$2,232,575, and the annual income to \$1,325,938. In 1930 a new assembly hall, with seating capacity of 1800, was under construction, and a new music building was dedicated on November 14-15. The library contained 223,295 volumes.

Of particular interest during the year was the programme being developed by the Institute for Research in Social Science through an appropriation made in 1927 by the Rockefeller Foundation. The problems studied, although of regional significance, had generic value. They included eight main divisions: Local government, county, State, and municipal; southern historical backgrounds; social-economic activities, including studies in social industrial relationships and the southern coöperative movement; crime and criminal justice; the Negro field, folklore and backgrounds of the southern people; social institutions, both public welfare and child welfare; and the human geography of the South. President, Frank Porter Graham, A.M.

NORTH CENTRAL, formerly **NORTHWESTERN COLLEGE**. A coeducational institution of higher learning in Naperville, Ill.; founded in 1861. In the autumn of 1930 there was an enrollment of 511 students, of whom 271 were men and 240 women. There were 39 members on the faculty. The productive funds of the college amounted to \$963,000, and the current income for the year was \$145,898. The library contained 20,000 volumes. In 1930 a four-year course in physical education, leading to the degree of bachelor of science in physical education, was introduced for the training of coaches and physical directors in high school. The Merner Gymnasium and Field House, costing \$350,000, also was completed. President, Edward Everett Rall, Ph.D.

NORTH DAKOTA. POPULATION. According to the Fifteenth Census, the population of the State on Apr. 1, 1930, was 680,845. On July 1, 1925, it was 641,192 according to the census taken by the State. On Jan. 1, 1920, it was 646,872. The capital is Bismarck.

AGRICULTURE. The following table gives the acreage, production, and value of principal crops in 1929 and 1930:

| Crop | Year | Acreage | Prod. Bu. | Value |
|--------------|------|------------|------------|--------------|
| Wheat | 1930 | 9,336,000 | 99,807,000 | \$51,038,000 |
| | 1929 | 10,197,000 | 97,262,000 | 94,920,000 |
| Barley | 1930 | 2,290,000 | 40,075,000 | 10,420,000 |
| | 1929 | 2,462,000 | 34,960,000 | 14,683,000 |
| Hay | 1930 | 2,660,000 | 2,591,000* | 16,590,000 |
| | 1929 | 2,671,000 | 2,486,000* | 19,312,000 |
| Flaxseed .. | 1930 | 1,931,000 | 10,041,000 | 13,757,000 |
| | 1929 | 1,463,000 | 6,876,000 | 19,734,000 |
| Oats | 1930 | 1,838,000 | 38,598,000 | 7,720,000 |
| | 1929 | 1,876,000 | 33,768,000 | 10,806,000 |
| Rye | 1930 | 1,194,000 | 13,194,000 | 3,152,000 |
| | 1929 | 1,038,000 | 9,861,000 | 7,494,000 |
| Corn | 1930 | 1,089,000 | 19,058,000 | 10,101,000 |
| | 1929 | 1,057,000 | 16,384,000 | 11,141,000 |
| Potatoes ... | 1930 | 116,000 | 7,192,000 | 5,754,000 |
| | 1929 | 145,000 | 7,685,000 | 8,069,000 |

* Tons.

Farms in the State numbered 78,050 in 1930, as against 75,970 in 1925, and 77,690 in 1920. The area of irrigated lands totaled 8851 acres in 1929, as against 12,072 in 1919.

MINERAL PRODUCTION. Coal, which continued to rank as the State's only important mineral product, was more actively mined in 1929. Its total production for that year was 1,862,130 net tons, as against 1,649,930 for 1928. The value of the

coal mined rose with the quantity, to \$3,157,000 for 1929, from \$2,780,000 for 1928. The remaining 10 per cent or so of the yearly total value of minerals produced was contributed chiefly by clay products and by sand and gravel. The total value of the mineral products of the State was \$3,082,621 for 1928; for 1927, \$2,869,663.

TRANSPORTATION. The total number of miles of railroad line under operation on Jan. 1, 1930, was 5275.58. No construction of additional line or trackage in 1930 was reported.

EDUCATION. In the effort to determine whether the system in use for the training of teachers provided the desired type, number, and quality of teachers, a survey of the training system and of its product was conducted in 1930. The State's population within the years of school age was estimated, for the year ended June 30, 1930, at 222,798. There were enrolled in the public schools 169,277 pupils. Of these, 139,580 were in the elementary and 29,697 in the high schools. The expenditures of the year for public-school education totaled \$16,069,409. The year's salaries of all teachers averaged \$109.87 a month.

CHARITIES AND CORRECTIONS. Under the administrative system in effect in 1930 the State Board of Administration exercised entire control of the State institutions, whether charitable, correctional or educational. The board was composed of three appointed and two ex-officio members, and it had an executive secretary. Under its charge was an important non-institutionalized activity, the State Children's Bureau. Seven places for the care or custody of individuals, all under the Board of Administration, had among them a population of about 3000. These institutions, with their respective populations as reported near the close of 1930, were: State Training School, Mandan, 205; State Penitentiary, Bismarck, 364; Hospital for the Insane, Jamestown, 1521; Institution for Feeble-Minded, Grafton, 567; School for the Blind, Bathgate, 32; School for the Deaf, Devil's Lake, 112; Tuberculosis Sanatorium, Dunseith, 208.

The State Capitol at Bismarck was destroyed by fire on December 28. The loss by reason of the structure was about \$1,000,000. In addition, a great part of the State records perished. Their loss threw accounts and projects into confusion. Among the collections of documents destroyed or damaged were reported to be the Land Department's records of \$55,000,000 in State investments and the records of a further \$40,000,000 of public investments in the Treasurer's office; also the plans of the Highway Department and the Tax Commissioner's records and data.

POLITICAL AND OTHER EVENTS. A group seeking the repeal of the prohibition laws of the State filed on July 8 a petition to initiate a repeal referendum. The petition carried more than 20,000 signatures, but some of these were challenged as not presented in conformity with the legal requirements. On Mount Rushmore, near where President Coolidge had spent the summer of 1927, the sculptor Gutzon Borglum carried on a work of mountain-face sculpture. Ex-President Coolidge contributed a 500-word summary of the history of the United States to be carved on the mountain, with heads of Washington, Jefferson, Lincoln, and Roosevelt. The head of Washington was unveiled on July 4.

ELECTIONS. Governor George F. Shafer, Republican, was reelected November 4, defeating Pierce Blewett, Democratic candidate. Both branches of

the Legislature remained Republican, but the conservative wing of the Republicans gained control in the two houses of the Legislature simultaneously for the first time subsequent to 1919. Three Republicans were elected to the House of Representatives. A measure to amend the State constitution so as to extend the terms for State and county officers to four years, from two years, was rejected by popular vote.

OFFICERS. Governor, George F. Shafer; Lieutenant-Governor, John W. Carr; Secretary of State, Robert Byrne; Treasurer, Berta E. Baker; Auditor, John Steen; Attorney-General, James Morris; Superintendent of Public Instruction, Bertha R. Palmer.

JUDICIARY. Supreme Court: Chief Justice, John Burke; Associate Justices, Luther E. Birdzell, A. M. Christianson, A. G. Burr, W. L. Nuessle.

NORTH DAKOTA, UNIVERSITY OF. A State institution of higher education at University Station, Grand Forks, N. D.; founded in 1883. The enrollment for the autumn of 1930 was 1604, of whom 1015 were men and 589 women. These were distributed as follows: Graduate, 76; liberal arts, 624; commerce, 98; education, 371; engineering, 232; law, 72; medicine, 60; specials, 70. For the summer session of 1930 the total registration was 529, of whom 242 were men and 287 women. The faculty numbered 139. The income for 1930 was derived as follows: State appropriations for maintenance, \$534,200; Federal land funds, \$64,000; student fees, \$60,000; all other sources, \$15,000; receipts for buildings and permanent improvements, \$14,000; receipts for extension work, \$21,500. Grounds, buildings, and equipment were valued at \$2,400,000. The library contained 98,131 volumes. President, Thomas Franklin Kane, Ph.D., LL.D.

NORTHERN EPIRUS. See GREECE under *History*.

NORTHERN TERRITORIES. See GOLD COAST.

NORTHERN TERRITORY. A territory of the Commonwealth of Australia, situated in the central and northern part of the island continent; divided for administrative purposes into two territories, North Australia and Central Australia. Area, 523,620 square miles; population, according to the census of 1921, exclusive of aborigines, 3867; estimated Jan. 1, 1930, at 4470. The aborigines are estimated to number about 20,000. Principal town and port, Darwin. Agriculture has not been developed chiefly because the climate is unsuitable for Europeans. Stock raising and mining are the chief occupations. The value of all minerals produced in 1927-28 was £14,627. The overseas imports in 1929-30 were valued at £39,104, exports, £57,054. Revenues in 1927-28 totaled £142,902; expenditure, £459,756; the public debt (June 30, 1928) was £3,564,630. Government Resident for North Australia, R. H. Weddell; for Central Australia, J. C. Cawood.

Lake Eyre, in Central Australia, which is covered with encrusted patches of crystal salt, was explored in December, 1929, by C. T. Madigan, who drove an automobile truck for miles across the surface. He estimated the quantity of salt in North Lake Eyre at 3,000,000,000 tons.

NORTH POLE. See POLAR RESEARCH.

NORTHWESTERN UNIVERSITY. A co-educational institution of higher learning in Evanston and Chicago, Ill.; founded in 1851. It is composed of a college of liberal arts, a graduate school, and schools of engineering, commerce,

journalism, music, education, and speech in Evanston; and schools of law, medicine, dentistry, commerce, and journalism in Chicago. For the autumn term of 1930 there was an enrollment of 12,392, of whom 6000 were registered in evening classes in Chicago. For the summer session of 1930, 2500 students were enrolled. The faculty numbered 657 members of the rank of instructor or above. The endowment as of June 30, 1930, was \$25,525,618, and the income from these funds for the fiscal year 1929-30 was \$749,760. In the various libraries of the university there were approximately 350,000 bound volumes and 175,000 pamphlets. President, Walter Dill Scott, Ph.D., LL.D.

NORTHWEST PROVINCES. THE PRAIRIE PROVINCES OF CANADA. See CANADA.

NORTHWEST TERRITORIES. A vast area in northern Canada, largely uninhabited and only partially explored, lying north and west of Hudson Bay and Strait, north of the Prairie Provinces, and east of Yukon Territory. Total area, 1,309,882 square miles (1,258,217 square miles of land and 51,465 of water); population, estimated June 1, 1930, at 9600, mostly Eskimos and Indians. Fur production in 1926-27 was valued at \$2,981,829. The Territories were divided in 1920 into three provisional districts, namely, Mackenzie, Keewatin, and Franklin. They are administered by a commissioner, deputy commissioner, and five councilors appointed by the Governor General. Expenses of Government in 1928 were \$392,378. Commissioner in 1930, William W. Cory.

NORWAY. A constitutional monarchy of northwestern Europe, occupying the western and northern half of the Scandinavian Peninsula and separated from Sweden by the Kjølen Mountains, with an extreme length of 1110, and an extreme width of 250 miles; formerly united with Sweden, but separated, June 7, 1905. Capital, Oslo; reigning King in 1930, Haakon VII.

AREA AND POPULATION. With an area of 125,086 square miles, Norway reported a census population of 2,809,000 on Dec. 31, 1930, as compared with 2,649,775 at the census of 1920. During the years 1924 to 1928, the average annual number of births was 53,338 and of deaths, 30,336, the annual excess of births being 23,002. Emigrants during the same period averaged 9109 annually, of whom 68 per cent went to the United States. Oslo, the capital, had 258,483 inhabitants at the 1920 census. Estimated populations of other leading cities in 1928 were: Bergen, 96,772; Nidaros (formerly Trondhjem), 55,218; Stavanger, 47,179.

EDUCATION. Primary education is compulsory, the school age being from 6½ to 14 years in urban districts and 7 to 14 years in rural districts. During 1926-27 the number of pupils in elementary schools was 394,018 and in secondary schools, 23,447. There is only one university, that at Oslo, which had 3457 students in 1928.

PRODUCTION. As Norway is a largely barren and mountainous country, lumbering, fishing, and manufacturing vie with agriculture as the chief factors in the national economy. In 1928, only 1,704,000 acres, or 2.4 per cent of the total area, was cultivable; there were 622,000 acres of permanent meadows, and 17,531,000 acres of forests. The production of the chief crops in 1929 and 1928, respectively, in quintals (1 quintal equals 220.46 pounds) was: Wheat, 198,000 (217,277); rye, 143,000 (126,271); barley, 1,175,000 (1,117,697); oats, 1,806,000 (1,840,482). The potato crop in 1928 totaled 9,503,244 quintals. Imports of

wheat and potatoes have shown a steady increase, despite the expansion of domestic production of cereals, except rye, and of potatoes. The final crop report for 1930 showed a yield above average for cereals, fruit, and berries. Livestock in 1928 included 1,654,447 sheep, 1,220,875 cattle, 293,258 goats, 282,709 swine, and 182,401 horses.

The value of the sea fisheries in 1929 was 81,300,000 crowns (1 crown equaled \$0.2668 in 1929), as compared with 72,500,000 crowns in 1928 and 58,000,000 in 1927. Cod fisheries yielded 31,400,000 crowns; and herring, 21,100,000 crowns. The 1930 cod catch of 60,400,000 pieces was the lowest in six years. Whale-oil production in 1929-30 totaled 1,720,775 casks, as compared with 1,214,871 casks in 1928-29. The value of wrought and partly wrought timber exported in 1928 was 38,203,300 crowns, of wood pulp and paper, 187,088,300 crowns. In 1929, exports of rough and dressed lumber, logs, and hewn lumber were estimated at 340,000,000 board feet, as against 328,600,000 board feet in 1928.

Mineral production in 1928 was valued at 29,052,000 crowns, including pyrites, 15,840,000 crowns; iron ore, 9,373,000 crowns; copper ore, 1,466,000 crowns; silver ore, 517,000 crowns. Metals produced, in order of their value, were: aluminum, 37,602,000 crowns; ferro-alloys, 29,288,000 crowns; nickel, 1,677,000 crowns; electric iron, 941,000 crowns; silver, 868,000 crowns. In 1927, there were 10,548 manufacturing establishments, the most important lines being the production of wood products, machinery and metal work, and food products. A general decline in industrial and commercial activity was experienced in 1930 as a result of the world economic crisis. The number of registered unemployed on Oct. 1, 1930, was 23,300, or 2000 more than a year earlier.

The estimated national income of Norway in 1929 was 2,181,000,000 crowns (\$581,890,800), as compared with 2,153,000,000 crowns (\$574,634,700) in 1928. Estimates placed the national wealth in 1929 at 7,914,000,000 crowns (\$2,111,455,200), as against 8,053,000,000 crowns (\$2,149,345,700) in 1928. Compared with 1913, the national wealth and income were estimated to have increased 89 and 134 per cent, respectively, by 1929.

COMMERCE. Total imports in 1929 were valued at 1,066,546,000 crowns, as compared with 1,023,361,000 crowns in 1928, while domestic exports amounted to 742,770,000 crowns, as against 670,329,000 crowns in 1928. The unfavorable balance of trade was 323,770,000 crowns in 1929 and 339,200,000 crowns in the previous year. The heavy adverse balance of trade is normal in Norwegian economy, being rectified by earnings of the shipping industry, immigrant remittances, etc.

Leading imports were motor and other vehicles, breadstuffs, textile manufactures, and raw minerals, while the chief exports were animal products, timber, wood pulp, paper manufactures, wrought metals, and minerals. Germany, the United Kingdom, and the United States, in the order named, were the principal sources of imports. Exports went chiefly to the United Kingdom, Germany, and the United States, also in the order named. Preliminary figures for 1930 placed imports at 1,067,000,000 crowns and exports at 683,000,000 crowns.

FINANCE. The approved budget for the fiscal year ended June 30, 1930, balanced at 388,400,000 crowns (1 crown equaled \$0.2668 in 1929). Ac-

tual revenues, however, amounted to 410,500,000 crowns and expenditures to 395,800,000 crowns, leaving a surplus of 14,700,000 crowns for the year. The actual surplus in 1928-29 was only 211,000 crowns. The 1929-30 increase over the revenue estimates was due largely to greater income from taxes, indicating a definite improvement in the country's economic situation during the year. The budget for 1930-31, as presented to the Storting (Parliament), was estimated to balance at 374,700,000 crowns (about \$100,419,000). The budget included proposals for a reduction of the tax on personal income and on business earnings.

The national debt on Jan. 1, 1930, was estimated at 1,582,058,000 crowns—a decrease of 52,767,000 crowns since June 30, 1928. Of the total debt, 789,109,000 crowns represented the internal debt, including a floating debt of 15,608,000 crowns. The debt was incurred partly through capital investments in state railways, the construction of telegraph lines, and water-power developments and partly as a result of budgetary deficits.

SHIPPING. In the size of her mercantile fleet, Norway ranked sixth among the nations of the world in 1930. On July 1, 1930, the merchant fleet consisted of 1562 steamers of 2,366,225 tons; 325 motorships of 1,098,300 tons; and 11 sailing vessels, of 4101 tons. In 1928, 8937 vessels, of 6,148,319 net tons, entered Norwegian ports, and 8953 vessels, of 6,164,673 tons, cleared.

INTERNAL COMMUNICATIONS. Of 2383 miles of railway line in operation on June 30, 1928, 2154 miles were government owned and operated. For the year ended June 30, 1928, the state railways reported total receipts of 80,132,690 crowns and total expenses of 81,324,051 crowns. Private railways had receipts of 3,922,806 crowns and expenses of 3,595,550 crowns. The highway mileage in 1930 was estimated at 23,344 miles, of which only about 50 miles were surfaced outside of the cities. The Government operated 18 wireless telegraph stations, including one at Svalbard.

GOVERNMENT. Executive power is vested in the King, who acts through a cabinet or council of state, and legislative power in the Parliament or Storting of 150 members, elected for three years by universal suffrage without distinction as to sex. When assembled, the Storting divides itself into the Lagting and Odelsting, comprising one-fourth and three-fourths of the membership of the Storting, respectively. The two sections function much as the upper and lower Houses of bicameral Parliaments. As a result of the elections held in November, 1927, the following parties were elected for the period 1928-30: Labor party, 59; Conservatives and Moderate Liberals, 31; Liberals, 31; Agricultural party, 28; Communists, 3. King Haakon VII was born Aug. 3, 1872, and elected King Nov. 18, 1905, upon the secession of Norway from its union with Sweden. The members of the cabinet appointed Feb. 13, 1928, were as follows: Prime Minister and Foreign Affairs, J. L. Mowinkel; Education and Ecclesiastical Affairs, S. M. Hasund; Justice, H. M. Evjenth; Agriculture, H. J. Aarstad; Public Works, O. M. Mjelde; Social Affairs, T. Værland; Finance, P. Lund; Defense, T. Anderssen-Rysst; Commerce and Industry, L. Oftedal.

HISTORY

POLITICAL TRENDS. The general elections of Oct. 20, 1930, were fought on the issue of capitalism versus radical socialism. The Norwegian

Labor party, with a programme only slightly less radical than communism, had made sensational gains at the elections of 1927, increasing its representation in the Storting from 34 to 60. Gaining control of the Government early in 1928, Labor introduced aggressive legislation as the first step in its programme of converting Norway into a Socialist community. Two weeks later it was voted out of office by a combination of the alarmed bourgeois parties. The Labor platform announced in April, 1930, at the opening of the electoral campaign, was even more radical. It called for a levy on capital, the nationalization of the banks, and the reduction of the military and naval establishments to the level of militia and coast-guard units. A plain hint that Labor would not hesitate to establish a minority dictatorship under favorable conditions was given at the Labor party meeting.

The election resulted in the loss of 11 seats by Labor and the elimination of the Communist party, which held three seats in the former Storting. The Conservatives, on the other hand, gained 13 seats, the Radicals 3, and the Agrarians lost 3. The composition of the new Storting was: Labor, 48; Conservatives, 44; Radicals, 34; Agrarians, 24. The gains registered by two of the three bourgeois parties left the Government of Premier Mowinckel (Radical) in a much stronger position. The reaction to the setback of the Labor party was a general increase in optimism in business circles and a distinct upward movement of prices on the Oslo Stock Exchange.

At the opening of Parliament, Jan. 23, 1930, Labor's motion of lack of confidence in the Government was rejected by the combined votes of the other parties. The issues in dispute were Labor's proposals for a further reduction of the military budget and for a change in the tax laws. The Mowinckel government's programme submitted to the Storting May 28 provided for the reduction of the military and naval budget by 14,000,000 kroner to 32,000,000 kroner. The compulsory three-months-service period was to be retained. It also called for the revision of statutes governing labor difficulties, reconsideration of the temperance laws, and the passage of legislation enabling women to apply for higher government posts.

A Storting committee appointed to examine the advisability of restoring the former name of Trondhjem, which became Nidaros on Jan. 1, 1930, split on its recommendations. The Lagting on February 5 voted 57 to 55 in favor of restoring the old name, which was objected to by extreme nationalist elements because of its Danish antecedents.

FOREIGN RELATIONS. The foreign relations of Norway in 1930 were marked by that country's election to a nonpermanent seat on the Council of the League of Nations during the September Assembly of the League, the signing at Oslo on November 1 of a nationality treaty with the United States, and the formal statement of Norway's claims to lands in the Antarctic by the Norwegian Consul General in New York at the Williamstown Institute of Politics on August 5. The treaty with the United States provided that persons of Norwegian or American birth, who had so-called "dual nationality" and previously might have been called upon legally for military service in either or both countries, in the future could be called upon for service only in the country in which they have established a per-

manent residence. In defending Norwegian claims in the Antarctic, as against British, American, and other claims, the Norwegian spokesman, Consul General Wilhelm Morgenstjerne, revealed that Norway had submitted her contentions in a note delivered to the State Department in Washington, Apr. 29, 1929. He pointed out that approximately 100 Norwegian whalers, with about 8000 men, were engaged in the whaling industry in the Antarctic regions in 1930, and that Norway accordingly had the major economic interests in that area. Negotiations were carried on with Denmark during the year in an effort to end the practice of smugglers in using neutral territory in the Cattegat to deliver spirits destined for Norway.

A tariff conference held in Oslo by representatives of Sweden, Norway, Denmark, Belgium, and Holland closed on Dec. 22, 1930, with complete agreement on all main points. The purpose of the conference was to prevent the raising of tariff barriers between the participating countries.

OTHER EVENTS. The year was marked also by the celebration from July to October of the 900th anniversary of the introduction of Christianity into Norway by King Olav, who later became the national saint of the Norwegian people. The twenty-fifth anniversary of Norway's independence from Sweden was celebrated May 17, and on November 18 the nation observed the silver jubilee of King Haakon's accession to the Throne. The later ceremonies in Oslo were attended by the King and Queen of Denmark and Prince George of Great Britain. The death of Dr. Fridtjof Nansen (q.v.), famous Norwegian explorer and humanitarian, occurred in Oslo May 13. He was buried with official ceremonies on Constitution Day, May 17. Another notable death of the year was that of Sigurd Ibsen (q.v.), only son of Henrik Ibsen and a former Prime Minister of Norway, who died April 14 at Freiburg. For Norway's withdrawal of claims to the Sverdrup Islands in the Canadian Arctic, see **SVERDRUP ISLANDS**. See also **ICELAND**; **SVALBARD**; **POLAR RESEARCH**.

NORWEGIAN LITERATURE. See **SCANDINAVIAN LITERATURE**.

NOTRE DAME, UNIVERSITY OF. A Roman Catholic institution for the higher education of men in Notre Dame, Ind.; founded in 1842. The enrollment for the autumn term of 1930 was 3272, representing an increase of 218 over 1929-30. The summer session enrollment was 1087. There were 167 faculty members. The endowment amounted to \$1,000,000, and the income for the year was \$64,675. During 1930 the construction of a new law building and stadium was completed. The library contained 143,181 volumes. President, the Rev. Charles L. O'Donnell, C.S.C., Ph.D.

NOVA SCOTIA, nō'vā skō'shā. The easternmost of the Maritime Provinces of Canada. Area, 21,428 square miles; estimated population on June 1, 1930, 553,900 (523,837 at census of 1921). Halifax, with 58,372 inhabitants in 1921, is the capital. Other large towns are Sydney, 22,545, in 1921; Glace Bay, 17,007; Dartmouth, 7899; Amherst, 9998; and New Glasgow, 8974. In 1928, births totaled 10,899; deaths, 6195; marriages, 3256. Besides nine universities and colleges, there were (1928) 3319 schools, with 112,898 pupils.

Agriculture is the chief occupation, with fruit-raising as the most profitable branch. Field crops in 1929 were valued at \$20,945,000 and the fruit crop, mostly apples, totaled about 2,500,000 bar-

rels. The fisheries, which yielded a catch valued at about \$12,000,000 in 1929, rank second in importance in Canada. The important mineral areas include about 1000 square miles of coal fields and about 10,250 square miles classed as gold districts. Mineral production in 1930 was valued at \$30,890,956 (\$30,524,392 in 1928), the coal output reaching 7,063,879 tons (6,743,504 tons in 1928). Salt, lead, zinc, copper, manganese, and other minerals are found. The estimated forest area is over 12,000 square miles and the value of forest products in 1927 was \$8,885,293. There were (1928) 1167 industrial establishments, employing 19,222 persons, and with a gross production value of \$84,948,608. The hydraulic turbine horse power installed in 1929 was 109,124 (74,356 in 1928). Exports passing through Nova Scotian ports in 1929 totaled \$59,679,784 and imports for consumption were \$32,821,746. There are 1451 miles of railway and 18,000 miles of highway.

Executive power is vested in a legislature consisting of a lieutenant-governor, appointed by the Federal Government, and an assembly of 38 members elected for five years. For the fiscal year ended Sept. 30, 1929, revenues totaled \$7,390,410 and expenditures were \$7,288,486. The estimated revenue for 1929-30 was \$8,263,064 and the estimated expenditure, \$8,640,068. The bonded indebtedness in 1928 was \$43,757,113. In the Dominion general election held July 28, 1930, the Province returned 10 Conservatives and four Liberals to the House of Commons at Ottawa. Lieutenant-Governor in 1930, James C. Tory; Premier, Provincial Secretary, Treasurer, and Minister of Natural Resources, E. N. Rhodes.

Legislation authorizing the sale of alcoholic liquors under Government control was in operation in 1930. In a plebiscite held Oct. 31, 1929, the Province voted 77,341 to 64,071 against continuing the Nova Scotia Temperance Act and 87,651 to 53,082 in favor of the sale of liquor under Government control. See CANADA.

NOVAYA ZEMLYA (No'va Zem'bla). An archipelago to the north of European Russia belonging to Soviet Russia and administered by a Soviet commissioner in Archangel.

NOVEL. See LITERATURE, ENGLISH AND AMERICAN; FRENCH LITERATURE; GERMAN LITERATURE; ITALIAN LITERATURE; SCANDINAVIAN LITERATURE; SPANISH-AMERICAN LITERATURE; SPANISH LITERATURE.

NUT CULTURE. See HORTICULTURE.

NUTRITION. See FOOD AND NUTRITION.

NYASALAND PROTECTORATE. A British protectorate in south central Africa, occupying the southern and western shores of Lake Nyasa. Land area, 37,890 square miles; population (Jan. 1, 1929), 1877 Europeans, 1085 Asiatics, and 1,326,165 natives. Zomba is the seat of government and Blantyre and Limbe in the Shire Highlands are the chief white settlements. There were 2562 native schools (1928), with an average attendance of 80,662. Coffee, tobacco, cotton, and tea are the chief export crops. In 1928 imports totaled £869,463 and exports £706,757 (excluding specie and goods in transit). In the same year government receipts were £374,967 and expenditures, £407,377. The public debt on Jan. 1, 1929, was £789,759. Construction of a 2½-mile bridge across the Zambezi River to provide direct railway connections between Blantyre in the protectorate and the port of Beira in Portuguese East Africa was commenced in 1930.

Its completion was scheduled for 1933 at a cost of between £1,500,000 and £2,000,000. The territory is administered for the Colonial Office by a governor and commander-in-chief, aided by executive and legislative councils, both consisting of nominated members. Governor in 1930, T. S. W. Thomas.

OATS. Oats production in 1930 for 33 countries reporting to the International Institute of Agriculture, Rome, not including the Soviet Republics and countries of the southern hemisphere, was estimated at 3,518,014,000 bushels, or 1.7 per cent below the yield of these countries in 1929 and slightly below the annual average for the five years 1924-28. The area devoted to the crop, 97,221,000 acres, was 1.2 per cent above that of 1929 and only .9 per cent below the average of the five-year period. The 1930 production of the leading countries exclusive of the United States was reported as follows: Canada, 455,978,000 bushels; Germany, 377,008,000 bushels; France, 302,749,000 bushels; Poland, 162,590,000 bushels; England and Wales, 93,870,000 bushels. Argentina in the crop year 1929-30 reported a production of 68,294,000 bushels, and Chile of 10,403,000 bushels. In Canada the area of 13,223,000 acres was only 6 per cent above the area of 1929, but the yield was greater by nearly 52 per cent.

In the United States the 1930 crop escaped the severe drought of the summer and the grain was of high quality, being good in color and heavy in weight. The yield per acre averaged 33.7 bushels or three bushels more than in 1929 and 2.7 bushels above the average of the preceding 10 years. A larger acreage than in any recent year was cut for hay in the drought area, but the acreage harvested for grain, 41,598,000 acres, was 4 per cent above the grain acreage of 1929. According to estimates published by the U. S. Department of Agriculture the total crop amounted to 1,402,026,000 bushels, compared with 1,228,369,000 bushels in 1929 and an average of 1,372,000,000 bushels during the past five years. The average farm price Dec. 1, 1930, was 32.4 cents per bushel or 11.1 cents below the corresponding price the year before, and on this basis the total value of the 1930 crop was \$453,973,000, or \$79,834,000 under the value of the smaller crop of 1929.

Oats is a crop grown in every State. The production of the leading States was reported as follows: Iowa, 239,655,000 bushels; Minnesota, 171,351,000 bushels; Illinois, 153,062,000 bushels; Wisconsin, 108,680,000 bushels; and Nebraska, 80,017,000 bushels. The average yield per acre ranged from 15 bushels in Florida to 48 bushels in Washington. On Aug. 1, 1930, 66,965,000 bushels of oats, or 5.4 per cent of the 1929 crop, were still held on farms. The Department of Agriculture determined from 3081 farm reports that the cost of producing an acre of oats in 1929 was \$17.87, or 54 cents per bushel.

During the fiscal year ended June 30, 1930, the exports of oats by the United States amounted to 4,635,000 bushels of grain and 41,244,000 pounds of oat meal, flaked and rolled oats. These exports were over 50 per cent less than in the preceding fiscal year. The imports were only 152,000 bushels. A class of U. S. Army officers under the direction of the Department of Agriculture studied the methods and details of grading oats according to the Federal standards to qualify as inspectors for the Army.

OBERLIN COLLEGE. A nonsectarian institution for the higher education of men and

women in Oberlin, Ohio; founded in 1833. The registration for the first semester of 1930-31 was 1662, while that for the summer session of 1930 was 161. The faculty had 277 members. The productive funds of the institution as of Aug. 31, 1930, amounted to \$17,791,481, and the income for the year was \$1,643,335. The library contained 323,216 bound and 207,324 unbound volumes. President, Ernest Hatch Wilkins, Ph.D., Litt.D., LL.D.

OBITUARY RECORD OF THE YEAR. See NECROLOGY.

O'BRIEN, IGNATIUS JOHN. See SHANDON, IGNATIUS JOHN O'BRIEN, FIRST BARON.

OBSERVATORIES. See ASTRONOMY.

OCCUPATIONAL DISEASES. See WORKMEN'S COMPENSATION.

OCEANIA, *O'shē-an'la*, FRENCH ESTABLISHMENTS IN. A French colonial possession consisting of groups of small islands scattered throughout a wide area of the eastern Pacific. The total area of the Establishments is estimated at 1520 square miles: population in 1926, 35,862, of whom 29,644 were natives. The principal island is Tahiti, which contains the chief town, Papeete, with a population of 5569, of whom 2126 were French. Tahiti forms a part of the Society Islands. The other groups are the Marquesas Islands, Tuamotu Islands, Leeward Islands, the Gambier, Tubuai, and Rapa groups, and a number of outlying islands. Various tropical fruits are grown and exported. Pearls, mother-of-pearl, and phosphates are important products. For the island of Tahiti, imports in 1928 totaled 52,752,715 francs and exports, 46,250,276 francs. The budget of the Establishments for 1929 balanced at 14,197,100 francs. A New Zealand steamship service connects Tahiti with San Francisco, New Zealand, and Australia. The administration is in the hands of a governor assisted by an administrative council. Governor in 1930, L. J. Bouge, appointed Apr. 30, 1928.

OCEANOGRAPHIC INSTITUTE. See ZOOLOGY.

OCEANS. See METEOROLOGY.

OFFICERS RESERVE CORPS. See MILITARY PROGRESS.

OHIO. POPULATION. According to the Fifteenth Census, the population of the State on Apr. 1, 1930, was 6,646,097. The population on Jan. 1, 1920, was 5,759,394. The capital is Columbus.

AGRICULTURE. The following table gives the acreage, production, and value of the principal crops in 1929 and 1930:

| Crop | Year | Acreage | Prod. Bu. | Value |
|-------------|------|-----------|--------------|---------------|
| Corn | 1930 | 3,483,000 | 88,816,000 | \$ 59,507,000 |
| | 1929 | 3,518,000 | 128,407,000 | 100,157,000 |
| Hay | 1930 | 2,822,000 | 2,469,000 * | 42,921,000 |
| | 1929 | 3,062,000 | 5,018,000 * | 50,146,000 |
| Wheat ... | 1930 | 1,613,000 | 28,716,000 | 21,818,000 |
| | 1929 | 1,646,000 | 32,093,000 | 37,227,000 |
| Oats | 1930 | 1,790,000 | 64,440,000 | 22,554,000 |
| | 1929 | 1,689,000 | 49,826,000 | 22,422,000 |
| Potatoes . | 1930 | 105,000 | 9,450,000 | 10,895,000 |
| | 1929 | 106,000 | 10,494,000 | 16,266,000 |
| Tobacco .. | 1930 | 45,800 | 46,876,000 * | 5,704,000 |
| | 1929 | 52,800 | 40,881,000 * | 6,623,000 |
| Barley ... | 1930 | 122,000 | 3,355,000 | 1,678,000 |
| | 1929 | 103,000 | 2,420,000 | 1,476,000 |
| Sugar beets | 1930 | 80,000 | 277,000 * | ..... |
| | 1929 | 20,000 | 174,000 * | 1,814,000 |

* Tons. * Pounds.

Farms in the State numbered 219,659 in 1930, the total having declined from 244,703 for 1925 and 256,895 enumerated at the census of 1920.

MINERAL PRODUCTION. The total value of the product of minerals native to the State was \$211,041,279 for 1928; for 1927, \$226,962,529. The chief components of this total, for 1928, were clay products, natural gas, coal, and cement, in the order of the value of the total product of each. Clay products, in which industry Ohio ranked foremost among the States, furnished nearly 40 per cent of the total value of mineral products for 1928, but were nevertheless about 11½ per cent below the corresponding product for 1927; the total of clay products of the State being, for 1928, \$81,848,422, as against \$92,595,130 for 1927. Brick and tile furnished, in 1928, \$47,867,039 of the total; pottery, \$33,981,383. The natural gas output, on the other hand, rose considerably, to 56,341,000 M cubic feet for 1928, from 51,381,000 M for 1927; in value, to \$32,090,000 for 1928, from \$28,881,000 for 1927. The production of coal fell to 15,641,225 net tons for 1928, from 15,799,967 for 1927, but subsequently increased to 23,689,477 net tons for 1929; by value it was \$35,733,000 for 1929, as against \$26,439,000 for 1928 and \$30,376,000 for 1927. Shipments of cement from the mills of Ohio, 9,364,338 barrels for 1928, declined slightly to 9,144,085 barrels for 1929; in value they were \$14,928,183 for 1928 and \$13,427,778 for 1929. The production of petroleum was on a slowly declining scale; it fell to 7,015,000 barrels for 1928, from 7,593,000 for 1927, and diminished further to 6,708,000 for 1929; the value of the yearly product was \$14,100,000 (estimated) for 1929, \$14,470,000 for 1928, and \$14,970,000 for 1927. The output of stone, 13,717,410 short tons for 1928, in value \$14,195,607, while large as to totals, consisted in great part of the less valued grades. The State maintained its lead in the production of lime, of which the total quantity was 1,013,676 short tons for 1928; in 1929 Ohio produced 956,000 short tons (estimated); in value the total was \$8,919,596 for 1928 and \$7,800,000 (estimated) for 1929. There were produced in 1928, 413,948 short tons of gypsum, in value \$3,805,795. The salt production of 1928 was 1,308,110 short tons, in value \$2,988,862; it rose to 1,449,360 short tons for 1929, in value \$3,199,903.

The mineral industry of the State was largely augmented by the production of pig iron from non-native ores. The blast furnaces shipped 9,266,936 long tons of pig iron in 1928, while the shipments of 1929 rose to 9,446,984; by value the yearly products were \$156,883,186 for 1928 and \$163,480,003 for 1929. Closely connected with this industry was the production of coke, of which the quantity was 7,786,199 short tons for 1928 and, for 1929, 8,521,132, from byproduct ovens, a considerable production of bee-hive coke not included; the value of coke produced was \$33,908,863 for 1928 and \$35,202,383 for 1929. The substantial industry in ferro-alloys produced 87,221 long tons in 1928, in value \$3,652,022.

FINANCE. State expenditures in the year ended Dec. 31, 1928, as reported by the United States Department of Commerce, were: for maintenance and operation of governmental departments, \$44,094,360 (of which \$4,198,513 was for local education); for interest on debt, \$820,236; for permanent improvements, \$11,260,033; total, \$56,274,574 (of which \$19,576,973 was for highways, \$12,236,209 being for maintenance and \$7,340,764 for construction). Revenues were \$75,370,133. Of these, property and special taxes formed 28.2 per cent; departmental earnings and

remuneration to the State for officers' services, 8.6; sales of licenses, 47.8 (including taxes of \$15,472,000 on sales of gasoline). The State's funded debt outstanding on Dec. 31, 1928, was \$15,645,620. Net of sinking-fund assets, it was \$14,625,935. On property bearing an assessed valuation of \$13,497,743,790 were levied in the year State taxes of \$3,374,436.

TRANSPORTATION. The total number of miles of railroad line under operation on Jan. 1, 1930, was 8810.14. There were built, in 1930, 14.28 miles of first, 17.55 of second, and 4.49 of third track.

EDUCATION. The State Department of Education gave much of its attention during the year to inaugurating what was styled a system of guidance. The purpose of this system was described as the coordination of educational procedures with the complex social and economic structure of the State and Nation.

CHARITIES AND CORRECTIONS. The State Department of Public Welfare, organized in 1921, brought near to completion in 1930 ten years of highly concentrated direction of a wide variety of State activities in dealing with its wards. The department had at its head a single director. Its functions included the conducting of 21 State institutions; the administration of the pay-patient law; through a division of charities, the regulation of local and private institutions, whether of confinement or of child-care; through a division of probation and parole, supervision of these forms of restriction upon released culprits; criminal investigation and classification; execution of laws as to pardons and paroles; through a manufacturing and sales organization, the conduct of prison industries supplying State, county and local institutions; through a commission for the blind, work for the prevention of blindness, for the employment of blind persons, and for the assistance of the aged and infirm blind. The average daily institutionalized population was, for the year ended Oct. 31, 1930, 32,313. The State institutions under the Department of Public Welfare were: State hospitals (mental) at Athens, Cleveland, Columbus, Dayton, Lima, Longview, Massillon, and Toledo; Ohio Hospital for Epileptics; Institution for the Feeble-Minded, Columbus; Institution for the Feeble-Minded, Orient; Ohio State Sanatorium; Ohio Soldiers' and Sailors' Home; Madison Home; Boys' Industrial School; Girls' Industrial School; Ohio Penitentiary, Columbus; London Prison Farm; Ohio State Reformatory; Ohio Reformatory for Women; Bureau of Juvenile Research.

POLITICAL AND OTHER EVENTS. In the Ohio State Penitentiary at Columbus a fire swept through four crowded blocks of cells on the evening of April 21 and caused the death of 322 convicts. The prison, which was designed to hold 1500, was reported as having at the time some 4300 inmates. Those who had been let out from their cells on account of the risk rioted within the prison inclosure but were subdued by a force of the National Guard. The surviving convicts, however, greatly excited by the belief that the safety of the victims had been disregarded, later resumed the mutiny and were entirely subdued only after the lapse of several days. It was later reported that the fire had been set by convicts intending to make their escape while it was under way. See **CRIME** under *Prisons*.

A site on the river front at Columbus was purchased in separate parcels by the State in the

course of the year, to furnish a place for a new State office building to be erected.

The city council of Cleveland voted on January 13 to remove from office the municipality's city manager, William R. Hopkins. Charged with usurpations of power, failure to provide properly for the municipal light plant and negligence in a real-estate transaction, Hopkins retorted at a public hearing that his removal was inspired by his opposition to a rise in gas rates. Daniel E. Morgan was appointed city manager to succeed him. A new union terminal building for the use of railroads entering the city was completed and was dedicated on June 28. It was to be used by the New York Central, the Erie, the Wheeling and Lake Erie, the Baltimore and Ohio, the New York, Chicago and St. Louis, and the Chesapeake and Ohio. The terminal was reported to have cost \$220,000,000. It was topped by a tower 700 feet in height, reputed to be the tallest in the country, outside of New York City.

Cleveland, among several other American cities, was disturbed on March 6 by demonstrations on behalf of the unemployed, stirred up by Communist leaders. A crowd estimated at 10,000 persons invaded Public Square after holding a scheduled meeting and became disorderly. They were dispersed by a large body of mounted police, and about a hundred were more or less injured by clubbing or trampling. At Forest Hill, the 400-acre Rockefeller estate, John D. Rockefeller, Jr., undertook the development of a model community of residences, apartments, shops and offices, designed to cost \$75,000,000 in the aggregate. It was intended to provide homes at about \$25,000 each for persons able to afford them, and was to be run on a profit basis.

One of the large industrial units of the State, the Youngstown Sheet and Tube Company, voted by a large majority of its stock on April 11 to combine with the Bethlehem Steel Company. The projected combination was estimated as likely to have assets of approximately \$1,000,000,000. A minority opposed to the merger obtained a State court injunction against the proposal on December 29.

Delay occurred in the plans for the dedication of the monument to the late President Harding, erected on the outskirts of Marion, owing to the reported failure of the Harding Memorial Association and the Republican State Committee to obtain from President Hoover an assurance that he would attend the ceremony. On the motion of former Attorney-General Harry M. Daugherty the association on October 6 postponed the dedication indefinitely.

The minority interest, led by Cyrus S. Eaton of Cleveland, who opposed in the courts the merger of the Youngstown Sheet and Tube Company with the Bethlehem Steel Corporation, obtained an injunction against the union of the companies on December 29. Judge D. G. Jenkins of the Court of Common Pleas in granting the writ opined that "full, accurate and candid" information had not been furnished the stockholders of the Youngstown company.

ELECTIONS. The Republican ticket in the State was severely handled on November 4. The State elected a Democratic Governor, a Democratic Senator and six more Democratic Representatives than in the existing delegation. For Governor, George White, Democrat, obtained by unofficial count 1,031,787 votes, to 922,137 for Governor Myers Y. Cooper, running for reelection on the

Republican ticket. For United States Senator, Robert J. Bulkley, Democrat, obtained 1,042,125 votes (unofficial), to 801,350 for Roscoe C. McCulloch, Republican, supporter of Prohibition and actual holder of the Senate seat. McCulloch was reported to have suffered by the defection of a considerable part of the colored vote. The State's delegation of Federal Representatives as fixed by the election consisted of 13 Republicans and 9 Democrats. Nicholas Longworth, Speaker of the House, was among the Republicans reelected. Republican control of both houses of the State Legislature was preserved, though by heavily reduced majorities. Republican State officers elected were Clarence J. Brown, Secretary of State; Harry S. Day, State Treasurer; and Gilbert Bettman, Attorney-General. A proposed amendment to the State constitution, requiring that the State pay to the subdivisions of origin at least half of income and inheritance taxes collected, was approved.

OFFICERS. Governor, Myers Y. Cooper; Lieutenant-Governor, John T. Brown; Secretary of State, Clarence J. Brown; Treasurer, H. Ross Ake; Auditor, Joseph T. Tracy; Attorney-General, Gilbert Bettman; Director of Education, J. L. Clifton.

JUDICIARY. Supreme Court: Chief Justice, Carrington T. Marshall; Associate Justices, Reynolds R. Kinkade, James E. Robinson, Thomas A. Jones, Edward S. Matthias, Robert H. Day, Florence E. Allen.

OHIO NORTHERN UNIVERSITY. An institution for the higher education of men and women in Ada, Ohio; founded in 1871, and under the direction of the Methodist Episcopal Church. It consists of a college of liberal arts, college of law, college of pharmacy, a teacher training division in the liberal arts college, and a college of engineering. In the academic year 1929-30 there were 1014 students in residence, and in the summer quarter 436 students. The faculty consisted of 60 members. The productive endowment of the institution amounted to \$470,158, and the income for the year to \$217,791. The library consisted of 21,000 volumes. President, Robert Williams, A.M., D.D., LL.D.

OHIO STATE UNIVERSITY. A State institution for the higher education of men and women in Columbus, Ohio; founded in 1870. The enrollment for the autumn term of 1930 totaled 10,841, distributed as follows: Graduate School, 1106; agriculture, 882; applied optics, 38; arts and sciences, 2143; arts-education, 57; commerce and administration, 1989; dentistry, 207; education, 1756; engineering, 1726; law, 288; medicine, 343; nursing, 98; pharmacy, 152; veterinary medicine, 145. There were in addition 4485 students registered in the summer quarter of 1930. The faculty numbered 990, an increase of 32 over 1929. The endowment amounted to \$1,150,299. The total income for the year was \$8,665,485, while the total expenditures were \$8,707,259. The university also had current assets amounting to \$4,723,209, and the buildings and equipment were valued at \$20,042,882. The library contained 360,000 volumes. President, George W. Rightmire, LL.D.

OHIO UNIVERSITY. A State university for the higher education of men and women; founded in Athens, Ohio, in 1804. The student enrollment for the first semester of 1930 was 2590, of whom 1331 (993 men and 338 women) were in the college of liberal arts, and 1259 (404 men and 855

women) were in the college of education. In the college of liberal arts, the students were distributed as follows: Seniors, 173; juniors, 208; sophomores, 338; freshmen, 535; graduate students, 10; special music students, 52; unclassified students, 15. The distribution in the college of education was as follows: Seniors, 150; juniors, 212, sophomores, 348; freshmen, 518; graduate students, 19; unclassified students, 12. The student enrollment for the 1930 summer session was 1445, of whom 243 (125 men and 118 women) were in the college of liberal arts, and 1202 (304 men and 898 women) were in the college of education. The income for 1929 was \$1,517,588.65. The faculty numbered 221. The library contained 72,315 bound volumes. President, Elmer Burritt Bryan, L.H.D., LL.D.

OHIO WESLEYAN UNIVERSITY. An institution for the higher education of men and women in Delaware, Ohio, under the control of the Methodist Episcopal Church; founded in 1844. For the autumn semester of 1930 the total enrollment was 1843, distributed as follows: Seniors, 304; juniors, 382; sophomores, 469; freshmen, 566; special students, 21; graduate students, 41. The faculty numbered 175. The productive endowment of the university amounted to \$3,127,600 and the income for the year 1929-30 to \$673,178. The library contained 128,046 volumes. During 1930 Stuyvesant Hall, a dormitory for freshmen women, was under construction. President, Edmund D. Soper, D.D. LL.D.

OIL. See PETROLEUM.

OIL ENGINES. See INTERNAL COMBUSTION ENGINES.

OIL HYDROGENATION. See CHEMISTRY, INDUSTRIAL.

OKLAHOMA. POPULATION. According to the Fifteenth Census, the population of the State on Apr. 1, 1930, was 2,396,040. The population on Jan. 1, 1920, was 2,028,283. The capital is Oklahoma City.

AGRICULTURE. The following table gives the acreage, production, and value of the principal crops in 1929 and 1930:

| Crop | Year | Acreage | Prod. Bu. | Value |
|------------------|------|-----------|-------------------------|--------------|
| Cotton | 1930 | 4,061,000 | 900,000 ^a | \$ |
| | 1929 | 4,492,000 | 1,200,000 ^a | 94,200,000 |
| | 1930 | 3,141,000 | 86,436,000 ^b | 23,683,000 |
| Corn | 1929 | 3,020,000 | 48,320,000 | 38,173,000 |
| | 1930 | 3,547,000 | 83,696,000 | 19,881,000 |
| Wheat | 1929 | 4,236,000 | 44,478,000 | 44,083,000 |
| | 1930 | 1,451,000 | 13,059,000 | 7,835,000 |
| Grain sorghum . | 1929 | 1,384,000 | 20,488,000 | 13,314,000 |
| | 1930 | 1,209,000 | 1,148,000 ^b | 10,691,000 |
| Hay | 1929 | 1,224,000 | 1,364,000 ^b | 15,656,000 |
| | 1930 | 919,000 | 25,732,000 | 9,778,000 |
| Oats | 1929 | 792,000 | 20,592,000 | 9,884,000 |
| | 1930 | 48,000 | 8,893,000 | 4,672,000 |
| Potatoes . . | 1929 | 44,000 | 3,313,000 | 4,307,000 |
| | 1930 | 15,000 | 915,000 | 915,000 |
| Sweet potatoes . | 1929 | 15,000 | 990,000 | 1,138,000 |
| | 1930 | 15,000 | 990,000 | 1,138,000 |

^a Bales. ^b Tons.

Farms in the State numbered 204,268 in 1930, the total having risen from 197,218 for 1925 and 191,988 for 1920.

MINERAL PRODUCTION. Oklahoma, though subordinate to California in quantity of petroleum produced, led the States in the value of its petroleum production both for 1928 and for 1929. The output of its wells was 253,704,000 barrels for 1929, as against 249,857,000 for 1928; by value, \$354,200,000 (estimated) for 1929 and \$347,600,000 for 1928. Petroleum furnished not far from

three-fourths of the entire mineral product of the State, by value, for 1928. The production of natural gas, however, was large and fairly well maintained. Its quantity was 320,861,000 M cubic feet for 1928 and, for 1927, 326,864,000 M; its value, \$47,476,000 for 1928 and \$41,391,000 for 1927. Gasoline extracted from natural gas rose steadily to the quantity of 619,691,000 gallons for 1928 and 676,500,000 for 1929; and to the value of \$40,959,000 for 1928 and \$42,960,000 for 1929. The mine production of zinc rose to 192,042 short tons for 1929, from 180,252 for 1928; in value, to \$25,349,544 for 1929, from \$21,990,744 for 1928. The production of lead was 46,515 short tons for 1929, and for 1928, 43,687; in value, \$5,860,638 for 1929 and \$5,067,692 for 1928. The coal product totaled 3,774,080 net tons for 1929 and 3,501,325 for 1928; in value it was \$11,481,000 for 1929 and \$10,365,000 for 1928. The yield of gypsum was 397,752 tons for 1928, in value \$2,021,635. Stone, sand, and gravel were also produced in important quantities. The value of the State's entire mineral product, duplications eliminated, was \$486,634,347 for 1928; for 1927, \$524,594,732.

FINANCE. State expenditures in the year ended June 30, 1928, as reported by the U. S. Department of Commerce, were: for maintenance and operation of governmental departments, \$18,856,605 (of which \$2,992,333 was for local education); for interest on debt, \$109,639; for permanent improvements, \$15,555,094; total, \$34,521,338 (of which \$15,115,785 was for highways, \$3,440,717 being for maintenance and \$11,675,088 for construction). Revenues were \$33,654,688. Of these, property and special taxes formed 16.8 per cent; departmental earnings and compensation to the State for officers' services, 7.6; sales of licenses, 48.6 (including taxes of \$5,449,113 on sales of gasoline). The State's funded debt outstanding on June 30, 1928, was \$2,761,200. Net of sinking-fund assets, it was \$2,706,917. On property bearing an assessed valuation of \$1,729,342,830 were levied in the year State taxes of \$4,323,357.

TRANSPORTATION. The total number of miles of railroad line under operation on Jan. 1, 1930, was 6681.67. There were built, in 1930, 27.49 miles of first and 4.50 of second track.

EDUCATION. The study of the financial conditions in the public school system received much attention in the course of the year, and plans were made for important recommendations on this point to the ensuing Legislature. The number of individuals of school age in the State was reported as 758,198. There were enrolled in the public schools 675,797 pupils; of these, the number in kindergartens was 6513; in elementary grades, 569,217; in high-school grades, 99,461; and as special students, 426. Yearly expenditure for public-school education was \$29,539,480, current, and \$4,008,476 additional in capital outlay. The yearly salaries of teachers averaged \$1088.

POLITICAL AND OTHER EVENTS. The Democratic State primary elections were noteworthy by reason that candidates of the more radical wing of the party defeated for both the Gubernatorial and the Senatorial nomination opponents identified with the petroleum interests. Former Senator Thomas P. Gore was nominated for the U. S. Senate and William H. Murray for the Governorship. The State suffered severely in the late summer and the autumn from drought. For the relief of afflicted farmers Governor Hollo-

way, after conference with Federal officials early in September, initiated a plan for the creation of a private corporation with a capital of \$1,000,000, to make loans up to a total of \$10,000,000, with funds to be advanced by intermediate credit banks.

The State's policy of curtailing the production of petroleum in its oil fields, by orders of the State Corporation Commission, was extended and was upheld in the State Supreme Court. An order of the Commission, issued on June 30, limited the production of the chief fields severally by percentages of their potential outputs. The total for the State was thus set at an estimated maximum of 650,000 barrels a day, subject to change after two months. Further curtailment, however, was ordered subsequently. The C. C. Julian Oil and Royalties Company brought suit for an injunction against the orders of the Commission. The State Supreme Court ruled on October 14 that the Commission had full authority to prorate petroleum production under a statute of 1915 empowering it to make regulations to prevent the waste of crude oil. The State income tax law was attacked in numerous suits brought in the course of the year; it had been enacted in 1915 and had not previously been impugned as to legality.

The C. E. Stout well of the Morgan Petroleum Company, about a mile from the centre of Oklahoma City, deluged the neighborhood with petroleum at the end of October, causing danger of fire for three days, until it was capped on November 2. See **PETROLEUM**.

ELECTIONS. On November 4 W. P. Pine, United States Senator and Republican candidate for reelection, was defeated by former Senator T. P. Gore, Democrat, the vote as unofficially reported being: Gore, 253,505; Pine, 230,837. William H. Murray, familiarly known as "Alfalfa Bill" Murray, Democrat, was elected Governor, defeating Ira B. Hill, Republican, by 299,001 votes to 204,664 (unofficial). Seven Democrats and one Republican were elected Representatives, the Democrats gaining two seats. The Legislature remained Democratic by heavily increased majorities. The voters rejected proposed State constitutional amendments to render women eligible to hold high State offices and to place the University of Oklahoma and the Oklahoma Agricultural and Mechanical College under separate boards of regents.

OFFICERS. Governor, W. J. Holloway; Lieutenant-Governor, C. C. Storms (acting); Secretary of State, Graves Leeper; State Auditor, A. S. J. Shaw; Attorney-General, J. Berry King; State Treasurer, R. A. Sneed; Superintendent of Public Instruction, John Vaughan; State Examiner and Inspector, John Rogers.

JUDICIARY. Supreme Court: Justices: Charles W. Mason, E. F. Lester, James B. Cullison, Charles Swindall, Robert A. Hefner, Albert C. Hunt, Thomas G. Andrews, J. W. Clark, Fletcher Riley.

OKLAHOMA, UNIVERSITY OF. A State institution for the higher education of men and women in Norman, Okla., founded in 1890. The enrollment for the autumn of 1930 totaled 5418, of whom 3643 were men and 1775, women. These were distributed as follows: Graduate school, 277; arts and sciences, 2080; business 640; education, 187; engineering, 1074, fine arts, 399; law, 268; medicine, 225; nursing, 134; and pharmacy, 134. For the summer session of 1930,

2052 students were registered. There were 425 faculty members. The productive funds of the university amounted to \$3,200,000, and the income for 1930-31 was \$1,624,000. The library contained 120,000 volumes. President, William Bennett Bizzell, Ph.D., LL.D.

OKU, ōku, YASUKATA, COUNT. A Japanese military leader, died in Tokyo, July 19, 1930. He was born in Fukuoka-ken in 1846. Entering the army in 1871, he fought with distinction on the imperial side in the civil war of 1877 and was cited for his bravery in cutting through the besieging lines of the rebels around Kumanoto. He commanded the 5th (Hiroshima) Division in the war with China during 1894-95, and later was appointed commander of the Tokyo Bay defense and of the eastern military districts. He became a general in 1903, and on the outbreak of the war with Russia the following year received command of the 2d Army. He won the battles of Kinchow, or Nan Shan, Telissu, and Ta-shih-chao, and participated in the great battles at Liao-Yang, Shaho, and Mukden, gaining a reputation as one of the greatest military strategists. From 1906 to 1912 he was chief of the general staff and member of the supreme military council. He retired with the rank of field marshal, which had been bestowed on him in 1911. He was created Baron in 1895 and was elevated to the rank of Count in 1907.

OLD AGE PENSIONS. FEDERAL ACTION. The Congress of the United States, in the spring of the year, witnessed considerable discussion of the problem of old age security in view of the generally expressed sentiment that the handling of the question was too difficult a matter for State action. Thus, as a result of a group of bills submitted, the House Committee on Labor held hearings on February 20, 21, and 28, in which legislators and other interested persons urged the preparation of a bill to furnish relief through Federal agencies. Among the legislators who addressed the Committee were: Senator C. C. Dill, of Washington; Congressmen F. H. La Guardia, Hamilton Fish, Jr., and Dr. William I. Sirovich, of New York; Congressman Royal C. Johnson, of South Dakota; Congressman Clyde Kelly, of Pennsylvania; and Congressman Roy O. Woodruff, of Michigan. The following organizations sent representatives to urge Federal coöperation with the States in the handling of the problem: American Association for Old Age Security, American Federation of Labor, Fraternal Order of Eagles, Fraternal Order of Red Men, Socialist party, the four Railroad Brotherhoods, and the American Association for Labor Legislation. There appeared in opposition representatives from the National Manufacturers Association, the Sentinels of the Republic, and the Woman Patriot group. Particularly interesting was the statement of Murray W. Latimer, who presented the results of a study of private industrial pensions. Among the conclusions of this investigation were the following: 1. The pension movement in the United States, which had been rapidly growing for years, by 1930 embraced some 4,000,000 employees, 60 per cent of whom were employed in railroad and public utility companies. 2. However, the previous 10 years had witnessed a steady diminution in the number of employees being added under these private pension systems. The report made this significant conclusion: "Universal adoption of present types of pension plans would insure pensions only to a

minority of employees by reason of the service requirements necessary to become qualified for pensions."

Characteristic of the types of measures being introduced in Congress was House Bill No. 13,016 presented by Representative Frederick N. Zihlman, of Maryland, on June 17. This provided the characteristic grants-in-aid form of relief, which had been typical of Congressional enactments in the previous decade. Thus, this old age bill in question called for an appropriation of \$10,000,000 to be allotted to the States on the basis of their population. The Secretary of Labor was authorized to administer this fund. Under the bill Federal aid was to be granted to States enacting pension laws providing assistance to persons who are 60 years of age and over, without property in excess of \$5000, and without children responsible for the support of the parents. The bill called for a citizenship requirement of 20 years.

NEW YORK. After a stubborn battle, in which the arguments pro and con were given wide attention and after a complete investigation conducted by a legislative commission, the New York State Legislature on Mar. 31, 1930, enacted an old age pension law. It is significant to note that public sentiment had so thoroughly accepted this programme of social legislation that the bill was passed by both houses of the Legislature without a dissenting vote. Particularly commendable in the work antecedent to the passage of the measure was the rôle played by Senator Seabury C. Mastick, who was chairman of the legislative commission that conducted the hearings and which drafted the bill. Praise was accorded also to the persistent and intelligent efforts of the American Association for Old Age Security whose marshaling of the facts bearing on the widespread character of improvident old age in the Empire State helped materially in the early enactment of this important code. The New York act, which was speedily signed by Governor Roosevelt, is in most particulars similar to statutes already passed in other States. The act provides for pensions to men and women 70 years old or over who are United States citizens and have resided in the State for 10 years and in the county for one year. The State and the counties are to administer and bear the cost of the pensions together. For the necessary administrative work there was created a Division on Old Age Security in the State Department of Social Welfare. Public welfare officials are to determine the nature of the relief to be received and the manner of providing it. In other words, there are no statutory maximums fixed by the law. Medical and surgical care and nursing may also be given. Competent experts estimated that approximately 51,000 aged persons would be reached by the provisions of the law. Applications for the pensions were opened on Sept. 1, 1930, to make possible the beginning of payments on Jan. 1, 1931.

The report of the New York State Legislative Commission on Old Age Security, above referred to, in view of the fact that it was based on seven months of investigation, is of sufficient interest as a social insurance document to be quoted at some length. The main conclusions of the Commission were the following: 1. Many of the needy aged were not adequately or properly cared for in the State of New York. 2. Many of the needy aged should be provided for outside of institutions "where they may continue to live among friends and enjoy a sense of freedom, self respect and

security." 3. The Commission estimated, as a result of its careful surveys, that approximately 51,000 persons 70 years of age and over were in need of assistance because their children were not able to give aid. 4. Responsibility for the administration of pension legislation should be borne jointly by the counties and the State, and the cost should be similarly divided. Particularly interesting was the Commission's attack upon the poorhouse as an adequate solution for the problem of old age. The report read:

The almshouse is not a satisfactory method of providing relief for all classes of the needy. It is the lineal descendant of workhouses and farms, which were first erected to care for the homeless and unemployed, and not primarily for the sick and the aged who inhabit them to-day. Investigations made by this and by other legislative commissions have shown that in some of the almshouses there is no segregation of the sick from the able-bodied or the mentally alert from the feeble-minded or, occasionally, the insane. . . . Many county homes are out of date, improperly equipped, unable to furnish proper infirmary or hospital care; nor will their facilities permit the segregation of the physically fit from the sick or the mentally deficient from the able-minded.

The Commission estimated that the average cost for the care and relief of elderly persons in need in New York State and without assistance from their own relatives would be \$242 a year. The report said: "In many cases the cost of maintaining an individual in his own home will be less than the present cost of institutional care."

MASSACHUSETTS. As a result of the governor's approval on May 28, Massachusetts joined the

vote of the county board. The statute fixes a maximum pension of \$1 per day with funeral expenses not to exceed \$100 if the estate of the deceased was insufficient to defray the costs. In 1930, eight counties had accepted cooperation with the State. (The State bears one-third of the costs.) Among these counties was Milwaukee County, the most populous one in the State. In 1925 only one county had adopted the system and had eight beneficiaries on its pension roll to whom it paid \$180. In 1929, six counties had adopted the system, had 401 beneficiaries on their rolls and expended in all \$67,689 of which \$22,563 had been contributed by the State. It is to be noted that Milwaukee County did not begin cooperating with the State until Feb. 1, 1930, and, therefore, its activities were not included in the above-cited figures.

AUSTRALIA. It is interesting to contrast this more or less limited programme with the extensive one to be found in the Commonwealth of Australia. The Commonwealth invalid and old age pension act of 1908 became operative on July 1, 1909, and provided pensions for aged and totally incapacitated persons. In 1930, the maximum fixed by statute was \$253 per year and the law also provided that the pensioner's total income, including the pension, was not to exceed \$411. On June 30, 1928, the number of old age pensioners was 139,367 of whom 41 per cent were males and 59 per cent females. The accompanying table indicates the age distribution of the persons added to the pension rolls in the year 1927-28.

SEX AND AGE GROUPING OF PENSIONERS ENROLLED IN 1927-28 IN AUSTRALIA

| Age group | Males | | Females | | Total | |
|-----------------------------|--------|----------|---------|----------|--------|----------|
| | Number | Per cent | Number | Per cent | Number | Per cent |
| 60 to 64 years | 1,349 | 14.7 | 5,809 | 62.6 | 7,158 | 38.8 |
| 65 to 69 years | 5,358 | 58.6 | 2,073 | 22.3 | 7,431 | 40.3 |
| 70 to 74 years | 1,763 | 19.3 | 871 | 9.4 | 2,634 | 14.3 |
| 75 to 79 years | 510 | 5.6 | 333 | 3.6 | 843 | 4.6 |
| 80 years and over | 171 | 1.9 | 195 | 2.1 | 366 | 2.0 |
| Total | 9,151 | 100.0 | 9,281 | 100.0 | 18,432 | 100.0 |

roll of States having old age pension laws on their statute books. There were, therefore, in 1930, 12 States with such legislation, viz: California, Colorado, Kentucky, Maryland, Massachusetts, Minnesota, Montana, Nevada, New York, Utah, Wisconsin, and Wyoming. The territory of Alaska, too, had an old age pension law. The State senate passed the measure on May 20 by a vote of 30 to 4, and the house on May 23 by a vote of 102 to 54. The house had originally favored a pensionable age limit of 60 years for women and 65 for men, but was compelled, in order to insure passage of a bill at this session, to compromise and accept the senate's bill which fixed the pensionable age at 70 years for both sexes. The administration of the Massachusetts law is placed in the hands of the State Department of Welfare and the local welfare boards. The act fixes no specific amount of pension. The State is to pay one-third of the cost in the cases of aged persons having a legal township residence and the full amount in the case where the pensioner has no such legal residence. The act was to become operative July 1, 1931.

WISCONSIN. An old age pension law came into effect in this State in 1925 with the characteristic provisions of an age requirement of 70 years, American citizenship, State residence of 15 years and a county residence. Adoption of the law was made optional with the counties on the

The number of persons in 1928 who received invalidity pensions was 55,517. The table herewith indicates the number of persons added to the invalidity pension rolls in the year 1927-28.

AGE AND SEX OF RECIPIENTS OF INVALIDITY PENSIONS, 1927-28

| Age group | Males | Females | Total |
|-----------------------------|-------|---------|-------|
| 16 to 19 years | 368 | 485 | 853 |
| 20 to 29 years | 477 | 539 | 1,016 |
| 30 to 39 years | 503 | 408 | 911 |
| 40 to 49 years | 862 | 712 | 1,574 |
| 50 to 59 years | 1,436 | 1,572 | 3,008 |
| 60 to 69 years | 215 | 210 | 455 |
| 70 to 79 years | 81 | 75 | 156 |
| 80 years and over | 1 | 2 | 3 |
| Total | 3,973 | 4,003 | 7,976 |

In the year ending June 30, 1928, the Commonwealth of Australia expended on both these types of pensions (and this does not include administrative costs) a total of \$47,678,985.

CANADA. The progress being made under the old age pension systems established in the Canadian provinces in recent years has been discussed in earlier YEAR BOOKS. The Dominion government reported that up to the conclusion of the fiscal year 1929-30, it had contributed a total of \$3,771,000 to the provinces in aid of aged persons. The total expenditure among the provinces was \$7,542,000 and covered relief

granted to 42,553 pensioners. The following indicates the distribution among the provinces of both pensioners and money allotments: Alberta, 2017 pensioners, \$267,420; British Columbia, 4576 pensioners, \$2,049,674; Manitoba, 5104 pensioners, \$1,640,295; Ontario, 26,370 pensioners, \$2,255,688; Saskatchewan, 4482 pensioners, \$1,113,942; Northwest Territories, four pensioners, \$557. It will be recalled that all the provinces did not enact their pension legislation at the same time and this, therefore, accounts for the differences in the sums expended. Thus, British Columbia was the first province to adopt the law; Ontario was the last.

OLD TESTAMENT ARCHAEOLOGY. See ARCHAEOLOGY.

OMAN. See ARABIA.

ONTARIO, ōn-tā'ri-ō. Second in size (after Quebec) among the Canadian Provinces, Ontario lies between Quebec on the east and Manitoba on the west. The area is 407,262 square miles; the population on June 1, 1930, was estimated at 3,313,000 (2,933,662 at the census of 1921). Toronto, the capital, had about 569,899 inhabitants in 1928 (521,893 in 1921). Other cities, with their estimated populations, were: Ottawa, capital of the Dominion, 121,000 in 1928; Hamilton, 158,170 in 1930; London, 71,310 in 1930; Windsor, 68,893 in 1929. In 1928, births numbered 68,420; deaths, 37,108; marriages, 25,728. There were (1927) 7150 elementary schools and 474 secondary schools, with a total of 724,989 pupils; also the Universities of Toronto, Queen's (Kingston), Western Ontario (London), McMaster (Toronto), and Ottawa (Ottawa).

Ontario leads all Canadian Provinces in manufacturing and also is rich in agricultural, mineral, and forest resources. In 1928 there were 9900 industrial establishments, with 320,729 employees, having a gross value of production of \$1,949,724,119, and a net value of \$915,222,879. In the same year the provincial Hydro-Electric Power Commission, which operates virtually all electric power installations, distributed 1,032,500 horse power to 560 municipalities and 522,700 customers. About 14,000,000 acres are under cultivation, of which 10,020,294 acres produced field crops valued at \$241,778,000 in 1929. Mineral production in 1930 was valued at \$112,926,411 (\$117,960,722 in 1929). Gold, silver, copper, nickel, platinum, crude petroleum, and natural gas are the chief sources of mineral wealth. The forested area is about 240,000 square miles and the value of timber cut in 1927 was \$54,055,133. The fisheries in 1928 yielded a \$4,030,753 catch; fur production (1927-28) was valued at \$4,401,889. There are over 11,000 miles of steam railway and more than 52,000 miles of public highways. About 2,500,000 tourists were estimated to have visited the Province in 1929.

The Province is administered by a lieutenant-governor, a cabinet, and a chamber of 112 members elected for four years. Following the election of Oct. 30, 1929, the Legislature was constituted as follows: 90 Conservatives, 12 Liberals, 5 Progressives, 4 Laborites, and 1 United Farmer. Ordinary revenues for the fiscal year ended Oct. 31, 1930, were \$57,325,000 and ordinary expenditures, \$57,953,000. For 1930-31, the main estimates amounted to \$68,002,212, of which \$28,000,000 was appropriated for use of the provincial power commission. There has been government control and sale of liquor since the Conservative victory in 1926. Lieutenant-

Governor in 1930, W. D. Ross; Premier and President of the Council, G. Howard Ferguson.

In the Dominion general election of July 28, 1930, the Province returned 59 Conservatives, 22 Liberals, and 1 United Farmer to the House of Commons. The Ontario Liquor Control Commission reported sales during 1929-30 of \$52,283,001, with profits of \$9,315,967. The Legislature in the spring of 1930 authorized the expansion of the Ontario Hydro-Electric Power Commission's activities and set aside \$2,000,000 for loans to farmers for the purchase of electrical appliances and equipment. A bonus of 1 per cent per unit on iron ore produced in the Province was voted and \$10,000,000 was appropriated for the development of northern Ontario, including an extension of the Temiskaming and Northern Ontario Railway toward James Bay. A new building to house trade and other representatives of the Ontario Government was opened in London, England, in October, 1930. See CANADA.

OPERA. See MUSIC.

OPIUM TRAFFIC. See LEAGUE OF NATIONS.

OPTANTS. See HUNGARY under *History and Reparations*.

ORANGE FREE STATE. A Province of the Union of South Africa. Capital, Bloemfontein. See SOUTH AFRICA, UNION OF.

ORANGES. See HORTICULTURE; ENTOMOLOGY, ECONOMIC.

ORCHESTRAS. See MUSIC.

ORDNANCE. See MILITARY PROGRESS.

ORE DEPOSITS. See GEOLOGY.

ORE DRESSING. See METALLURGY.

OREGON. POPULATION. According to the Fifteenth Census, the population of the State on Apr. 1, 1930, was 953,786. The population on Jan. 1, 1920, was 783,389. The capital is Salem.

AGRICULTURE. The following table gives the acreage, production, and value of the principal crops in 1929 and 1930:

| Crop | Year | Acreage | Prod. Bu. | Value |
|-------------|------|-----------|--------------|--------------|
| Hay | 1930 | 1,227,000 | 2,561,000 * | \$24,083,000 |
| | 1929 | 1,166,000 | 2,217,000 * | 31,391,000 |
| Wheat | 1930 | 1,017,000 | 23,391,000 | 18,615,000 |
| | 1929 | 1,058,000 | 23,114,000 | 25,554,000 |
| Oats | 1930 | 289,000 | 11,849,000 | 4,147,000 |
| | 1929 | 304,000 | 12,464,000 | 6,980,000 |
| Apples | 1930 | ..... | 6,600,000 | 4,950,000 |
| | 1929 | ..... | 4,000,000 | 4,400,000 |
| Potatoes .. | 1930 | 42,000 | 6,300,000 | 5,355,000 |
| | 1929 | 42,000 | 3,780,000 | 5,292,000 |
| Hops | 1930 | 14,000 | 14,350,000 * | 2,152,000 |
| | 1929 | 17,000 | 18,445,000 * | 2,213,000 |
| Corn | 1930 | 83,000 | 2,739,000 | 2,273,000 |
| | 1929 | 86,000 | 3,010,000 | 2,950,000 |
| Barley | 1930 | 104,000 | 3,744,000 | 1,872,000 |
| | 1929 | 116,000 | 4,292,000 | 3,305,000 |

* Tons. ♢ Pounds.

Farms in the State numbered 55,259 in 1930, as against 55,911 in 1925 and 50,206 in 1920.

MINERAL PRODUCTION. As usual the production of stone, sand, and gravel made up the major part of the mineral industry of the State for 1928. The quantity of stone produced was 1,875,250 short tons for 1928 and 1,863,930 for 1927; the value, \$2,117,322 for 1928 and \$1,951,631 for 1927. There was an increase in gold mining in 1929, although the output remained distinctly secondary to those of the important gold-producing States. The quantity of gold mined in 1929 was 17,092 fine ounces, as against 10,931 in 1928; the value, \$353,323 in 1929 as against \$225,908 in 1928. Coincidentally the number of producing placer mines increased by 21, to 111;

45 lode mines operated in 1929. The mine production of copper also rose, to 655,746 pounds, in value \$115,411 for 1929, from 358,463 pounds, in value \$51,019, for 1928. Silver and lead were produced only in minor amounts. The yield of mercury attained 3759 flasks, in value \$458,147, for 1928. The value of the entire mineral product of the State was \$6,686,988 for 1928; for 1927, \$6,821,224. See GEOLOGY.

The total value of the gold, silver, copper, lead, and zinc produced from lode and placer mines in Oregon in 1930 was estimated at \$309,100, or a decrease of \$176,300, compared with 1929, by the U. S. Bureau of Mines. There were decreases in the output of all metals, with copper recording the largest loss. Western Oregon led in the value of the output of metals, but with the output of a new dredge in Eastern Oregon the eastern and western portions of the State were about equally divided as to the gold yield. The value of the gold yield in Oregon in 1930 was estimated at \$285,300, a decrease of about \$68,000, compared with 1929. The larger part of the output came from placer mines, chiefly from dredging operations, but water shortage the last two seasons reduced the gold yield. The output of silver from lode and placer mines in Oregon in 1930 was estimated at 8500 fine ounces, valued at \$3200, a decrease of about 21,500 ounces in quantity and of about \$12,800 in value, compared with 1929. The output of copper from mines in Oregon in 1930 was estimated at 161,900 pounds, valued at \$20,100, which was a decrease of about 493,800 pounds in quantity and of about \$95,300 in value, compared with 1929. The output of lead in Oregon in 1930 was estimated at 9500 pounds, valued at \$500, a decrease of 10,680 pounds in quantity and of about \$800 in value, compared with 1929.

TRANSPORTATION. The total number of miles of railroad line under operation on Jan. 1, 1930, was 3487.54. There were built, in 1930, 27 miles of additional first track.

EDUCATION. A committee of the State Teachers' Association prepared a report embodying an educational plan for the State. This plan was described as providing a method of reorganizing the school system, and as having the support of the educational forces. Provision was made during the year for extending State supervision among the smaller high schools.

POLITICAL AND OTHER EVENTS. State Senator George W. Joseph, a Portland lawyer disbarred from practice in the State for having made attacks on the integrity of members of the State Supreme Court, entered the campaign for nomination as the Republican candidate for Governor, on a platform asserting that he sought his vindication by that course. He gained a slight majority over Governor Norblad in the primary election of May 18, but died within a month of a heart attack. By action of the Republican central State committee its former chairman, Philip Metschan, a Regular Republican, was nominated candidate for Governor in Joseph's stead. Progressive Republicans who had cast their vote for Joseph revolted and named Julius E. Meier, a Portland merchant, as independent candidate, who pledged himself to a reform of the State's policy as to hydroelectric resources and to the abolition of the Public Service Commission. The Republican ranks were thus widely split.

By the presentation to the Secretary of State of a petition carrying 15,733 names, it was pro-

vided that there should be a referendum vote at the November elections on the proposal that the State constitution be amended to forbid the manufacture, sale, purchase, possession or donation of cigarettes or their makings. The State tax on intangibles established by a statute of 1929 and requiring individuals to pay on the basis of interest and dividends received was declared unconstitutional by the State Supreme Court on October 28 because not applying equally to corporations.

ELECTIONS. Julius E. Meier, independent candidate, was elected Governor on November 4, defeating both Edward F. Bailey, Democrat, and P. Metschan, Republican, by heavy pluralities. Charles L. McNary, Republican, was reelected United States Senator, receiving 127,240 votes, as unofficially reported, to 60,639 for Elton Watkins, Democrat. Two Republicans and one Democrat were elected to the House of Representatives. The Legislature remained in Republican control. A proposed State constitutional amendment to create water and power utility districts was carried by popular vote. It was also voted to give Legislative authority to fill vacancies, and a measure according exemptions from income taxation was approved. The voters repealed a measure for the payment of interest on the debts of irrigation and drainage districts by the State. The initiated proposal for a constitutional amendment to forbid cigarettes was rejected, as were proposals to create an office of Lieutenant-Governor, to set up a cabinet form of government, to extend bonus loans to certain of the veterans, to increase Legislators' pay, and to revise the license tax on motor vehicles.

OFFICERS. Governor, A. W. Norblad (succeeded on Dec. 22, 1929, I. L. Patterson, deceased); Secretary of State, and State Auditor, Hal E. Hoss; Treasurer, Thomas B. Kay; Attorney-General, I. H. Van Winkle; Superintendent of Public Instruction, Charles A. Howard.

JUDICIARY. Supreme Court: Chief Justice, O. P. Coshow; Associate Justices, Henry J. Bean, George M. Brown, George Rossman, Harry H. Belt, Percy R. Kelly, John L. Rand.

OREGON, UNIVERSITY OF. A State institution of higher education in Eugene, Ore.; founded in 1872. It consists of a college of literature, science, and the arts, graduate school, and schools of architecture, business, education, journalism, law, music, physical education, medicine, and social work, the latter two being located in Portland. The enrollment for the autumn term of 1930 was 3344, of whom 1970 were men and 1374 women, and 2830 were undergraduates and 176 graduate students, with an additional enrollment in the law school of 89 and in the medical school of 249. In the summer session of 1930 the registration totaled 1701, of whom 437 were men and 1264 were women. The faculty for the autumn term numbered 216. The total income for the year Oct. 1, 1929, to Sept. 30, 1930, was \$2,084,761. The endowment amounted to \$164,452, with a productive income of \$8933. The main library contained 217,769 volumes, and the medical school library more than 11,000 volumes.

During the summer of 1930 construction was started on an out-patient clinic building, located on the Portland medical school campus and made possible through a gift of \$400,000 from the General Education Board. During the fall term of 1930 work was completed on a \$200,000 central unit of the proposed \$500,000 fine-

arts building. Towards the construction of this, \$15,000 was received from Mrs. Gertrude Bass Warner, and \$18,075 from the estate of Elizabeth Harmon. The American Medical Association gave \$7000 to the medical school library. Beginning with the year 1930-31 the personnel work of the university was reorganized with a dean of personnel administration at the head. President, Arnold Bennett Hall, J.D., LL.D.

OREGON STATE AGRICULTURAL COLLEGE. The Federal land-grant college of Oregon, established under Federal and State support in 1868 in Corvallis. The college is coeducational and grants degrees in 10 schools: Agriculture, chemical engineering, commerce, engineering and mechanic arts, forestry, home economics, military science, mines, pharmacy, and vocational education. Supporting divisions not granting degrees are the school of basic arts and sciences, the school of health and physical education, the department of industrial journalism, and the department of music. The department of religion is privately maintained. The enrollment for the autumn term of 1930 was 3321, of whom 2250 were men and 1071 were women. The 1930 summer session registration was 1423. The total resident enrollment for the full year 1929-30 was 5636. There were 328 members on the teaching faculty.

The income for 1930-31 from the original land-grant and other Federal funds, from the State of Oregon (millage tax), student fees, etc., as well as from certain Oregon counties for extension work, was \$2,041,864. This was apportioned as follows: Resident instruction, \$1,472,786; experiment station, \$204,376; extension service, \$364,702. There were 94,602 catalogued volumes in the library. The Joseph N. Teal loan fund of \$5000, the Harry Holgate prize in freshman forensics, the Mary J. L. McDonald fellowship in reforestation, the Kappa Delta Pi education award, and the Drusilla Shepard Smith prizes in home economics were established during the year.

President of the College, William Jasper Kerr, Sc.D., LL.D.

OREGON TRAIL CELEBRATION. See CELEBRATIONS.

ORGANIC CHEMISTRY. See CHEMISTRY.

ORGANISTS. See MUSIC.

ORIENTAL FRUIT MOTH. See ENTOMOLOGY, ECONOMIC.

ORIENTAL RESEARCH. See ARCHÆOLOGY.

OSTEOMYELITIS. See SURGERY, PROGRESS OF.

OTTO, ARCHDUKE. Pretender to the Hungarian throne. See HUNGARY under *History*.

OSTRIC BANKING SCANDAL. See FRANCE under *History*.

OUTER MONGOLIA, SOVIET SOCIALIST REPUBLIC OF. See MONGOLIA.

OVERMAN, LEE SLATER. An American lawyer and legislator, died in Washington, D. C., Dec. 12, 1930. He was born in Salisbury, N. C., Jan. 3, 1854, and was graduated from Trinity College (N. C.) in 1874. On being admitted to the bar in 1878, he practiced in Salisbury, and entered politics as a Democrat. He was a member of the State Legislature five times, being speaker in 1893; in 1895 was defeated for the United States Senate through a coalition of Populists and Republicans; was president of the Democratic State Convention and presidential elector at large in 1900; and in 1902 defeated his old rival, J. T. Pritchard, for the Senate. He was reelected for five terms

thereafter. He was the author of the famous Overman Act, introduced in the Senate in February, 1918, which gave President Wilson unrestricted power to coordinate and consolidate all government activities as a war emergency.

OVERTON, GRANT (MARTIN). An American writer, died July 4, 1930, in Patchogue, N. Y., where he was born Sept. 19, 1887. He attended Princeton University during 1904-06, and for several years was on the reportorial staffs of the *New York Sun*, *Denver Post*, and *San Francisco Examiner*. In 1916 he became an editorial writer for the *New York Sun* and was its literary editor during 1918-19. After several years' association with George H. Doran Company (later Doubleday-Doran Company), he became fiction editor of *Collier's Weekly* in 1924 and consulting editor in 1927. His books include: *The Women Who Make Our Novels* (1918); *Mermaid* (1920); *World without End* (1921); *The Answerer* (a novel on the life of Walt Whitman, 1921); *When Winter Comes to Main Street* (1922); *American Nights Entertainment* (1923); *Island of the Innocent* (1923); *The Thousand-and-First Night* (1924); *Cargoes for Crusoes* (1924); *The Philosophy of Fiction* (1928); and *The American Novel* (1929). He edited *Mirrors of the Year* (1926-27); *Cream of the Jug* (humorous stories, 1927); *The World's 100 Best Stories* (1927); and *The World's 50 Best Short Novels* (1929).

PACIFIC RELATIONS, INSTITUTE OF. An organization formed in Honolulu in 1925 to serve as an unofficial body in studying the conditions of the Pacific peoples, with a view to the improvement of their mutual relations. It holds biennial conferences, promotes and coordinates research by other agencies, conducts research through its own secretariat, and endeavors to stimulate the mood of inquiry regarding Pacific problems on the part of the public generally. It is governed by a Pacific council, consisting of one representative from a recognized affiliated body of similar purposes in each country, including Australia, Great Britain, Canada, China, Japan, New Zealand, and the United States.

The main activities of the institute during 1930 were built around the research and education work growing out of the Kyoto conference and looked toward preparation for the China conference in 1931. The research programme included the following subjects: Population movement from Shangtung and Hopei to Manchuria; land utilization and rural economics in Korea; comparative study of boycotts; government of Pacific dependencies; the status of aliens in Pacific countries; industrialization at Shanghai, Nantung, Wushih, and other cities; comparative study of changing rural social life; land utilization in New Zealand.

The research committee of the American council of the institute was engaged in conducting the following studies: Filipino immigration; foreign merchants trading in China; history of the consortium; Oriental influences on American life; differences between Oriental and Occidental civilizations; tariff policy. The education committee initiated a study of China and Japan in American libraries, and also conducted an inquiry into the status of Oriental languages as an entrance credit in American colleges and universities.

Officers of the Pacific council elected at Kyoto in 1929 were: Chairman, Jerome D. Greene of Lee, Higginson & Co., New York City; first vice chairman, Inazo Nitobe of Japan; second vice

chairman, Newton Rowell of Toronto, Canada; treasurer, F. C. Atherton of Honolulu; chairman of the international research committee, Charles P. Howland of New York City; research secretary, John B. Condliffe. Charles F. Loomis was the acting general secretary. Headquarters of the institute are in Honolulu, and of the American council at 129 East 52nd Street, New York City. Jerome D. Greene was chairman of the American council and Edward C. Carter, honorary secretary and treasurer.

PACIFIST MOVEMENTS. See PEACE AND PEACE MOVEMENTS.

PACKING INDUSTRY. See LIVESTOCK.

PADEREWSKI, IGNAZ JAN. See MUSIC under Artists.

PAGE SCHOOL OF INTERNATIONAL RELATIONS. See INTERNATIONALISM; JOHNS HOPKINS UNIVERSITY.

PAHANG. See FEDERATED MALAY STATES.

PAINTING. The interest of the public in modern art continued its upward course in 1930, and the popularity of the modern artist, a term which could not have been used a few years previously, had become established. Although it was doubtless no easier than ever to achieve fame overnight, a moderate amount of notice was within the reach of the persistent and enterprising, and it was no longer necessary for an artist to starve because he belonged to his own time. Indeed he became encouraged to feel that the world owed him a living. There is something particularly American about this idea of the importance of the artist as an individual, the importance of his work as individual expression, his right to reap the profits of both, and the critic's willingness to help him to success. The occasion of the rise of modern art, however, is not American. Any one who observed the spectators' attitude of acceptance, even of reverence, at the Modern Museum's exhibition of painting in Paris, would realize that the French painters were responsible for America's late attack of worship of the contemporary in art. Their influence on American taste and on American painting—whose congenital lack of individuality had reduced taste to a convention—had aroused in the United States the first sanction of individual expression, even if the individualism paraded in borrowed garments. As those who sanctioned prided themselves upon being catholic, he was an innovator indeed who did not fall into some one of their categories. Whether or not this popularity was merely another manifestation of the vagaries of fashion, the critic of 1930 cannot have sufficient perspective either backward or forward to say; but one thing was certain, the academic and conventional in painting seemed damned for the present and modernism was in the ascendant among collectors and in the propaganda of the press.

An interesting result of the spread of art among persons of great wealth in America, which one heard so much about, and also of the growth of the importance of the artist as an individual was the temptation to supply by forgery the increased demand for art as a commodity. It was no longer sufficient in this world of mass production for the artist to sacrifice quality to quantity, but others must do so for him. The old masters had long provided a fair field for imitation, but only lately had it occurred to forgers to beat the living artist at his own game. Van Gogh was conveniently dead when certain works

attributed to him recently aroused controversy, and it was only a matter for experts to thrash out; but with Picasso threatened the tendency would surely bear watching. See earlier articles on ART EXHIBITIONS; ART MUSEUMS; ART SALES.

BIBLIOGRAPHY. Among the important publications of the year may be included the following: *The Islamic Book*, by Sir Thomas W. Arnold and Prof. Adolf Grohmann, a concise and accurate introduction to Persian painting; *Ancient Painting from the Earliest Times to the Period of Christian Art*, by Mary Hamilton Swindler, a much-needed handbook of the subject, comprehensive, readable, and well illustrated; *Die Wandmalerei Pompejis, Eine Einführung in ihr Verständnis*, by Ludwig Curtius, a detailed exposition of a late phase of ancient painting; *The Gothick North, A Study of Medieval Life, Art, and Thought*, by Sacheverell Sitwell; *Saint Christopher in English Mediæval Wallpainting*, by H. C. Waite, a scholarly piece of research; *A History of Spanish Painting*, by Chandler Rathfon Post, a scholarly, complete, and interesting book; *An Introduction to Italian Painting*, by Sir Charles Holmes, one of the better books apropos of the Italian exhibition in London; *Venetian Painting of the Seicento and the Settecento*, by Giuseppe Fiocco; *A Critical and Historical Corpus of Florentine Painting*, Section III, dealing with the lyrical tendency in the Florentine school, part of a work of 30 volumes comprising only illustration and bibliography; *Florentine Frescoes*, by Tancred Borenius; *Unknown Masterpieces*, edited by W. R. Valentiner and others, a yearly publication of lesser-known works in private collections; *Pietro Lorenzetti*, by E. T. de Wald, the most comprehensive study of this master that had yet appeared; *Fra Angelico, His Life and Work*, by Paul Muratoff, translated from the Russian; *Botticelli*, by Adolfo Venturi, translation into English of an authoritative work; *Leonardo und Sein Kreis*, by Wilhelm Suida, an exhaustive, acute, and well-documented book; *Drawings by Pisanello*, by George F. Hill, Keeper of Coins and Medals in the British Museum and well-known authority on Pisanello; *The Paintings and Drawings of J. B. C. Corot*, with an introduction by Victor Rieuicker, which shows Corot in a new light; *Art Nonsense*, by Eric Gill; *A History of British and American Etching*, by James Laver, a useful survey; *100,000 Years of Art*, by E. G. Morris; *Ernest Lawson*, by F. Newlin Price; *The Meaning of Art*, by A. Philip McMahon; and *Masterpieces of Russian Painting with color plates*, edited by Michael Farbman.

See also LITERATURE, ENGLISH AND AMERICAN under *The Fine Arts*.

NECROLOGY. Among the artists and critics of art who died during 1930 were the following: Francisco Alcantara, Spanish art critic; Cora Brooks, American painter; Carl Van Buskirk, portrait painter; Glance Cambon, Italian portrait painter; Pio Cellini, Italian designer and sculptor; Preston Dickinson, American painter; Alphonse Dinet, French painter of Algerian scenes; Anton Faistener, Austrian painter; Walter Greaves, English painter, pupil of Whistler; Henry de Groux, Belgian artist; Samuel Halpert, American artist; Charles Webster Hawthorne, American painter; John Kirchmayer, German woodcarver; Augustus Lamplough, English water color painter; Verdugo Landi, Spanish painter;

Henry C. Lee, American artist and archæologist; Émile René Ménard, landscape painter; Ferdinand von Miller, sculptor of the Munich school; David Muirhead, Scotch landscape artist; Jules Pascin, French painter of note; Lucian Whitney Powell, American landscape painter; Elia E. Riepin, Russian painter; Julius Rolshoven, American painter; Edwin Scott, American painter; Sigurd Skou, Norwegian artist; George Gardner Symons, American landscape painter; and David Croal Thomson, art critic. Many of these are discussed in appropriate biographical articles and in the **NECROLOGY**.

PALEONTOLOGY. See **GEOLOGY**.

PALESTINE. A territory comprising that part of historic Palestine which lies to the west of Trans-Jordan and between Syria on the north and Egypt and the Hejaz on the south; formerly a vilayet of the Turkish province of Syria. Captured by the British during the World War, it has been administered since Sept. 29, 1923, by Great Britain under a mandate of the League of Nations. The mandate confirmed the Balfour Declaration of Nov. 2, 1917, in which the British government pledged its aid in establishing in Palestine "a national home for the Jewish people."

AREA AND POPULATION. The area under British mandate is about 10,000 square miles. The population, according to the census of Oct. 23, 1922, was 757,182, of whom 590,890 were Moslems; 83,794 Jews; 73,024 Christians; 7028 Druses; 163 Samaritans; 265 Bahais; and the remainder Sikhs, Hindus, and Metawilehs. On June 30, 1930, according to official statistics, there were 916,998 inhabitants (excluding nomads). Of the total, 682,433 were Moslems, 154,330 Jews, and 80,225 Christians. Capital, Jerusalem, with a population in 1922 of 62,678. Other large towns, with their populations in 1922, are Jaffa, 47,709; Haifa, 24,634; Gaza, 17,480; Hebron, 16,577; Nablus, 15,947. The Jewish settlements are grouped in the four districts of Judæa, Samaria, and upper and lower Galilee. The total population of Jews permanently settled in Palestine had risen since the World War from 56,000 to 165,000 in 1929, or about 18 per cent of the total population. Jewish immigration in 1929 exceeded emigration by 3503, while in 1928 Jewish immigration and emigration balanced. For the year ended Sept. 30, 1930, 5883 Jews entered Palestine. In 1928, total births were 42,895, and deaths, 23,054.

EDUCATION. In 1929, there were 314 Government schools, with 21,259 pupils, mostly Moslem; 307 Jewish schools, with 28,207 pupils; 191 Christian schools, with 14,592 pupils; and 73 private Moslem schools, with about 4500 pupils. There was also a Hebrew University at Jerusalem, with 250 students.

PRODUCTION. Palestine is primarily an agricultural country. Production of the chief crops, in tons, in 1928 was: Wheat, 65,288; barley, 46,697; durra, 32,732; olives, 365; olive oil, 454; lentils, 1397. Wine production was 1,488,477 liters and the orange and lemon crop exported totaled 2,202,435 cases. Bananas and tobacco are grown also. Limestone, sandstone, gypsum, rock salt, and sulphur are the chief minerals found. A concession for the exploitation of cooking salt, carnallite, and bromide in the Dead Sea was granted to a British company in 1929. Industry is confined to the making of wine, soap, olive oil, and tobacco products. Approximately 2,000,000 timber and fruit trees were planted in 1928. In the same

year there were 226,611 sheep, 367,730 goats, 23,850 camels, and 600 buffaloes. Construction of a 24,000-horse-power hydro-electric plant utilizing the waters of the Jordan and Yarmouk rivers was in progress during 1930.

COMMERCE. The large excess of imports over exports, due primarily to expenditures in Palestine by foreign Jews, continued in 1928. Imports of merchandise and specie totaled £6,788,767 and exports, £1,519,461. Reexports amounted to £177,892 and goods in transit to £177,447. Trade was mainly with Egypt, Syria, the United Kingdom, and Germany. Oranges, laundry soap, water melons, wines, almonds, barley, durra, and sesame were the chief exports.

FINANCE. For the calendar year 1929 revenue was estimated at £2,148,326 and expenditure at £2,187,595.

COMMUNICATIONS. During 1928, a total of 1033 steamers of 2,394,689 tons and 2007 sailing vessels of 39,840 tons entered the ports of Palestine; steam vessels leaving numbered 1035 of 2,383,356 tons, sailing vessels, 2024 of 39,717 tons. Jaffa and Haifa are the chief ports. At the latter a modern harbor was under construction. Railway lines in 1929 totaled 774 miles and there were 438 miles of metaled roads.

GOVERNMENT. A Constitution promulgated Sept. 1, 1922, provided for the appointment of the High Commissioner and Commander-in-Chief and of an executive council. It provided also for a legislative council, consisting of the High Commissioner, 10 official, and 12 unofficial members, the latter to be elected and to include not less than two Christians and two Jews. The legislative council had not yet been instituted in 1930, the reason given being that many Arabs refused to participate in the elections. In the meantime its functions were performed by an advisory council appointed by the High Commissioner. High Commissioner in 1930, Lieut.-Colonel Sir John Robert Chancellor. The Chief Secretary, H. C. Luke, who was in charge in the High Commissioner's absence during the rioting of 1929, was transferred to a post in Malta in 1930.

HISTORY. While Great Britain in 1930 proceeded cautiously to evolve the new policy in Palestine necessitated by the Arab-Jewish outbreaks of August, 1929, both factions continued to exert pressure on the mandatory power in an effort to force recognition of their respective positions. Meanwhile interest centred in the attempt to fix responsibility for the 1929 riots and disorders.

The Shaw (British) Commission of Inquiry published its report Mar. 31, 1930. In general, the findings were favorable to the Arab cause, although the Labor representative on the commission dissented from the majority opinion. In sharp disagreement with the Shaw Commission's findings were those of the Mandates Commission of the League of Nations, which held secret hearings during June and July on the Palestine situation. The latter's report, issued August 25, scored Great Britain for the alleged inadequacy of the military and police forces in Palestine and for failure to anticipate the trouble and take preventive steps. Contrary to the Shaw Commission, the Mandates Commission concluded that the Arab uprising was premeditated and that it was directed against the British authorities, as well as against the Jews. The League group criticized Britain for alleged failure in its task of insuring "simultaneously the establishment of a Jewish

President accepted the resignations of the entire Cabinet on the following day, averting a political crisis by the selection of a new Ministry. Duncan's post was filled by Dr. Octavio Mendez Pereira, former Minister to France. The deposed Secretary was acclaimed by a throng of 8000 in Panama City September 11. A committee which investigated his administration of the Education Department, in a report issued December 24, charged the misuse of funds to the extent of \$500,000 and recommended judicial action.

No developments with regard to the ratification or modification of the treaty with the United States signed in 1926 but rejected by the National Assembly were reported. Roy T. Davis assumed the post of United States Minister to Panama early in the year. He subsequently arranged a settlement of the so-called Bermudez claim, pending more than 13 years, for the sum of \$100,000. A bill to transfer control of wireless communication in Panama from the United States to the Panamanian Government was introduced into the National Assembly on September 17. Radio control in Panama, considered vital to the defense of the Canal, was granted to the United States by Presidential decree in 1919. The unrattified treaty of 1926 contained a similar provision. The complications resulting from the enforcement of the Volstead Act in the Panama Canal Zone led Foreign Minister J. D. Arosemena to lodge a "friendly protest" with Minister Davis in September. The United States court in the Canal Zone convicted a Panama citizen for carrying intoxicants through the Canal Zone.

On Jan. 11, 1930, the Panama Government formally protested to Costa Rica against alleged propaganda carried on among peasants in the disputed Coto region. See PANAMA CANAL ZONE.

PANAMA CANAL. The total number of commercial vessels transiting the Canal during the calendar year ended Dec. 31, 1930, aggregated 5885, and the total tolls collection was \$26,146,024.96. The number of transits declined 545, or 8.5 per cent, in comparison with the calendar year 1929, while tolls collections decreased \$1,446,690.88, or 5.2 per cent. The lower percentage of decrease in tolls in comparison with the decrease in number of transits was caused by the greater average tonnage of the vessels transiting in 1930. The decrease in Canal traffic was attributed to the existing world-wide adverse business conditions. The daily average number of commercial transits during the year was 16.12, as compared with 17.62 in the calendar year 1929, and 17.31 for the calendar year 1928. The daily

average tolls collection in 1930 amounted to \$71,632.95, as compared with \$75,596.48 in the calendar year 1929 and \$72,065.46 in 1928. In the accompanying tabulation, the number of commercial transits and the amount of tolls collected are shown for the calendar year 1930, with the daily averages of transits and tolls, with comparative totals for the calendar years 1929 and 1928, and the fiscal year ended June 30, 1930.

PANAMA CANAL ZONE. The strip of land 5 miles wide on each side of the Panama Canal ceded to the United States by Panama in the treaty of Nov. 18, 1903. Area, 554 square miles, of which 163½ are taken up by Gatun Lake. The population at the census of Apr. 1, 1930, including military and naval forces, totaled 39,469, of whom 18,783 were white (14,431 males and 4352 females), 19,492 were Negroes (10,817 males and 8675 females), and 1194 of mixed and other races (907 males and 287 females). Exclusive of civilian residents attached to them, the military personnel was: Army, 8686; Navy, 1194; total, 9880. Deaths in the Canal Zone in 1929-30 numbered 292; births, 534. The treaty of 1903 gave the United States control over sanitation and quarantine in the cities and harbors of Panama and Colon, although they remained within the jurisdiction of Panama. The status of the Canal Zone is that of a military reservation under the Governor of the Panama Canal, appointed by the President of the United States. Airplanes inspected and passed upon entering the Canal Zone in 1929-30 totaled 326, as against 72 in 1928-29. An air line from Miami, Fla., to Colón, via Jamaica, was opened Dec. 3, 1930. Governor in 1930, Col. H. Burgess, U. S. A. See PANAMA CANAL.

PAN-AMERICANISM. During 1930 the Pan American Union continued to devote much of its efforts toward making effective the resolutions of the sixth International Conference of American States, held in Havana in 1928. In addition, the union cooperated in other important Pan American movements, especially in arranging for and assisting in special or technical conferences of a Pan American character.

Among the events of outstanding importance during the year were the following:

GUATEMALAN-HONDURAN BOUNDARY CONFERENCE. Representatives of Guatemala and Honduras met in Washington on Jan. 20, 1930, to attempt a settlement of the boundary dispute that has for so long existed between the two countries. After considerable negotiations, in which the delegates of both nations displayed a marked generosity of spirit in dealing with the delicate question, a treaty was signed which prepared the way for a final settlement. By their actions, the delegates gave a practical demonstration of the devotion of the American republics to the principles of arbitration and conciliation in the solution of international controversies. See GUATEMALA.

FOURTH PAN AMERICAN CONGRESS OF ARCHITECTS. The fourth Pan American Congress of Architects met in Rio de Janeiro from June 19 to 30, 1930. An important feature of the Congress was a Pan American Exposition of Architecture.

INTER-AMERICAN COMMISSION OF WOMEN. Since its creation as the result of a resolution of the sixth International Conference of American States, the Inter-American Commission of Women has continued its activities in studying the juridical status of women in the American

| | Total for month | |
|-----------------------------|-----------------|----------------|
| | Transits | Tolls |
| January | 531 | \$2,360,211.24 |
| February | 491 | 2,131,386.12 |
| March | 515 | 2,260,002.36 |
| April | 489 | 2,232,765.00 |
| May | 479 | 2,162,895.60 |
| June | 478 | 2,100,994.58 |
| July | 488 | 2,180,511.82 |
| August | 465 | 2,080,280.42 |
| September | 458 | 2,057,103.58 |
| October | 517 | 2,288,982.08 |
| November | 479 | 2,098,357.86 |
| December | 495 | 2,192,583.85 |
| Total, calendar year, 1930 | 5,885 | 26,146,024.96 |
| Total, calendar year, 1929 | 6,480 | 27,592,715.84 |
| Total, calendar year, 1928 | 6,334 | 26,375,962.41 |
| Total, fiscal year, 1930 .. | 6,185 | 27,076,890.01 |

Republics. It held its first general session in Havana from Feb. 17 to 24, 1930.

INTER-AMERICAN CONGRESS OF RECTORS, DEANS, AND EDUCATORS. Pursuant to a resolution of the sixth International Conference of American States, and the action of the governing board of the Pan American Union, the Inter-American Congress of Rectors, Deans, and Educators met in Havana from Feb. 20 to 23, 1930. One of the principal purposes of the Congress was to organize the Inter-American Institute of Intellectual Cooperation. The Congress was held during the period of the bi-centennial celebration of the University of Havana, at which time there also took place in Havana the International Congress of Universities.

INTER-AMERICAN CONFERENCE ON AGRICULTURE, FORESTRY, AND ANIMAL INDUSTRY. This conference met at the Pan American Union from Sept. 8 to 20, 1930, to consider many important questions relating to all phases of agriculture in the Pan American countries.

CONVENTION ON THE REGULATION OF AUTOMOTIVE TRAFFIC. In connection with the meeting of the sixth International Road Congress in Washington during October, 1930, there were held two special sessions at the Pan American Union, which were attended by delegates from the Pan American nations. At these sessions there was considered and signed a convention on automotive traffic, which, when ratified by the signatory nations, would provide uniformity throughout the Western Hemisphere in automotive traffic regulation.

COLUMBUS MEMORIAL LIGHTHOUSE. During the year preparations were made for the second stage of the competition to decide upon an architect for the lighthouse. The 10 winners of the first stage were to re-compete, and in 1931 their designs were to be judged by the international jury of award in Rio de Janeiro. The winner of the second stage of the competition was to be the architect of the Columbus Memorial Lighthouse, to be erected on a chosen site at Santo Domingo, Dominican Republic, the first permanent European settlement in the New World.

PAN AMERICAN UNION. An official international organization maintained and supported by the 21 American republics for the development among them of good understanding, friendly intercourse, commerce, and peace. It is controlled by a governing board composed of the Secretary of State of the United States and the diplomatic representatives in Washington of the other republics, and is administered by a director general and assistant director chosen by this board.

The services rendered by the Union may be broadly summarized under the following heads:

ECONOMIC. The office of the trade adviser provides a general commercial information service on all phases of Latin American trade and general economic conditions. This office also issues a large number of general descriptive booklets and pamphlets on Latin American nations, cities, and important trade commodities, which are kept up to date by constant revision. The division of *finance* supplies current information on developments in public and private inter-American finance. During 1930 the division prepared a study on Latin American revenues, expenditures, and public debts, which was to be issued annually in the future. The *statistical* division prepares reports on the trade of the Pan American nations,

as well as a general survey of the commerce of all Latin America. These reports are issued annually.

In the field of agriculture, the newly created division of agricultural cooperation is active in promoting the exchange of information relating to new and improved agricultural methods throughout the American continent, the elimination of plant and animal diseases, etc. The division played a prominent part in the important Inter-American Conference on Agriculture, Forestry, and Animal Industry, which met in Washington in September, 1930.

CULTURAL AND INTELLECTUAL. The division of intellectual cooperation offers a valuable contribution to the development of cultural and intellectual relations among the Pan American nations by promoting the exchange of professors and students, the establishment of scholarships, and the fostering of contacts and exchange relations among scientific, literary, professional, and artistic organizations. During 1930 the division cooperated in the preparation of a draft of organization of the Inter-American Institute of Intellectual Cooperation. At the Inter-American Congress of Rectors, Deans, and Educators, held in Havana, Cuba, in February, 1930, the organization of the institute, with which the division was to work in close contact, was definitely determined.

The Columbus memorial library of the Pan American Union offers a wide collection of books and periodicals on Pan American affairs, and its facilities are in constant demand by scholars, research workers, and others. In 1930 the library contained 75,000 volumes, 230,000 index cards, and a large collection of maps. A feature of its service is the publication of bibliographies on Pan American subjects.

The introduction of Latin American music into the United States, under the direction of the counselor, was an important feature of the Union's activities in 1930. During the year a number of concerts, featuring Latin American music and artists, were held under the auspices of the Union, and broadcast both in the United States and in Latin America. Copies of this music are also lent to clubs engaged in a study of Latin America.

PUBLICATIONS. The Pan American Union publishes monthly bulletins in English, Spanish, and Portuguese, which are chronicles of all phases of Pan American activities. In addition, it issues a large number of miscellaneous publications on a wide variety of topics. During 1930 four special series in Spanish and Portuguese were issued monthly on agriculture, education, social welfare, finance, industry, and commerce.

CONFERENCES. One of the important functions of the Pan American Union is that of giving effect to the resolutions and conclusions of the international conferences of the American States. These activities consist in conducting investigations and preparing reports on the various subjects entrusted to the Union by the conferences, and in arranging for the many special or technical conferences which are the outgrowth of the international conferences. During 1930 a number of these special or technical conferences were held. See **PAN-AMERICANISM.**

PAN AMERICAN SANITARY BUREAU. This is an official organization of the American republics which concerns itself with the collection and dissemination of information on all phases of ques-

tions relating to public health and sanitation in the republics. A monthly *Bulletin* is issued. The bureau is headed by Dr. Hugh S. Cumming, Surgeon General of the United States Public Health Service, assisted by a directing council.

The director general of the Pan American Union in 1930 was Dr. Leo S. Rowe; the assistant director, Dr. Esteban Gil Borges. Headquarters are in the Pan American Union Building in Washington.

PANGALOS, GENERAL THEODORE. See Greece under *History*.

PAN-PACIFIC UNION. An organization founded in 1907 to "secure and collate accurate information concerning the material resources of Pacific lands; to study the ideas and opinions that mold public opinion among the peoples of the several Pacific races; and to bring men together who can understandingly discuss these ideas and opinions in a spirit of fairness, that they may point out a true course of justice in dealing with them internationally." The Union is in no way the agency of any Pacific government but has the good will of all; its honorary heads are the presidents, premiers, or governor-generals of Pacific lands—the United States, Australia, New Zealand, China, Netherland East Indies, Canada, Japan, Siam, Mexico, Peru, Chile, Indo-China. It is supported in part by government and private appropriations and subscriptions, chambers of commerce, boards of education, scientific societies, and other organizations being affiliated and working with it. Its central office is in Honolulu, because of the location of the Hawaiian Islands at the ocean's crossroads. Its management is under the control of an international board of trustees.

The second Pan-Pacific women's conference met in Honolulu in August, 1930, for the purpose of perfecting an autonomous organization. The Pan-Pacific Women's Association was established, with a council representing 13 charter member countries. Dr. Georgina Sweet of Melbourne, Australia, was elected president. A third conference was to be held in Hawaii in 1933. On Dec. 4, 1930, Prince Iyesato Tokugawa, former president of the Japanese Imperial Diet, dedicated the Pan-Pacific Club House in Honolulu, the new home of the Pan-Pacific Union. The official periodical of the organization is the *Mid-Pacific Magazine*, an illustrated monthly. It also publishes the *Bulletin of the Pan-Pacific Union* and the *Journal of the Pan-Pacific Research Institution*. The president in 1930 was Wallace R. Farrington, former Governor of Hawaii; the director was Alexander Hume Ford. Executive offices are in Honolulu, T. H.

PANSY. See ALDEN, ISABELLA MACDONALD.

PAPER AND PULP. The production of wood pulp and paper in the United States in 1930, as estimated by the American Paper and Pulp Association, suffered a considerable decrease from the previous year. The accompanying tabulation

of statistics for 1929 and estimated production for 1930 indicates the sharp decline in output.

Paper production in the United States suffered a decline in practically all grades, as the accompanying statistics from the American Paper and Pulp Association indicate:

U. S. PAPER PRODUCTION
[Tons: 2,000 lbs.]

| Grade | 1929 | 1930 (Estimated) |
|------------------------------------|------------|---------------------|
| News | 1,392,276 | 1,281,500 |
| Hanging | 101,002 | 96,000 |
| Catalogue, poster, novel, etc. . . | 262,420 | 236,000 |
| Book paper, uncoated | 1,497,912 | 1,300,000 |
| Cover | 28,072 | 24,200 |
| Writing | 587,383 | 489,000 |
| Wrapping | 1,605,783 | 1,400,000 |
| Boards | 4,451,187 | 3,950,000 |
| Tissue | 370,468 | 350,000 |
| Building | 659,142 | 510,000 |
| Other paper | 194,898 | 103,300 |
| Total | 11,090,543 | 9,740,000 |

According to a preliminary tabulation of the data collected in the Census of Manufactures taken in 1930, the total value (f.o.b. mill price) of paper and paper boards produced for sale in 1929 by establishments in the United States amounted to \$809,630,000, an increase of two-tenths of 1 per cent as compared with \$807,969,857 reported for 1927, the last preceding biennial census year. The total value of paper and paper boards produced and consumed in the same plants in the manufacture of converted paper products amounted to \$83,789,400 in 1929, as compared with \$64,236,990 in 1927. The total production of paper and paper boards in 1929 amounted to 10,866,634 tons (of 2000 pounds), as against 10,403,338 tons in 1928 and 10,002,070 tons in 1927. The total production for 1929 was made up as follows: Standard newsprint, 1,401,665 tons;

SUMMARY FOR THE INDUSTRY: 1929 AND 1927

| | 1929 | 1927 |
|--|--------------------------|--------------------------|
| Number of establishments | 680 | 710 |
| Wage earners (average for the year) ^a | 101,600 | 98,566 |
| Wages ^b | \$138,064,000 | \$130,474,739 |
| Cost of materials, fuel, and purchased electric current ^b | 585,583,000 | 572,785,588 |
| Products, total value ^b | 954,176,000 | 919,891,465 |
| Paper and paper boards produced for sale .. | 809,630,000 ^c | 807,969,857 ^c |
| Other products | 144,546,000 | 111,921,608 |
| Value added by manufacture ^d | 368,593,000 | 347,105,927 |

^a Not including salaried employees. The average number of wage earners is based on the numbers reported for the several months of the year. This average somewhat exceeds the number that would have been required for the work performed if all had been continuously employed throughout the year, because of the fact that manufacturers report the numbers employed on or about the 15th day of each month, as shown by the pay rolls, usually taking no account of the possibility that some or all of the wage earners may have been on part time or for some other reason may not actually have worked the entire month. Thus in some cases the number reported for a given month exceeds the average for that month.

^b Manufacturers' profits cannot be calculated from the census figures because no data are collected for certain expense items, such as interest on investment, rent, depreciation, taxes, insurance, and advertising.

^c In addition, paper and paper boards to the value of \$83,789,400 for 1929 and \$64,236,990 for 1927 were produced and consumed in the same plants in the manufacture of the "Other products" (converted paper products).

^d Value of products less cost of materials, fuel, and purchased electric current.

U. S. PULP PRODUCTION

[Tons: 2,000 lbs.]

| Grade | 1929 | 1930 (Estimated) |
|----------------------|-----------|---------------------|
| Groundwood | 1,612,000 | 1,529,000 |
| Total sulphite | 1,676,000 | 1,628,000 |
| Total sulphate | 859,600 | 925,000 |
| Soda | 514,600 | 466,000 |
| All other pulp | 108,400 | 102,000 |
| Total | 4,770,600 | 4,640,000 |

hanging paper, 101,002; catalogue, 111,196; poster, novel, news-tablet, lining, etc., 141,484; book paper, uncoated, 1,491,972; cover paper, 28,072; writing paper, 418,452; wrapping paper, 1,606,102; boards, 4,428,495; tissue paper, 365,668; absorbent paper, 78,694; building paper, 654,149; other paper, 39,683.

PAPER AND PAPER BOARD—PRODUCTION, BY CLASS, AND QUANTITY: 1929, 1928, AND 1927—U. S. BUREAU OF CENSUS

[The schedule used for 1928 did not call for data in as much detail as did those used for 1929 and 1927, and consequently some of the figures in this table may not be strictly comparable as between 1928 and the other two years.]

| Kind | Quantity (tons, 2,000 pounds) | | |
|--|-------------------------------|----------------------|----------------------|
| | 1929 | 1928 | 1927 |
| Total | 10,866,634 | 10,403,338 | 10,002,070 |
| Newsprint, standard | 1,401,665 | 1,415,450 | 1,516,929 |
| Hanging paper | 101,002 | 96,390 | 112,658 |
| Catalogue | 111,196 | 138,660 | 183,338 ^a |
| Poster, novel, news-tablet, lining, etc. | 141,484 | (b) | (b) |
| Book paper, uncoated | 1,491,972 | 1,334,326 | 1,269,321 |
| Cover paper | 28,072 | 27,043 | 26,333 |
| Writing paper | 418,452 | 550,472 | 508,808 |
| Wrapping paper | 1,606,102 | 1,467,271 | 1,525,305 |
| Sulphite | 215,777 | 351,786 | 290,724 |
| Kraft | 703,653 | 873,578 | 637,295 |
| Other | 686,672 | 241,907 | 597,286 |
| Board | 4,428,495 | 4,061,803 | 3,773,608 |
| Container board | 2,252,338 | 1,984,697 | 2,100,150 |
| Folding boxboard | 981,211 | 947,613 | 796,216 |
| Set-up boxboard | 599,806 | 620,809 | 444,228 |
| Building board | 131,669 | 80,881 | 71,235 |
| Binders' board | 61,237 | 78,839 | 51,610 |
| Cardboard | 47,233 | 102,602 | 49,244 |
| Leather board | 24,228 | 18,911 | 24,195 |
| Press board | 11,893 | 7,775 | 6,938 |
| Other | 319,080 | 219,676 | 229,792 |
| Tissue paper | 365,668 | 348,174 | 316,070 |
| Absorbent paper | 78,694 | 74,768 | 63,766 |
| Building paper | 654,149 | 566,440 | 625,589 |
| Other paper | 39,683 | 322,541 ^c | 80,345 |

^a Includes data for poster, novel, news-tablet, lining, etc.

^b Not reported separately.

^c Includes "wrapping" other than sulphite and kraft.

In 1930 the total value of paper base stocks imported into the United States was \$106,921,914, as compared with \$118,132,740 in 1929. In this total pulp woods amounting to 1,582,210 cords valued at \$17,017,489 in 1930, and 1,350,722 cords valued at \$14,598,949 in 1930 figured. In 1930 there was imported sulphite wood pulp to the amount of 988,135 tons valued at \$55,920,650, of which 665,049 tons valued at \$33,193,598 were unbleached, and 323,086 tons valued at \$22,727,052 were bleached. Of the sulphite wood pulp, Sweden supplied 385,600 tons valued at \$20,538,626; Canada, 351,594 tons valued at \$21,167,731; and Finland, 107,148 tons valued at \$5,213,041. The sulphate wood pulp unbleached imported in 1930 aggregated 357,351 tons valued at \$16,447,258, as against 384,005 tons valued at \$20,518,076 in 1929. Sweden also was the leading source with 242,065 tons valued at \$10,283,488, followed by Canada with 65,157 tons valued at \$4,026,301, and Finland with 33,239 tons valued at \$1,414,239 in 1930. Rags for paper stocks to the amount of 281,592,177 pounds valued at \$5,565,340 were imported in 1930, as against 446,496,028 pounds valued at \$9,341,795. The imports of paper and manufactures into the United States were valued at \$147,439,758 in 1930, as against \$163,184,327 imported during the year 1929.

Imports of standard newsprint paper, free of duty, in 1930 totaled 4,559,303,478 pounds valued

at \$131,800,333, as against 4,845,401,341 pounds valued at \$144,492,736 in 1929. Canada continued to be the leading importer with 3,978,570,163 pounds valued at \$110,470,307, followed by Newfoundland and Labrador with 312,372,024 pounds valued at \$8,848,403, and Finland with 83,592,327 pounds valued at \$1,930,971 in 1930.

The United States exported paper base stock in 1930 valued at \$4,175,838, as against \$5,078,346 in 1929. The exports of paper and pulp manufactures from the United States in 1930 suffered a decline, being valued at \$30,301,759, as against \$37,086,009 in 1929. Newsprint does not figure as largely in the exports as in the imports, being valued at \$812,231 in 1930, and exceeded by book paper valued at \$2,155,175, and wrapping paper valued at \$2,759,441, among the various other manufactures.

CANADIAN PULP PRODUCTION

[Tons: 2,000 lbs.]

| Grade | 1929 |
|----------------------|-----------|
| Groundwood | 2,420,774 |
| Bleached sulphite | 324,548 |
| Unbleached sulphite | 911,684 |
| Sulphate or kraft | 250,104 |
| Screenings | 99,182 |
| All other wood fibre | 14,937 |
| Total | 4,021,229 |

CANADIAN PAPER PRODUCTION

[Tons: 2,000 lbs.]

| Grade | 1929 |
|-----------------------|-----------|
| News | 2,725,331 |
| Book and writing | 73,502 |
| Wrapping | 91,374 |
| Paper boards | 250,061 |
| Other paper products | 56,881 |
| Total specified paper | 3,197,149 |

For the year 1930 the exports of pulp and paper from Canada were valued at \$177,500,020, for 1929 the total value of these exports amounted to \$198,287,106 so that 1930 showed a decline of \$20,786,884, or 10 per cent from the previous year. Wood pulp exports for the year amounted to \$39,059,979 as compared with \$43,577,021 in 1929 and of paper to \$138,440,243 as compared with \$154,710,085 in 1929. Pulp wood exports increased in 1930, the total being 1,330,466 cords valued at \$13,611,617, as compared with 1,294,995 cords valued at \$13,314,738 exported in the year 1929. See CHEMISTRY, INDUSTRIAL.

PAPUA, pā'pū-ā. A territory of the Australian Commonwealth, comprising the southeastern part of the island of New Guinea and all the groups of small islands between 8° and 12° S. latitude and 141° and 155° E. longitude; formerly known as British New Guinea; transferred to the Australian government Sept. 1, 1906. Area, 90,540 square miles, of which about 87,786 are on the Island of New Guinea. On June 30, 1929, there were 1523 Europeans and about 275,000 natives in Papua. Port Moresby is the capital and a port of entry. Schools and missions are maintained by five missionary bodies. European plantations are devoted mainly to coconuts, rubber, and sisal production.

The forests contain valuable timber, and the mineral resources, which are considerable, include gold, copper, osmiridium, coal, lead, zinc, tin, and iron. Gold, copper, and osmiridium are exported. There are indications of petroleum. In 1928-29

imports totaled \$358,910 and exports, \$337,365. Tonnage entered and cleared, mostly in the Australian trade, aggregated 184,946 tons. The local revenue for 1928-29 amounted to \$93,751 and the expenditure, \$152,949. The annual deficit is met by an Australian government subsidy. The territory is administered by a lieutenant-governor appointed by the Governor-General of Australia, and an executive and a legislative council, both consisting of official or nominated members. Lieutenant-Governor and chief judicial officer in 1930, Sir J. H. P. Murray. See NEW GUINEA.

PARAGUAY, pâr-â-gwâ. An inland republic of South America, bounded by Argentina, Bolivia, and Brazil. Capital, Asunción.

AREA AND POPULATION. Including that part of the Chaco under dispute with Bolivia, the area is estimated at 176,000 square miles; the estimated population in 1929 was 843,905 (excluding about 30,000 Chaco Indians). Populations of the leading cities, with suburbs, in 1926 were: Asunción, 113,684 (142,519 in 1928); Villarrica, 26,000; Concepción, 11,000; Luque, 13,000; Carapeguá, 12,000; and Paraguarí, 10,000.

EDUCATION. Education is free and nominally compulsory. Of the 168,781 children of school age in 1929, 104,084 were enrolled in schools; average attendance, 86,188. The university in 1928 had 411 students and 60 professors.

PRODUCTION. Stock raising, lumbering, and agriculture are the chief industries, accounting, respectively, for 38, 34, and 25 per cent of the total exports in 1929. Two-thirds of the area is covered with forests of hard and soft wood, the leading forest products being yerba maté (native tea), quebracho extract, and lapacho, curupaz, and cedar lumber. Agriculture is confined mainly to the fertile forest clearings of the eastern area. Stock breeding is carried on in the western plains region. The chief crops, with the production in pounds in 1928, were: Manioc, 1,361,288,000; sugar cane, 934,296,000; corn, 141,893,000; sweet potatoes, 99,242,000; tobacco, 27,908,100; cotton, 20,039,800; alfalfa, 17,740,800; peanuts, 19,483,000; beans, 15,303,200; rice, 6,762,800. White potatoes, castor beans, and oranges are grown also. In 1926, there were 3,270,000 cattle, 195,192 sheep, and 209,901 horses in the country. Iron, manganese, copper, and other mineral deposits remain practically unexploited. Meat packing and the production of animal by-products, flour, quebracho extract, beverages, and shoes are the chief industries.

COMMERCE. Foreign trade declined in 1929, imports falling to 13,850,000 pesos (\$13,460,000) from 14,305,000 pesos (\$15,886,000) in 1928 and exports to 13,176,000 pesos (\$12,804,000) from 13,802,000 pesos (\$15,327,000) in 1928. Of the exports, which were the lowest since 1924, 85 per cent went to Argentina. Argentina transhipped about one-third of her imports from Paraguay to the United States, Germany, and Great Britain. Argentina furnished over one-third of all Paraguay's imports. Imports from the United States and Great Britain increased 11.6 and 1.8 per cent, respectively, in 1929, while imports from Argentina and Germany declined 13.3 and 10.9 per cent, respectively. The principal exports, in order of importance in 1929, were: Quebracho extract, canned meats, yerba maté, tobacco, and cattle hides.

FINANCE. According to the President's message to Congress in April, 1930, actual ordinary revenues in the fiscal year 1928-29 totaled 256,186,791

paper pesos and ordinary expenditures 216,698,836 paper pesos, as compared with budget estimates in which ordinary receipts and disbursements balanced at 253,478,000 paper pesos (1 paper peso exchanged at \$0.0233 in 1929). Extraordinary budgetary expenditures totaled 5,356,270 paper pesos, and extra budgetary expenditures an additional 64,531,925 paper pesos. Of the last-named amount, nearly 40,490,094 paper pesos were paid out of extraordinary special revenues, according to the President. The budget for 1928-29 was extended into 1929-30 when Congress failed to act upon the new budget presented to it. The national debt on Nov. 30, 1929, stood at 6,958,000 gold and 43,586,000 paper pesos (about \$16,563,000), of which 4,219,000 gold pesos (\$4,070,000) represented the external debt. From 1913 to 1929, American investments in Paraguay increased from \$3,000,000 to \$15,000,000 and British investments from \$16,000,000 to \$18,000,000.

COMMUNICATIONS. Of 517 miles of railway line in operation in 1928, the principal line was that of the Paraguay Central Railway (274 miles), which during the year carried 484,000 passengers and 172,000 tons of freight, with gross receipts of \$1,120,000. The length of telegraph and telephone wire was 2220 and 4793 miles, respectively. In 1930, the inadequate highways were being extended. Asunción was linked with Buenos Aires by river and air lines; two new river steamers were placed in service in 1930. The first section of the new port under construction at Asunción was opened in January, 1930.

GOVERNMENT. Executive power is vested in a president elected for four years, who acts through a ministry of five members; and legislative power in a congress of two houses: a senate of 20 members and a chamber of deputies of 40 members elected directly by the people. President in 1930, Dr. José P. Guggiari, who assumed office Aug. 15, 1928.

HISTORY. The outstanding development in Paraguayan history during 1930 was the temporary settlement of the dispute with Bolivia over the Chaco territory, which led both countries to the verge of war in 1929. The restoration of the *status quo* in the Chaco was due primarily to the mediation of the Uruguayan Foreign Minister (see BOLIVIA under History). The renewal of diplomatic relations with Bolivia and the subsequent overthrow of the belligerent Siles régime in the latter country favored a peaceful settlement of the boundary question. Nevertheless, clashes between border patrols in the Chaco were reported toward the end of the year. Paraguay accordingly urged that the dispute be submitted anew to the Inter-American Conciliation Commission at Washington in an effort to arrive at a permanent solution of the problem. During the year two modern river gunboats were completed for Paraguay in Italian shipyards and negotiations were entered into for the reorganization of the military establishment by an Argentinian Mission.

The state of martial law proclaimed in September, 1929, by President Guggiari was extended throughout 1930 by decision of the President and Council of State. In his message to Congress of Apr. 2, 1930, President Guggiari said the state of siege was made necessary by efforts of communists to foment internal disorders during the crisis with Bolivia. The Minister of Interior, on May 6, defended the continuation of military rule

on the ground that "communistic plottings" affecting the army had been discovered by the Government. Opponents charged that the Government had illegally proclaimed the state of siege in order to perpetuate its control.

The post of Minister to the United States was filled early in the year by the appointment of Luis Riart, former President of Paraguay. Further immigration of Mennonites from Canada and Prussia to the Mennonite colony established in the Chaco region in 1928 testified to the success of the experiment. The colony, established under a charter from the Paraguayan Government granting virtual autonomy and exemption from military service, was specializing in the production of cotton. Dr. Eligio Ayala, President of Paraguay from 1924 to 1928, died in Asunción Oct. 24, 1930.

PARAO. See CAROLINE ISLANDS.

PARASITES. See VETERINARY MEDICINE.

PAREISIS. See MEDICINE, PROGRESS OF.

PARK COLLEGE. A nonsectarian institution for the higher education of men and women in Parkville, Mo.; founded in 1875 and cooperating with the Presbyterian Church in the United States of America. The enrollment for 1930-31 totaled 497 distributed as follows: Seniors, 70; juniors, 73; sophomores, 122; freshmen, 221; and specials, 11. The faculty numbered 39. The endowment funds amounted to \$1,708,200, from which the income was \$89,000. Tuition and fees amounted to \$106,200 and donations to \$28,800; \$31,300 was yielded from other sources. The library contained 38,000 volumes. A plan of honors work was adopted in 1927, providing special opportunity for independent study to gifted students in the upper division. During 1930 the Tyler Memorial Chapel, costing approximately \$100,000, was under construction. President, Frederick W. Hawley, D.D., LL.D.

PARKS, NATIONAL. According to the annual report of Horace M. Albright, Director of the U. S. National Park Service, for the fiscal year 1929-30, travel to the national parks broke all records, despite the general decrease in long-distance rail travel and resort use. In all, 2,774,561 persons used the national parks, an increase of 93,964, or 3.5 per cent, over 1929. The national monuments reported a decrease from 567,667 to 472,095 visitors. Part of this decrease was due to the abolishment of the Papago Saguaro National Monument, which in the previous year was visited by 87,600 persons. Approximately 50,000 persons visited this area up to the time of change in status.

The acquisition of private holdings within the national parks was continued during the year under congressional authority and appropriation. The outstanding transaction was the Yosemite purchase, in which 15,570 acres of magnificent sugar pine land were involved at a total cost of approximately \$3,300,000. A contribution from John D. Rockefeller, Jr., of half this purchase price, was met by an equal amount of Government funds. Negotiations for the transfer to the Government of several other tracts of land in Yosemite National Park, and of land in the Lake McDonald section of Glacier National Park, were also in progress when the Director submitted his report.

Appropriations for the National Park Service for the fiscal year ended June 30, 1930, amounted to \$7,813,817.18, with additional authority to enter into contracts for road work up to \$2,500,-

000. For the fiscal year 1931, \$9,999,135 was appropriated, with additional authorizations for road work up to \$2,500,000. Cash donations for development and improvement of the national parks for the 1930 fiscal year amounted to \$1,781,453.05. Revenues for the 1930 fiscal year amounted to \$1,015,740.56. This is the first time in the history of the parks that the revenues had reached the million mark.

The total area of the national park and monument system was changed from 15,846 square miles to 16,156 square miles through various changes. The Carlsbad Cave National Monument became the Carlsbad Caverns National Park; land for the proposed Great Smoky Mountains National Park area was accepted by the United States government for administration and protection as described below; the George Washington Birthplace National Monument was established; and the areas of Zion, Rocky Mountain, and Yosemite National Parks and the Craters of the Moon National Monument were extended.

With the transfer on Aug. 28, 1930, by the States of North Carolina and Tennessee of title to the United States covering 158,876.50 acres, a beginning of the Great Smoky Mountains National Park was made. The Park Service took over this area but it was not to be organized as a national park until 427,000 acres had been acquired. However, the greater part of the remaining area had been acquired or was under condemnation by State commissions, and it was hoped that within a short time it would be available for full park development. In the meantime, a protective force was installed and arrangements made for a trained park superintendent. The whole cost of \$10,000,000 was being borne, one-half by the two States and one-half by the Laura Spelman Rockefeller Memorial.

Minimum boundary lines of the Shenandoah Park project were definitely established on the ground, so that officials of the State of Virginia could make appraisals to determine the exact cost of acquiring the lands necessary for park purposes. Private and State subscriptions and appropriations had provided the funds necessary to purchase the lands for the proposed Mammoth Cave National Park. Some of the area was acquired and steps were being taken to secure the remainder, for transfer to the United States.

Congress also established the George Washington Birthplace National Monument at Wakefield, Va., and authorized the creation of the Colonial National Monument which will include Jamestown Island, part of Williamsburg, and York town battlefield. In this small area are the landmarks of the beginning and the end of the colonial period. Hawaii National Park was placed under exclusive Federal jurisdiction. The Hoover Dam Reservoir area was reserved with a view to considering its possibilities as a national monument. Eventually it would be a great inland lake, nearly 100 miles long, through wild country, including the lower end of the Grand Canyon, and might possibly provide a transportation route for tourists traveling by car from Zion and Bryce Canyon National Parks to the dam.

Major road construction in the national parks was being pushed as rapidly as available funds and contractual authority would permit, in cooperation with the Bureau of Public Roads of the Department of Agriculture. There were put into use during the year some notable spectacular new roads, involving careful landscape planning. Such

roads as the Zion-Mount Carmel, the Cape Royal in Grand Canyon, the Paradise Valley, and Yakima Park in Mount Rainier, the Sylvan Pass in Yellowstone, and the west-side portion of the Transmountain Road in Glacier, were outstanding examples. The elimination of dust from the park highways through oiling was accomplished in Sequoia, General Grant, Yosemite, Crater Lake, Mount Rainier, Glacier, Yellowstone, Zion, and Grand Canyon National Parks. Oiling was also extended to the principal trails in the major parks.

PARSONS, FRANK ALVAH. An American art educator, died in New York City, May 26, 1930. He was born in Chesterfield, Mass., Apr. 1, 1868, and after attending Wesleyan Seminary studied art in Italy, France, England, and Austria. From 1890 to 1898 he lectured in Boston and vicinity, and from 1899 to 1905 taught at Columbia University, where he also completed the course in fine arts in Teachers College. He founded the New York School of Fine and Applied Art in 1905, acting as president and director until his death. Branches of the school also were established in Paris, London, and Florence. From 1903 to 1914 he was lecturer on interior decoration at the Brooklyn Institute of Arts and Sciences, and from 1915 until 1930, professor of advertising display at New York University. He also traveled extensively, lecturing before women's clubs, civic associations, teachers' conventions, and museum classes. In 1927 he was made a chevalier of the Legion of Honor of France in recognition of his services to the advancement of Franco-American relations. He was the author of *Principles of Advertising Arrangement* (1912); *Interior Decoration, Its Principles and Practice* (1915); *The Psychology of Dress* (1920); and *The Art Appeal in Advertising Display* (1921), and co-author of *Advertising, Its Principles and Practice* (1915); and *Art, Its Principles and Practice Applied to Modern Life* (1916).

PARTRIDGE, THE RT. REV. SIDNEY CATLIN. Protestant Episcopal Bishop of the Diocese of West Missouri, died in Kansas City, Mo., June 22, 1930. He was born in New York City, Sept. 1, 1857, and was graduated from Yale University in 1880 and from the Berkeley Divinity School in 1884. After ordination as deacon in the Protestant Episcopal Church in 1884 and priest the following year, he went to Shanghai, China, where he taught three years in St. John's College and was chaplain of St. Mary's Hall. During 1887-99 he was rector of the Boone School and missionary in Wu-chang, China. In 1900 he was consecrated Bishop of Kyoto, Japan, in recognition of the wide influence which he exerted throughout the Far East. He became Bishop of the Diocese of West Missouri in 1911. The D.D. degree was conferred on him by the Berkeley Divinity School in 1900.

PARTRIDGE, WILLIAM ORDWAY. An American sculptor, author, and lecturer, died in New York City, May 22, 1930. He was born in Paris, France, Apr. 11, 1861. After attending Columbia University in 1885, he studied modeling in Florence under Galli, in Rome under Welonski, and in Paris. He exhibited at the International Exposition in Berlin in 1891, at the Paris Salon in 1892, and at the Royal Academy in London in 1902. He first gained recognition by his well-characterized portrait busts, which included not only distinguished men of the day but great poets, artists, and musicians. Among these are: Chief

Justice Melville W. Fuller, in the chamber of the United States Supreme Court, Washington; Dr. S. Weir Mitchell, in the College of Physicians and Surgeons, Philadelphia; Rear Admiral Robert E. Peary, at Bowdoin College; Dean J. H. Van Amringe, at Columbia University; Edward Everett Hale, in the Union League Club, Chicago; and the poet Whittier, in the Boston Public Library. His sculpturing showed the touch of the idealist, with a sense of transcendent beauty in such works as the Kauffman Memorial in Rock Creek Cemetery, Washington; "Memory," in the Averell Memorial Art Museum, Rochester, N. Y.; the baptismal font in the Cathedral of Sts. Peter and Paul, Washington; "Pieta," in St. Patrick's Cathedral, New York City; and the heads entitled "Peace" (Metropolitan Museum, New York City), "Madonna" (Brooklyn Museum), and "Nearing Home" (Corcoran Gallery, Washington).

Mr. Partridge showed an equal refinement and versatility of technique in his heroic and colossal works. Among these are: "Alexander Hamilton," in front of the Hamilton Club, Brooklyn, N. Y.; "Shakespeare," in Lincoln Park, Chicago; "General Grant," in front of the Union League Club, Brooklyn; "Pocahontas," in Jamestown, Va.; "Nathan Hale," in St. Paul and Washington; "Alexander Hamilton" and "Thomas Jefferson," at Columbia University; "Horace Greeley," in Chappaqua, N. Y.; and Samuel J. Tilden, on Riverside Drive, New York City. He also became well known as a lecturer through the courses on fine arts which he gave at Columbian (later George Washington) University (1897-1903), the Concord School of Philosophy, and the Brooklyn Institute of Arts and Sciences. His writings include: *Art for America* (1894); *The Song Life of a Sculptor* (poems, 1894); *The Technique of Sculpture* (1895); *The Angel of Clay* (a novel, 1900); *Nathan Hale, the Ideal Patriot* (1902); and *The Czar's Gift* (a novel, 1906).

PATENTS. See UNITED STATES under *Patents*; for German Patents see *CHEMISTRY, INDUSTRIAL*.

PAVEMENTS. See *ROADS AND PAVEMENTS*.
PEABODY MUSEUM OF HARVARD UNIVERSITY. See *ANTHROPOLOGY*.

PEACE. The Executive Committee of the World Conference for International Peace through Religion held sessions from August 12 to 15, at Berne, by invitation of the Swiss government. Sixty-two members attended, representing every continent and the major religious groups. Washington, D. C., was unanimously selected as the place for a World Conference for International Peace through Religion, to be held from Nov. 10 to 24, 1932. In choosing Washington, the Executive Committee cordially accepted the invitation of the American Congressional Committee asking that the World Conference be made a part of the George Washington Bicentenary celebrations in 1932. Preparations for the conference pointed to a world-wide movement, rather than the holding of a single meeting. The Washington conference was considered the next step forward, to be followed by a second conference in the Far East and, at a later date, by a still greater gathering at Geneva or some other central European point.

Dr. Henry A. Atkinson, General Secretary, announced that the presidents of the conference would include the Rev. Dr. S. Parkes Cadman, former President of the Federal Council of the Churches of Christ in America; Dr. Albert Ein-

stein, Berlin, Germany; Baron Sakatani, member of the Japanese House of Peers and former Mayor of Tokyo; Dr. Rabindranath Tagore, India; and the Rt. Rev. the Lord Bishop of Liverpool.

In April, 1930, the Japanese National Committee of the World Conference for International Peace Through Religion, consisting mainly of members of the Permanent Religious Committee of the League of Nations Association of Japan, the Japan Religious Association, and the Kiitsu Kyokai (Concordia Society, another association of religionists), was formed. Baron Sakatani presided at the first general meeting in Tokyo in June. Thirty-two committeemen attended, including members from Kyoto and Nara; Mr. Nishivama, chief of the Bureau of Religious Affairs of the Department of Education; Mr. Matsuo, chief of the section of Religious Business; Mr. Tsurumi, secretary of the Department of Foreign Affairs; and Mr. Aoki, chief of the Tokyo Bureau of the League of Nations. Baron Sakatani said that he was deeply moved by the enthusiasm of religious men of other countries who dared to visit foreign countries in order to promote peace through religion. Considering that Japan should not be outdone by other countries in this line of work, he had been participating with a firm faith in the organizing of this committee.

The 102d annual meeting of the board of directors of the American Peace Society was held May 2, 1930, in Washington, D. C., with President William Fortune presiding. All the old officers were reelected. Resolutions upon the death of Senator Theodore D. Burton, who during two terms was president of the society, and Dr. W. H. P. Faunce, for many years an honorary vice-president, were adopted.

Representatives of France, Germany, Great Britain, and Japan were guests of the Fifth Conference on the Cause and Cure of War held in Washington, Jan. 14-17, 1930. At this meeting delegates from the following organizations were present: American Association of University Women; Council of Women for Home Missions; Federation of Women's Boards of Foreign Missions of North America; General Federation of Women's Clubs; National Board of the Young Women's Christian Associations; National Council of Jewish Women; National Federation of Business and Professional Women's Clubs; National League of Women Voters; National Woman's Christian Temperance Union; National Women's Trade Union League. Mrs. Carrie Chapman Catt presided.

Rennie Smith, M.P., resigned in February as directing secretary of the National Council for Prevention of War, a federation coordinating the efforts of all bodies working against war, and was succeeded by Gerald Bailey, a member of the Society of Friends. This organization maintained offices at 39 Victoria St., London, S. W. I.

At Mürren, Switzerland, was held the annual meeting of the World Alliance for International Friendship through the Churches. Sessions of the management committee were attended by representatives of the national councils of the Alliance in the United States, Australia, Austria, Belgium, Great Britain, Bulgaria, Canada, China, Czechoslovakia, Danzig, Denmark, Estonia, Finland, France, Germany, Greece, Holland, Hungary, Italy, Latvia, Lithuania, Norway, Poland, Portugal, Rumania, Spain, Sweden, Switzerland.

Among the outstanding figures of the conference were its chairman, Bishop Amundsen of

Denmark; Lord Dickinson of England; Professor Siegmund-Schultze of Berlin, an earnest advocate of peace before and during the War; Pastor Jezeziel of Paris; Dr. Henry A. Atkinson and the Rev. Dr. W. P. Merrill of New York; Judge Alexis de Boer, of Hungary; Professor Choisy of Geneva; and Professor Zankov of the Orthodox Church of Bulgaria, a professor of theology at Sophia. At one session Professor Arseniew, a Russian Orthodox refugee stationed in Germany, reported on the religious persecution in Russia. Bolshevism, he said, was not only an economic system but an atheistic creed, marked by hatred for Christianity and for Christians. Corroborative evidence was given by delegates from Finland and Lithuania, and statements on the subject were received from the American and Finnish councils.

Resolutions were unanimously adopted urging that nations signatory to the Paris Peace Pact take the necessary steps to implement the pact by an announcement to the world that, in case of a threat of war anywhere, the nations, parties to the pact, would agree to meet for conference and provide the pacific means possible for settling the dispute and checking the nation which had violated its pledge and threatened the peace of the world; pledging the councils to work for the adoption by each nation of such measures; and expressing sympathy with all persons suffering for their faith in Russia.

A complex problem was that of religious minorities in the Balkans; for example, Bulgars in Yugoslav territory were compelled to attend services in Slavonic, being denied the use of their own language in worship. The matter was to be more fully considered at the International Conference of the Alliance to be held in Cambridge in 1931 and in the meanwhile a regional conference for the Balkans, including Greece, Bulgaria, Rumania, and Yugoslavia, was to be held to discuss the question with a delegation of the secretariat of the Alliance.

The Briand Memorandum on European Federal Union was referred to the Executive Committee of the Alliance with a view to the preparation of a memorandum on the whole question from the Christian point of view. See INTERNATIONALISM.

NATIONAL STUDY CONFERENCE. Believing that the churches should keep abreast of the international situation and should be prepared to interpret that situation from the standpoint of Christian principles, ideals and motives, the National Committee on the Churches and World Peace held a Third National Study Conference, in Evanston, Ill., February 25-27. The opening address of the Conference was made by the Chairman of the National Committee, Bishop G. Ashton Aldham, of the Protestant Episcopal Church. A series of round-table conferences considered the following themes: "The Religious Ethic in International Life," "The Church, the Pact and Peace Policies," and "Religious Education and the Pact." The first considered such questions as the place of nationalism in the modern world, the relation of nationalism and internationalism, the relation of the Church to the State, patriotism and religion, and conscientious objectors and citizenship; the second group America's foreign policy from the standpoint of the Pact, consideration being given to the London Five-Power Conference on Naval Armaments, the relation of the United States to the World Court and the League of Nations, the Inter-American Arbitration Treaty,

and the United States and the Far East. Still another group considered the problem of peace education for children, young people, and adults.

The first of these National Study Conferences on the Churches and World Peace was held in Washington, D. C., in 1925, and the second in Columbus, Ohio, in 1929. Approximately forty communions and allied religious organizations were represented at the Evanston conference.

Fifty thousand copies of the Armistice literature of the Federal Council of Churches Commission on International Justice and Goodwill were distributed among the clergy and representative laymen of more than a score of communions, in most instances this distribution being effected through the peace committees of the various bodies. Armistice Week was thus made the occasion by great numbers of churches for an intensive study of the world situation from the Christian standpoint. As an aid in developing discussion, the Commission suggested the following syllabus of questions, dealing with the international policies which the United States should follow in order to give practical value to the Kellogg Peace Pact:

1. *Armaments.*—The United States has recently signed a naval treaty with Great Britain and Japan in order to remove the menace of an uncontrolled competitive naval building program. Should or should not the American Navy be now built up to the limits allowed by the treaty? Why, in either case?

2. *Meeting a War Menace.*—In case two or more nations, in violation of their pledges, appear to be on the point of going to war, what should the United States do in the light of the Peace Pact? Should or should not the United States announce to the world that whenever a war menace arises it will promptly confer with the other major nations regarding the situation?

3. *Neutrality.*—In case a war actually breaks out the United States would normally be a neutral. In case the League of Nations declares a blockade of one or both the nations, should or should not the United States insist on its rights as a neutral to trade with the belligerents, even if such insistence involves the use of its Navy? What are the reasons for and against such a course?

4. *Military Training in Civilian Schools and Colleges.*—What effect has military training on the mind and attitude of pupils toward the problems of war and peace? Should or should not compulsory military training under the War Department be continued in our civilian educational institutions? Why? Why not?

5. *Economic International Relations.*—The European nations are struggling desperately with the economic consequences of the war. The problems relate to reparations, debts, and tariffs. Does or does not the American attitude toward these problems hinder Europe's recovery? Should or should not America modify her policy on Europe's war debts? Should or should not America modify her tariff policy in the light of Europe's needs and feelings?

6. *The World Court.*—What is the present situation regarding American membership in the World Court? Should or should not the United States promptly ratify the World Court treaties and become a member at once?

7. *The League of Nations.*—The League of Nations is the world's forum for discussing and formulating the world's international policies for assuring world peace. The United States is cooperating with most of its commissions and committees. What would be the respective advantages and disadvantages of complete membership in the League?

Peace was a paramount issue in 1930 Church assemblies. The Northern Baptist Convention at its meeting in Cleveland, after expressing its belief that the London Naval Treaty should be ratified, said: "We very earnestly urge that the Treaty shall not be made the basis for a heavy naval building programme and that in dealing with the Treaty and with all legislation affecting international relations, the fundamental significance and value of the World Peace Pact shall be fully recognized."

The United Presbyterian Assembly of North America, at Des Moines, Iowa, ordered the fol-

lowing message sent to President Hoover: "As followers of the Prince of Peace we respectfully submit that the proposed billion dollar navy is reactionary and imperialistic and certain to arouse international suspicion, fear and ill-will. We urge that this programme be so drastically reduced as to give substance to our profession of international goodwill." In a similar vein the General Synod of the Reformed Church in America, at its meeting at Asbury Park, said: "We believe that for the United States to enter upon a billion dollar building programme at this time in order to secure naval parity would be contrary to the purpose of the Pact of Paris and to the original aim of the London Conference."

The Methodist Episcopal Church, South, meeting in Dallas, Tex., said: "The partial success of the recent London Naval Conference clearly indicates that Christian people all over the world must so mold public opinion and mobilize the agencies of peace as to compel the nations of the earth to abandon war in fact and not simply by treaty, as a method of settling international disputes."

The general point of view of these various denominational utterances was gathered up in a statement adopted by the Administrative Committee of the Federal Council of Churches on July 25, which, after expressing great satisfaction with the ratification of the London Naval Treaty said:

We would call the attention of the churches to the fact that the building of the new ships allowed the United States under the treaty is permissive, not mandatory. Inasmuch as the tonnages permitted by the London Naval Treaty have been fixed upon disappointingly high levels we seriously question the advisability of entering into the naval construction programme required if the United States is to build the so-called "treaty navy." It has been estimated that the cost to the American people of such a building programme would approximate a billion dollars. Already, according to the President, the United States is spending more money on its army and navy than any other nation in the world.

Moreover, the United States, in agreement with fifty-five other nations, has renounced war as an instrument of national policy. We can best evidence our faith in these peace pledges by refraining from building up to the limit of the tonnages allowed under the London Treaty.

The Assembly of the United Presbyterian Church adopted the following statement voicing its peace policy:

The General Assembly believes that compulsory military training in our public schools, colleges and universities should cease, and we request the presidents of all educational institutions having compulsory military training to abolish the compulsory feature of the system, believing that only by so doing can we observe the intent and spirit of the Peace Pact. We favor the abolition of all military training in high schools or for youth of high-school age, as such training tends to foster the war spirit and to develop a wrong attitude toward life.

Similarly, the General Synod of the Reformed Church in America called upon the people of their churches:

To stand with educators against the programme of enlarged and popularized military training in schools and colleges, and to advocate a more effective, constructive preparation for citizenship through civilian educational processes.

Many of the denominational assemblies recognized the primary place of education in the consummation of the peace ideal. The Northern Baptist Convention asked each church:

To make systematic education for peace a regular part of its instructional programme in the church school

and also in all young people's societies and adult groups.

The General Synod of the Reformed Church called upon its pastors:

To educate their congregations concerning the growing will to peace and the development of world peace organizations.

Leaders of the church school, young people's societies, missionary and other organizations were likewise urged "to give intelligent treatment to the theme of peace." The General Assembly of the Presbyterian Church in the U. S. A. reviewed "with satisfaction and commendation the present programme on education for peace, developed and promoted by the Board of Christian Education" and urged "the hearty support of the church in the use of this programme."

PEACHES. See HORTICULTURE; ENTOMOLOGY, ECONOMIC.

PEARCE, RICHARD MILLS, JR. An American pathologist and educator, died in New York City, Feb. 16, 1930. He was born in Montreal, Canada, Mar. 3, 1874. On graduation from the Harvard Medical School in 1897, he became resident pathologist at the Boston City Hospital. He returned to Harvard in 1899 as instructor in pathology, and from 1900 to 1903 was successively demonstrator and assistant professor of pathology at the University of Pennsylvania. After studying for a few months at the University of Leipzig he became, in 1903, director of the Bender Hygienic Laboratory in Albany, N. Y., professor of pathology and bacteriology at the Albany Medical School, and director of the Bureau of Pathology and Bacteriology of the New York State Department of Health. He was called to the New York University and Bellevue Hospital Medical College as professor of pathology in 1908, and two years later returned to the University of Pennsylvania as professor of pathology and, later, of research medicine. He remained at Pennsylvania until the entry of the United States into the World War, when he became a major in the medical corps of the U. S. army and acted as secretary of the medical advisory committee of the American Red Cross, director of the Bureau of Foreign Medical Service, and chairman of the division of medicine and related sciences of the National Research Council. He resumed his connection with the University of Pennsylvania after the War, and in 1920 became associated with the Rockefeller Foundation, carrying out its first medical surveys in South America and other countries. He was appointed general director of the division of medical education in 1923 and during his incumbency extended the Foundation's programme of coöperation in the development of centres of medical training in various parts of the world. His greatest research contribution was on cytotoxins and the pathology of the spleen. He was the author of *Medical Research and Education* (1913) and *The Spleen and Anæmia* (1917).

PEARS. See HORTICULTURE.

PEARSE, MARK GUY. An English clergyman and author, died in London, Jan. 1, 1930. He was born in Camborne, Cornwall, Jan. 3, 1842. After studying medicine at St. Bartholomew's Hospital, he decided to enter the Methodist ministry, and studied at Wesley College, Sheffield, and at Didsbury College, Manchester. He was ordained in 1863 and held various charges in Leeds, Brixton Hill, Ipswich, Bedford, Highbury, Westminster,

and Bristol. In 1889 he became associated with the Rev. Hugh Price Hughes in the conduct of the West London Wesleyan Mission, and this partnership lasted until the death of the latter in 1902. He then became an itinerant preacher and lecturer. His writings include devotional works and semi-religious tales, especially of Cornwall. The best known are: *Daniel Quorm and His Religious Notions* (1874); *Elijah, the Man of God* (1891); *The Gentleness of Jesus* (1898); *The Story of a Roman Soldier* (1899); *West Country Songs* (1902); *Bridgetslow* (1907); *The Prophet's Raven* (1908); and *Christ's Cure for Care* (1914).

PEAT. See SOILS.

PEKING MAN. See ANTHROPOLOGY.

PEMBA. See ZANZIBAR PROTECTORATE.

PENANG, pē-nāng'. One of the Straits Settlements. See STRAITS SETTLEMENTS.

PENNSYLVANIA. POPULATION. According to the Fifteenth Census, the population of the State on Apr. 1, 1930, was 9,631,350. The population on Jan. 1, 1920, was 8,720,017. The capital is Harrisburg.

AGRICULTURE. The following table gives the acreage, production, and value of the principal crops in 1929 and 1930:

| Crop | Year | Acreage | Prod. Bu. | Value |
|-------------|------|-----------|-------------------------|--------------|
| Hay | 1930 | 2,852,000 | 3,788,000 * | \$74,503,000 |
| | 1929 | 2,886,000 | 4,298,000 * | 56,248,000 |
| Corn | 1930 | 1,322,000 | 29,084,000 | 27,630,000 |
| | 1929 | 1,309,000 | 46,470,000 | 46,470,000 |
| Potatoes .. | 1930 | 234,000 | 23,166,000 | 26,641,000 |
| | 1929 | 234,000 | 25,740,000 | 41,184,000 |
| Wheat | 1930 | 1,122,000 | 25,236,000 | 20,201,000 |
| | 1929 | 1,119,000 | 20,138,000 | 24,371,000 |
| Oats | 1930 | 1,075,000 | 40,312,000 | 19,350,000 |
| | 1929 | 1,014,000 | 29,913,000 | 17,050,000 |
| Apples | 1930 | ..... | 9,774,000 | 9,285,000 |
| | 1929 | ..... | 5,973,000 | 9,258,000 |
| Tobacco ... | 1930 | 39,500 | 38,118,000 ^b | 4,955,000 |
| | 1929 | 38,700 | 49,536,000 ^b | 5,944,000 |
| Buckwheat | 1930 | 199,000 | 2,488,000 | 2,214,000 |
| | 1929 | 199,000 | 3,383,000 | 3,383,000 |
| Rye | 1930 | 124,000 | 2,108,000 | 1,665,000 |
| | 1929 | 124,000 | 1,984,000 | 2,103,000 |

* Tons. ^b Pounds.

Farms in the State numbered 172,046 in 1930, as against 200,443 in 1925 and 202,250 in 1920.

MINERAL PRODUCTION. Coal, bituminous and anthracite, formed nearly three-fourths of the native mineral product of the State for 1928. Activity in the bituminous field increased in 1929, the quantity mined being 143,516,421 net tons, as against 131,202,163 in 1928; the value, \$258,607,000 in 1929 and \$249,895,000 in 1928. The anthracite mines produced 65,974,551 long tons in 1929, a decrease from the 75,348,069 short tons of 1928; by value the product was \$392,979,161 for 1929 as against \$393,637,690 for 1928. Much bituminous coal went into coke ovens. Coke shipments from these ovens attained 14,489,283 short tons, in value \$55,129,765, for 1929, from by-product ovens, in addition to some 5,439,000 short tons from beehive ovens. Although producing relatively little native iron ore the State maintained a long lead in the production of pig iron. Its blast furnaces shipped, in 1929, 14,058,194 long tons of pig iron, as against 12,289,455 in 1928; by value \$257,154,601 in 1929 and \$216,425,084 in 1928. The natural gas output was smaller in 1928, reaching for that year 79,466,000 M cubic feet, as against 105,709,500 M for 1927; in value it was \$40,432,000 for 1928 and \$47,135,000 for 1927. Cement production fell in 1929, the mills

shipping 39,309,662 barrels of cement, as against 41,161,019 in 1928; by value, \$55,600,953 in 1929 and \$62,572,588 in 1928. Clay products totaled \$47,928,803 for 1928; for 1927, \$50,988,821. The yield of petroleum rose to 11,805,000 barrels for 1929, from 9,956,000 for 1928; in value to \$45,700,000 (estimated) from \$32,550,000. Stone, sand, gravel, and lime were worked in important quantities. The total value of the native mineral products of the State was \$881,490,033 for 1928; for 1927, \$936,773,189.

FINANCE. State expenditures in the year ended May 31, 1929, as reported by the U. S. Department of Commerce, were: for maintaining and operating governmental departments, \$99,080,568 (of which \$26,730,446 was for local education); for operating public service enterprises, \$99,631; for interest on debt, \$4,115,895; for permanent improvements, \$32,691,113; total, \$135,897,207, of which \$798,077 was represented by interdepartmental entries. Of the total, \$42,847,708 was expended for highways, \$20,558,185 being for maintenance and \$22,289,523 for construction. Revenues were \$153,713,648. Of these, special property and other special taxes furnished 37.9 per cent; departmental earnings and compensation to the State for officers' services, 6.7; sale of licenses, 42.9 (in which was included the gasoline sale tax totaling \$19,937,722). Of funded State debt on May 31, 1929, there was outstanding \$93,758,320, of which \$93,221,000 was for highways. Net of sinking fund assets, the debt was \$84,951,158. There was no general State assessment of property.

TRANSPORTATION. The total number of miles of railroad line under operation on Jan. 1, 1930, was 11,153.77. There were built, in 1930, 9.87 miles of first, 2.51 of second, 1.84 of third, and 1.87 of fourth track.

EDUCATION. The erection of a new State education building was completed. The Lloyd Mifflin Memorial Home, for elderly women teachers and convalescents, was established, providing an agency for the betterment of the individual teacher's prospects of security. The State's population of persons of school age, as estimated for the year 1928-29, was 1,995,100. There were enrolled in that year, in the public schools, 1,897,128 pupils. Of these, 1,589,108 were in common or elementary schools and 308,020 in high schools. The year's expenditures for public-school education totaled \$211,789,815. Salaries of teachers, for the year, averaged \$1406.

CHARITIES AND CORRECTIONS. The central organization of the State government for dealing with the dependent and delinquent in 1930 was the State Department of Welfare. It had as its administrative head a Secretary of Welfare. Its forces were organized in four bureaus. Of these, the Bureau of Children supervised institutions of child care and cooperated with county officials to distribute the Mothers' Assistance Fund, while its orthopedic unit helped defray treatment for child cripples. The Bureau of Assistance supervised the State-aided hospitals and the almshouses, homes for the aged and other organized forms of relief. The Bureau of Mental Health supervised mental hospitals and kindred institutions. The Bureau of Restoration had the supervision of State, county, and borough penal institutions, conducted prison industries, and carried on the education of prisoners. The 28 State institutions were managed each by a board of trustees. These institutions were: 10 surgical

hospitals, at points in the coal districts, having 1218 beds; 8 State hospitals for mental cases, at Allentown, Danville, Farview, Waymart, Harrisburg, Norristown, Torrance, Warren, and Wernersville, having in all some 12,000 inmates; 4 institutions for mental defectives, having in all some 4400 inmates, the four being Penhurst State School, Polk State School, Laurelton State Village, and Cumberland Valley State Institution for Male Defective Delinquents; the Selinsgrove State Colony for Epileptics, Selinsgrove, 150 patients; and 6 penal or correctional institutions—the Eastern State Penitentiary at Philadelphia, Western State Penitentiary at Pittsburgh, Rockview Prison Farm at Rockview, Pennsylvania Industrial Reformatory (for male delinquents from 15 to 25 years old) at Huntingdon, State Industrial Home for Women (delinquent) at Muncy, and Pennsylvania Training School (delinquent children) at Morgantown—these institutions having among them a population of about 6000.

In the course of the wave of bank suspensions, in many sections of the country, toward the end of the year, the Bankers' Trust Company of Philadelphia ceased payments on December 22. It operated under State charter and had had resources of \$55,491,501 on September 24.

POLITICAL AND OTHER EVENTS. The normally firm organization of the Republican party in the State was disturbed by the return to the political field of ex-Governor Gifford Pinchot. He entered the primary campaign for the Republican nomination as Governor, supported by Joseph R. Grundy and opposing Francis Shunk Brown, who had the support of the Vire organization. He won in the primary of May 20, despite the casting of a heavy anti-Prohibition vote that helped give the nomination for U. S. Senator to Secretary of Labor James J. Davis. The expenditures of the several Republican candidates, which had aggregated \$3,000,000 or more in 1926 and had then aroused serious objection, were much less for 1930, being in the neighborhood of \$1,000,000, of which Pinchot spent about \$90,000. On the plea that perforated ballots employed in Luzerne County were void and should not be counted an effort was made to have the vote of that county thrown out, which would have upset Pinchot's majority. Declaring that the Pennsylvania Railroad interests were trying to steal the Governorship, Pinchot announced on July 10 that if the candidacy were denied him he would run as an independent. The State Supreme Court decided in August that the contested ballots of Luzerne County should stand as valid.

There followed a movement among Pinchot's opponents in his own party to start a new Liberal party organization, indorsing the anti-Prohibition Democratic candidate for Governor, John M. Hemphill. Some prominent Republicans withdrew their support from the regular organization; the bolters included nearly all the 48 leaders of the Philadelphia Republican organization. There were, on the other hand, a number of defections from the Democratic ranks to Pinchot. Secretary Davis and Mr. Pinchot, though running on the same ticket, engaged in a controversy late in October as to whether Davis had publicly declared that President Hoover had asserted his wish that the entire Republican ticket of the State be elected, Pinchot included. Davis denied that this was the case.

The position of the anthracite mining industry was improved by the execution in July of an

agreement over the wage scale, executed by the leading anthracite mine owners and the anthracite group of the United Mine Workers. This agreement was to run from the expiration of the existing compact on September 1 to Apr. 1, 1936. It was designed to maintain virtually the existing scale of wages and it provided for the creation of a joint committee of six representatives each, from the operators' and the mine employees' groups, to solve difficulties that might arise. The question of wages was to be open to arbitration once a year. Plans for the formation of a corporation controlling more than 50 banks, the Western Pennsylvania Bank Corporation, were matured in May. The Water Gap highway, a five-mile stretch of road through the rough country between Portland and Stroudsburg to form a part of the shortest route between New York and the West, was opened on August 29. Application to close the oldest railroad in the country, the Honesdale branch of the Delaware and Hudson, was made to the Interstate Commerce Commission on September 7.

The city of Philadelphia bought Hog Island, the war-time site of Government shipyards, from the Government for \$3,000,000, for development as a combined marine, rail, and air terminal. By an ordinance signed on June 27 the city agreed to lease the city-owned Broad Street subway to the Philadelphia Rapid Transit Company for two and a half years at a rental of \$780,000 a year, plus a sum of \$475,000 to cover back rent. Owing to tax delinquencies the city and county budget was not sufficiently covered by receipts, and in consequence the city undertook the plan of financing the bond charges on the North Broad Street subway route out of the transit-loan funds. A suit brought by Controller Hadley in 1929 to remove control of the Rapid Transit Company from the hands of the Mitten Management was interrupted by Judge Harry S. McDevitt of the Court of Common Pleas, who brought about a conference of the opposed interests for the purpose of settling the issue. This conference early in 1930 employed a commission of experts to recommend a plan for better organization of transit. The report of this group, published in June, renewed in modified form the proposal that the city acquire by condemnation or private purchase the Philadelphia Rapid Transit and its thirty and more underlying companies.

Ground was broken at Logan Circle in Philadelphia for the site of the building to be erected to the memory of Benjamin Franklin, and the Benjamin Franklin Memorial, Inc., promoting the enterprise, announced at the same time the completion of the subscription of the required \$5,000,000. The trustees of the University of Pennsylvania approved in March a plan to build a home for the College of Liberal Arts at Valley Forge, on a tract donated by Henry N. Woolman. Actual construction was to await the raising of the needed funds. A proposal with strong denominational support, to have Philadelphia high-school students released for one school hour a week in order that they might go to their own places of worship and receive religious instruction, was rejected on February 5 by the Board of Education.

See CHILD LABOR.

ELECTIONS. Former Governor Gifford Pinchot, Republican candidate, was elected Governor on November 4, despite the defection of a great part of the organization of the party in Philadelphia.

He obtained, according to an unofficial report, 1,073,660 votes, to 991,606 for John M. Hemphill, Democrat. Secretary of Labor James John Davis, Republican, was elected U. S. Senator, defeating Sedgwick Kistler, Democrat, by 1,276,436 votes to 472,135 (unofficial). The Legislature remained strongly Republican in both branches. Democratic candidates gained 3 seats in the Federal House of Representatives, the Republicans retaining 33.

OFFICERS. Governor, John S. Fisher; Lieutenant-Governor, Arthur H. James; Secretary of the Commonwealth, Robert R. Lewis, later James A. Walker; Treasurer, Edward Martin; Auditor-General, Charles A. Waters; Attorney-General, Cyrus E. Woods, later William A. Schnader; Superintendent of Public Instruction, John A. H. Keith.

JUDICIARY. Supreme Court: Chief Justice, Robert S. Frazer; Judges, Emory A. Walling; Alexander Simpson, Jr., John W. Kephart, Sylvester B. Sadler, William I. Schaffer, George W. Maxey.

PENNSYLVANIA, UNIVERSITY OF. A non-sectarian institution of higher education in Philadelphia, primarily for men but with certain courses open for women; founded in 1740. It is composed of the college of arts and sciences, the Towne Scientific School (engineering and chemistry), the Moore School of Electrical Engineering, the Wharton School of Finance and Commerce, the school of fine arts (architecture, fine arts, music), the school of education, the graduate school, and the professional schools of medicine, graduate medicine, law, dentistry, veterinary medicine, hygiene, and public health. The 1930 autumn enrollment was 15,320, including all schools and departments. Of those enrolled, 8372 were candidates for degrees; 2969 were candidates for certificates; and 3979 were partial students and auditors. The enrollment for the 1930 summer session was 2070. The faculty numbered 1406. The productive funds amounted to \$18,018,180, and the income for the year was \$5,504,811. The library contained 712,358 bound volumes and 70,000 pamphlets.

The important gifts and subscriptions received during the year included \$500,000 from Eldridge R. Johnson, \$250,000 of which was to be added to the \$800,000 previously subscribed by Mr. Johnson to the Eldridge R. Johnson Foundation for Research in Medical Physics, and the remaining \$250,000 to be used for pressing needs of the university. An additional sum of \$56,000 was received from the estate of Ellis D. Williams for the establishment of the Ellis D. Williams Endowment Fund; and an additional gift of \$17,713 from Louis J. Kolb for the Louis J. Kolb Fund for the Treatment of Cancer, increasing Mr. Kolb's gift to \$117,713. The Rockefeller Foundation made an appropriation of \$80,000, covering a period of two years, toward the programme for study of tuberculosis at the Henry Phipps Institute, while \$50,000 payment was received by virtue of a pledge of \$150,000 by the Laura Spelman Rockefeller Memorial for the department of industrial research special programme fund. The Julius Rosenwald Fund appropriated a sum not to exceed \$75,000 for three years, ending June 30, 1933, to be used in the study of regularization of employment in the Philadelphia area, while an appropriation of \$75,000 was received from the Carnegie Corporation, \$25,000 being payable annually for three years, in support of fundamental research in the cause and cure of tuberculosis.

A notable incident of the academic year 1929-30 was the revision of the statutes of the university to provide for the new office of president, or administrative head, and the election thereto of Thomas S. Gates, LL.D., a trustee of the university. Under this change the historic office of provost, or academic head, was retained, with Josiah H. Penniman, Ph.D., Litt.D., LL.D., L.H.D., provost since 1923, occupying that office.

PENNSYLVANIA ACADEMY. See ART EXHIBITIONS.

PENNSYLVANIA MUSEUM OF FINE ARTS. See ART EXHIBITIONS, ART MUSEUMS.

PENNSYLVANIA STATE COLLEGE. A nonsectarian institution for the higher education of men and women at State College, Pa.; founded in 1855. On Nov. 1, 1930, the undergraduate enrollment totaled 4407, distributed as follows: Agriculture, 729; chemistry and physics, 474; engineering, 1173; education, 755; liberal arts, 1033; mineral industries, 227; specials, 92; graduate school, 231. There were 3240 students registered in the 1930 summer session. The resident faculty numbered 585, including the agricultural and home economics extension staff. The productive funds of the college amounted to approximately \$517,000, and the income for operation for the year to \$4,443,000. The library contained 117,000 volumes. The college celebrated the seventy-fifth year of its founding in the fall of 1930, at which time 12 major structures and several smaller units, completed since 1927 in a rebuilding programme, were dedicated. The new buildings and their cost, equipped, are: Old main, \$840,000; mineral industries, \$450,000; liberal arts north, \$182,000; power plant, \$785,000; recreation hall, \$550,000; Frear Hall, \$210,000; Pond Laboratory, \$390,000; hospital, \$127,000; Grange Dormitory, \$263,000; main engineering, \$350,000; botany building, \$194,000; sheep barn, \$36,000; poultry range, \$29,000; veterinary barn, \$10,000; and dairy barn addition, \$11,000. During the year there was organized a new school of physical education and athletics, with Hugo Bezdek as director. Summer session features included institutes of French, English, and music education, and a nature camp in central Pennsylvania mountains. President, Ralph D. Hetzel, LL.D.

PENOLOGY. See CRIME.

PENSIONS. See OLD AGE PENSIONS; UNITED STATES under *Pensions*.

PERAK, pà'rāk'. The most northern of the Federated Malay States. See **FEDERATED MALAY STATES**.

PERKIN MEDAL. See **CHEMISTRY, INDUSTRIAL**.

PERLIS. See **NON-FEDERATED MALAY STATES**.

PERMANENT COURT OF INTERNATIONAL JUSTICE. See **ARBITRATION, INTERNATIONAL**; **LEAGUE OF NATIONS**; **WORLD COURT**.

PERNICIOUS ANÆMIA. See **MEDICINE, PROGRESS OF**.

PEROSI, CARLO, CARDINAL. A prelate of the Roman Catholic Church, died in Vatican City, Feb. 22, 1930. He was born in Tortona, Italy, in 1868 and was ordained a priest in 1901. In 1903 he was called to Rome by Pope Pius X, who invested him with the benefice of the Vatican Basilica. Later he was made consultor of the Sacred Congregation of the Council, a member of the Tribunal of the Apostolic Penitentiary, and a substitute in the Sacred Consistorial Congregation. In 1915 Pope Benedict XI appointed him one of

the consultors of the Supreme Sacred Congregation of the Holy Office and made him canon of the Church of Santa Maria Maggiore. He was created a cardinal-deacon by Pope Pius XI in 1926, and two years later was appointed secretary of the Sacred Consistorial Congregation. In the latter office he assisted with the preparation of matters for discussion in consistories, the erection and division of dioceses, and the election of bishops.

PERSIA. A monarchy of southwestern Asia, extending north from the Persian Gulf and the Gulf of Oman to the Caspian Sea. Capital, Teheran; reigning Shah in 1930, Riza Khan Pahlavi.

AREA AND POPULATION. The area is estimated at about 628,000 square miles; the population at from 8,000,000 to 10,000,000, about 3,000,000 of whom are nomads. Turks, Kurds, Leks, and Arabs predominate among the nomads. Europeans in the country were estimated at from 1000 to 6000, most of them in Teheran. The chief cities, with their approximate populations, are: Teheran, 210,000; Tabriz, 180,000; Ispahan, 100,000; Meshed, 85,000; Resht, 80,000; Kerman, 40,000; Kermanshah, 40,000; and Shiraz, 35,000. The bulk of the population are Moslems of the Shi'a and Sunni sects.

EDUCATION. About 90 per cent of the population are illiterate. The number of pupils registered in 1928 aggregated 151,000, including 50,304 in Government schools, 41,810 in private schools, 6586 in foreign schools, 36,073 in "Maktab" schools, and 6188 in native religious schools. In 1930, more than 750 Persian students were studying in Europe, about half of them being supported by the Government. In the preceding few years, 1133 new schools of Western type had been added to the school system.

PRODUCTION. Persia is predominantly agricultural, the chief products being wheat, barley, rice, tobacco, wool, fruits, opium, gums, cotton, and silk. Government estimates, in pounds, of crops in 1929 were: Cotton, 58,918,000; tobacco, 29,459,000; wool (in grease), 50,000,000; tea, 177,000. Mining is confined largely to the extraction of petroleum. The Anglo-Persian Oil Company, which holds a concession covering all except the five northern Provinces, produced 45,250,000 barrels of oil in 1929, as compared with 43,461,000 in 1928 and 39,688,000 in 1927. Other mineral resources, for the most part undeveloped, include deposits of iron ore, coal, copper, lead, manganese, marble, cobalt, and nickel. Rugs are the principal manufactured product. Exports of rugs to the United States, which normally takes half of the total, were valued at \$7,877,000 in 1929, as compared with \$8,568,000 in 1928.

COMMERCE. For the fiscal year ended Mar. 21, 1929, imports were valued at \$82,580,000 (\$79,128,000 in 1927-28) and exports at \$152,822,000 (\$103,920,000). Increased shipments of petroleum accounted for most of the gain in exports, and larger imports of gold and silver for the increase in imports. Foreign trade showed a considerable recession in 1929-30. Imports in 1928-29 came principally from the Union of Soviet Socialist Republics, with British India and the United Kingdom ranking in order. Exports (excluding petroleum) went chiefly to Russia (35 per cent), the United States, and the United Kingdom. Including mineral oils, the United Kingdom ranked first among Persian foreign markets. Shipments to the United States were valued at \$8,125,000

and the imports from that country at \$3,940,000.

FINANCE. The budget returns for 1928-29 showed revenues of 295,134,000 krans (average exchange value of the kran in 1929 was \$0.1007) and expenditures of 340,170,000 krans, making a deficit of 45,036,000 krans. Receipts from the sugar and tea monopolies, allocated to railway construction, and royalties received from the Anglo-Persian Oil Company, held as a treasury reserve in European banks, were not shown in the budget. The oil royalties were estimated at between £1,250,000 and £1,500,000. In the budget for 1930-31, revenues were estimated at 353,375,000 krans and expenditures at 352,988,000 krans, the anticipated surplus being 387,000 krans. The national debt on Mar. 20, 1928, included £1,638,000 (about \$7,971,000) of funded debt and 7,214,000 krans (about \$707,000) of floating debt. On June 20, 1927, the funded debt stood at £1,668,000 (\$8,117,000) and the floating debt at 7,885,000 krans (about \$770,000).

Persia's monetary system was changed from a silver to a gold standard under a law passed by the Medjliss on Mar. 18, 1930, which established the gold ryal, containing 100 dinars, as the legal monetary unit. The ryal was equivalent in value to about \$0.25. The same measure provided that commencing Mar. 21, 1930, all customs duties should be collected on a gold basis.

COMMUNICATIONS. The railways in operation in 1929 reported 230 miles of line. The principal system was the Tabriz-Julfa line, extending 126 miles, which reported gross receipts of about 5,900,000 krans (\$590,000). See under *History* below. Air lines connected Teheran with Resht on the Caspian Sea, Kasr Shirin on the Iraq frontier, and Bushire on the Persian Gulf. Telegraph lines extended 20,495 miles and telephone wire, 3734 miles. Vessels entering the Persian Gulf ports in 1928-29 totaled 12,821, of 8,381,231 net registered tons; those entering the Caspian Sea ports, 2734, of 568,058 tons. Direct steamship service between the Gulf and Atlantic ports of the United States and ports on the Persian Gulf was inaugurated in December, 1930.

GOVERNMENT. Executive power is vested in the Shah, an absolute ruler down to 1906, when he consented to a constitutional form of government with a parliament or Mejliss. The actual running of the government is in the hands of a cabinet. Prime Minister in 1930, Mehdi Quli Kahn Hedayat, appointed March, 1929. The reigning Shah, Riza Khan Pahlevi, was publicly proclaimed Dec. 16, 1925, and crowned Apr. 25, 1926.

HISTORY. New rebellions among the tribesmen of southern Persia and disputes with Turkey over the Mount Ararat boundary and with Great Britain over the Bahrain Islands were the outstanding developments of 1930. The difficulties with Turkey arose as a result of the revolt of Kurdish tribesmen on the Turkish side of the border, who were joined by Kurds from Persian territory and who were pursued over the Persian boundary by Turkish troops. Persia demanded damages for the invasion of her territory. Negotiations for a revision of the boundary in the Mount Ararat region were reported proceeding satisfactorily at the end of the year (see *TURKEY* under *History*). Drilling for petroleum by the British in the Bahrain Islands near the Arabian coast of the Persian Gulf led the Persian government to protest to the League of Nations against British control of the islands. The British made no move to abandon their drilling activities.

Despite uprisings of the southern tribesmen, caused in part by efforts of the Government to disarm them, and increasing economic difficulties, modernization of the country on Western lines proceeded rapidly under the firm guidance of Riza Khan Pahlevi. Motor highways were rapidly extended and motor transport was replacing horse-drawn vehicles in Teheran and other leading cities. Progress on the southern section of the projected Trans-Persian railway line was delayed by a dispute between the German-American company holding the concession and the Government. The concession was later reported cancelled and on October 19 the Medjliss authorized the Government to engage foreign engineers to complete that section.

The nationalistic policies of the Government were evidenced by new laws requiring all Persians residing abroad to return to Persia within one year on pain of forfeiture of both their citizenship and their property in Persia. Foreigners in Persia were required to dispose of their real estate, except dwellings, to Persian subjects within one year. To further the development of national resources, a new Ministry of National Economy was created, headed by Mirza Mohammed Ali Kham Farughi, Zoka ul Mulk, formerly Prime Minister. Prince Firuz Nosrat ud Daulah, a former Cabinet Minister, fell a victim to the Shah's vigorous efforts to eliminate corruption from the Government. Convicted of accepting a bribe, he was deprived of all political rights and sentenced to a fine of \$5800 and four months' imprisonment.

To relieve difficult business conditions and check the declining exchange value of the kran, the Medjliss authorized the adoption of a gold monetary unit (see above under *Finance*) and on Feb. 25, 1930, passed an emergency law drastically curtailing purchases from abroad. Commissions were established to fix the selling and buying rates of all foreign currencies and to pass upon applications for foreign exchange by importers. After serving 18 months as treasurer-general, Dr. Walder of Switzerland was succeeded by M. DeKerckheer, a Belgian who had reorganized the Persian customs service.

The slave trade between southern Persia and southeastern Arabia was reported to persist, despite efforts of British naval police in the Persian Gulf to suppress it. Ex-Shah Ahmed Mirza (q.v.) died at Neuilly, Paris, France, on February 27, thus bringing to an end the Qajar Dynasty established in 1794. See *EARTHQUAKES*; *KURDISTAN*.

PERSIAN ARCHÆOLOGY. See *ARCHÆOLOGY*.

PERSIAN LITERATURE. See *PHILOLOGY*, *MODERN*.

PERU, pē-rō'v. A republic on the Pacific coast of South America; bounded on the north by Ecuador and Colombia; on the east by Brazil and Bolivia; and on the south by Chile. Capital, Lima.

AREA AND POPULATION. Including the Province of Tacna, with an area of 3282 square miles, regained from Chile by the boundary settlement of 1920, the area of Peru is about 524,800 square miles. The population in 1929 was estimated at 6,187,000, as compared with 4,574,000 in 1896. Over one-half of the population were native Indians. For the period 1924 to 1928, the average annual births were 135,005 and deaths 58,398. The chief cities, with their estimated populations in

1929, were: Lima and suburbs, 316,000; Callao, 77,000; Arequipa, 70,000; Cusco, 40,000; Chiclayo, 35,000; Trujillo, 30,000; Iquitos, 25,000; Huancayo, 25,000; Ica, Ayacucho, Huarás, and Piura, 20,000 each.

EDUCATION. Like the other Andean republics, Peru has a high percentage of illiteracy. Elementary education is nominally free and compulsory between the ages of 7 and 14. For the school year 1929-30, there were 3567 primary schools, with 317,107 pupils enrolled; and 110 secondary schools, with 11,790 students. The University of San Marcos at Lima had 1531 students in 1928. There were other universities at Arequipa, Cuzco, and Trujillo.

PRODUCTION. Despite the importance of mining in the national economy of Peru, agriculture remains the basic industry, providing the means of subsistence for about 80 per cent of the population. As rainfall is negligible over the entire region from the Pacific coast to the crest of the Andes, about 80 per cent of the cultivated land is artificially watered. The Government in 1930 was constructing projects in northern Peru, which, when completed, would place nearly 500,000 additional acres under irrigation. The yields of the principal crops in 1928-29 were: Wheat, 3,186,000 bushels; rice (rough), 2,905,000 bushels; sugar cane, 3,183,000 metric tons; raw sugar, 362,000 metric tons; cotton (ginned), 107,324,000 pounds. Cacao, coffee, tobacco, corn, olives, grapes, rubber, and wool are produced also. The wool clip in 1929 totaled 10,300,000 pounds, or 2,000,000 pounds less than in 1928.

The value of mineral production in 1928 (\$120,075,000) was considerably exceeded in 1929. In the latter year the output of petroleum was 13,034,000 barrels, valued at \$81,495,000; copper, 52,085 metric tons, \$17,013,000; silver, 21,496,000 troy ounces, \$12,572,000. Other mineral products in 1929, by quantity, were: Gold, 122,141 troy ounces; lead, 21,410 metric tons; zinc, 12,425 metric tons; coal, 221,000 metric tons; vanadium ore, 902 metric tons. Guano production for the year ended Mar. 31, 1929, was 136,382 tons. Iron-ore deposits of more than 180,000,000 tons in the Province of Ica were surveyed in 1929 and 1930. Coal resources were estimated at 700,000,000 tons of anthracite and 1,329,000,000 tons of bituminous. Peruvian industries operate mainly for local consumption. They include cotton and wool textiles, flour, beer, petroleum products, cottonseed oil, leather, shoes, etc. The annual value of manufactures, including copper and oil products, was estimated at over 300,000,000 soles (about \$120,000,000). Business conditions, which had been fairly satisfactory in the first quarter of 1929, became progressively worse during the balance of the year and in 1930 as prices for cotton, sugar, and mineral products declined. The curtailment of public works and political disorders contributed to the general depression (see below under *History*).

COMMERCE. Foreign trade in 1929 was marked by increases of 7.1 and 8.5 per cent, respectively, in the values of exports and imports for consumption over 1928. According to preliminary figures, exports totaled \$134,033,000 (\$125,145,000 in 1928) and imports \$75,941,000 (\$69,987,000 in 1928). Although the values of sugar, cotton, wool, and cattle-hide exports were lower, the values of mineral exports were considerably higher than in 1928. Foreign trade slumped sharply in 1930, imports and exports during the first half of the

year falling 23 and 18 per cent, respectively, as compared with the corresponding period of 1929.

The United States furnished 42.5 per cent of all Peruvian imports in 1929 (41.1 per cent in 1928), as compared with 15.3 per cent for the United Kingdom and 9.6 per cent for Germany. The United States was also Peru's leading customer, purchasing 33.3 per cent of all exports (28.5 per cent in 1928), as against 18.3 per cent by the United Kingdom (23.9 per cent in 1928) and 6.1 per cent by Germany (8 per cent in 1928). Besides metals and ores, the chief exports are sugar, hides, cotton, and wool.

FINANCE. The budget for 1930, signed by President Leguía Dec. 30, 1929, balanced at £P14,098,719. Chief items of expenditure were: Ministry of Finance, £P5,309,201; Interior, £P2,200,862; Justice, £P1,969,128; War, £P1,625,368; Promotion, £P1,472,515. Preliminary returns for the year indicated a deficit of about \$10,000,000 (£P2,050,000). Due to the failure to formulate a new budget by the end of 1930, the existing budget was to be used as a basis of operations during the first quarter of 1931. The Peruvian pound, equivalent to \$4.8665, was replaced as the unit of currency on Mar. 27, 1930, by the sol, which had a par value of \$0.40. Government receipts during 1929 totaled 140,358,317 soles and expenditures 140,204,551 soles, as compared with budget estimates balancing at 125,836,361 soles.

The external debt of the National Government on June 30, 1929, totaled \$90,820,141 and £4,226,280, as compared with \$73,494,041 and £2,845,690 on the same date in 1928. The internal consolidated and floating debts (June 30, 1929) stood at £P4,533,651 and £P3,659,175, as compared with £P3,963,846 and £P3,663,740, respectively, a year earlier. A national savings bank, with an initial capital of £P1,500,000 was established Jan. 2, 1930.

COMMUNICATIONS. Railways in operation in 1929 extended 2810 miles, of which 642 miles were owned by the state and 2168 miles by private interests. All lines carried 5,881,000 passengers and 3,329,000 metric tons of freight during the year, the gross receipts totaling £P2,825,000 (\$11,294,000). By the end of 1929, motor roads had been completed north from Lima to the vicinity of the Ecuadorean border and south to Arequipa and the Chilean frontier, and from Cerro de Pasco north to Huánuco and south to Ayacucho. A 90-mile stretch of highway from Huarás to Huari was opened on Aug. 4, 1930. With the opening of a new air service from Lima to Chachapoyas on Aug. 14, 1930, the length of air lines in operation in the country exceeded more than 3000 miles. The state-owned telegraph system had 12,853 miles of wire in 1928. The privately-owned telephone system was greatly extended and improved during 1929 and 1930, international services being inaugurated in December, 1929. Radio telephone and telegraph stations for communication with other parts of Latin America, the United States, and Europe were under erection.

The merchant marine comprised 38 vessels of 62,100 tons in 1929. Including traffic on Lake Titicaca and the Amazon River, vessels entering the ports in 1928 aggregated 18,578,000 net registered tons.

GOVERNMENT. Under the Constitution of Jan. 18, 1920, executive power is vested in a President, elected for five years and eligible for reelection (under a constitutional amendment of 1927); legislative power rests with a congress consist-

ing of the Senate of 35 members and the House of Representatives of 110 members, all elected by direct vote for five years. The President acts though a Cabinet of seven members, appointed and removed at his pleasure. President at the beginning of 1930, Augusto B. Leguía, who was reelected Aug. 5, 1929, for the term 1930 to 1935.

HISTORY

THE DOWNFALL OF LEGUÍA. The termination of President Leguía's 11-year régime came with dramatic suddenness following a revolt at Arequipa on Aug. 22, 1930. University students and the army promptly declared for the rebels and at 3 o'clock on the morning of August 25 the dictator signed his resignation with the comment: "I hereby close another chapter in Peru's history."

A former insurance salesman, veteran of the war of 1879 with Chile, and president of the Latin American Chamber of Commerce in London, Leguía first assumed a dominant rôle in Peruvian politics when he entered the Presidency in 1908 with an ambitious programme of administrative and financial reform. Lack of funds defeated him in 1912 and he did not return to power for seven years. A candidate for the Presidency in 1919, he did not wait for the election returns but engineered a *coup d'état* with the aid of the army. A new Congress elected at his behest rewrote the Constitution and legalized his assumption of power. Amendments to the Constitution by executive decree, the deportation of hundreds of his political opponents, rigid censorship of the press, and a firm check on student agitations assured his continuance in office. He was reelected in 1924 and again in 1929, with the support of the two largest political parties in the country.

Encouraging the exploitation of Peru's resources by foreign capital, Leguía increased the Government's revenues by 120 per cent. He expended great sums in the development of railways, motor roads, harbors, irrigation projects, schools, and other public works, floating large loans in the United States when revenues proved insufficient to meet his ambitious demands. The smouldering resentment at his iron rule was fanned into flame by his refusal to withdraw at the end of his term in 1929 and by the hardships imposed upon all classes by the increasing business depression. The Peruvian pound declined steadily following the Wall Street crash of 1929, reaching the lowest point in history on Aug. 21, 1930. Unable to float new loans, Leguía was forced to curtail his public-works programme and thousands were thrown out of work. Charges of corruption in the "Leguía machine" multiplied, the settlement of the Tacna-Arica dispute with Chile left many ultra-nationalists disgruntled, while the white landowners grew increasingly restive at the President's sympathetic policy toward the Indians.

On April 24 and 25, the police revealed that they had frustrated two conspiracies to assassinate the President. At the same time martial law was declared in the Departments of Lima, Lambayeque, Junin, and Callao. The successful revolution against President Siles in Bolivia on June 27 reëchoed in Peru. The insurrection at Arequipa on August 22 was led by Col. Luis M. Sánchez Cerro, active in a revolt against Leguía in 1922 and subsequently a veteran of the Spanish Foreign Legion. Two days later the President's Cabinet resigned and on August 25, in an effort to stave off complete disaster, he resigned his power to a

junta of his military advisers headed by Gen. Manuel Ponce. It was too late to forestall the Arequipa revolt. There was rioting and street fighting in Lima. The army and the mass of the population went over to Col. Sánchez Cerro, and on August 27 General Ponce surrendered the reins of power to a second military junta, headed by the Arequipa leader as Provisional President. The naval vessel *Almirante Grau*, bearing Leguía into exile from Callao, was ordered to return. On September 1, the former dictator, seriously ill, was imprisoned on the island of San Lorenzo, in Callao Harbor, to await trial for his alleged misdeeds.

THE PROVISIONAL GOVERNMENT. One of the first moves of the Provisional government was to set up a special tribunal for the trial of Leguía and his supporters on various charges of malfeasance. The tribunal acted with deliberation. On September 15, it caused the arrest of Gen. Manuel Ponce; Oscar Leguía, nephew of the ex-President; Pedro José Radra y Gama, former Foreign Minister; Gen. José Luis Salmon, former War Minister; and other prominent military men and civilians. A list of persons to be prosecuted for "illegal enrichment," submitted to the national sanction court on November 4, was headed by the former President, his three sons, his three sons-in-law, eight members of former Leguía Ministries, and 16 others. On Dec. 31, 1930, the tribunal exonerated Commander Harold B. Grow of taking sides in the civil conflict. A citizen of the United States, Commander Grow had been engaged by President Leguía as Director General of Aviation.

Among other acts of the new régime were the abolition of the censorship, elimination of organized gambling, the lifting of martial law, and the suspension of those constitutional guarantees which obstructed the prosecution of former officials. Assurance was given that the Tacna-Arica settlement with Chile would be allowed to stand and that the new government would seek to adjust the boundary dispute with Ecuador. Recognition was extended to the new régime by the United States on September 18.

The change of administrations did nothing to relieve Peru's serious economic and financial difficulties. Within a fortnight the new Government had to cope with labor troubles at the Cerro de Pasco copper mines. On November 12, labor unrest at the mines flamed into rioting, in which 15 men, including two citizens of the United States, were killed. On the following day martial law was declared in the Departments of Lima and Junin and the Government arrested 40 strike leaders and agitators. The foreign residents of the disaffected mining towns were evacuated to Lima. A wave of nationalism, tinged with a vague sort of communism among the submerged classes, evidenced itself in the mobbing of Chinese and Japanese merchants, criticism of foreign mining interests and a demand for revision of contracts between the government and various foreign public-utility enterprises.

On November 22, the Provisional President revised his Cabinet as a result of widespread criticism directed at the Minister of Interior and other members. There were three holdovers in the new Cabinet, in which civilians assumed the portfolios of Finance and Justice. While Colonel Sánchez Cerro retained his popularity, the new Ministry caused dissatisfaction among numerous elements. The newspaper *La Prensa* was suspended November 24 for criticism of the Cabinet.

On the same day a clash between Communist and Civil party demonstrators in Lima resulted in the wounding of 15. Troops were later needed to suppress disorders in the Talara oil fields. Meanwhile the Provisional government (November 9) had issued a decree ordering a general election to choose a National Assembly. While no date for the election was fixed, it was announced that the Assembly would meet at Lima on May 2, 1931, to frame a new Constitution, enact new election laws, and "organize the executive power."

In an effort to balance the budget, the Provisional government further curtailed public-works projects, reduced the personnel of embassies and the pensions and salaries of government employees, and engaged Prof. Edwin Kemmerer of Princeton University to reorganize the financial structure. The liberal tendencies of the new régime were illustrated by a decree issued October 8 establishing a divorce law. Uruguay was previously the only South American country to recognize divorce.

FOREIGN RELATIONS. The development of major interest in Peruvian foreign relations during the year was the severance of diplomatic relations by Uruguay on September 17. The Provisional government had declared the Uruguayan Minister at Lima *persona non grata* as a result of his close friendship with former President Leguía and had refused to recognize the right of the Uruguayan Legation to give asylum to Jesus Salazar, former president of the Peruvian Chamber of Deputies, who was wanted on charges preferred by the special revolutionary tribunal. Uruguay charged that Peru had violated provisions of the Treaty of Montevideo with respect to the right of asylum of political prisoners. The dispute was finally adjusted through the good offices of Brazil and diplomatic relations were resumed on Dec. 4, 1930.

PESHAWAR. See INDIA under History.

PETROLEUM. According to preliminary figures compiled by the U. S. Bureau of Mines, 896,265,000 barrels of crude petroleum was produced in the United States during 1930. Unlike the preliminary figures of former years, the 1930 total accounted for the crude oil consumed on the leases and the net change in producer's stocks. The final figure of actual production probably would amount to approximately 898,000,000 barrels, or a decline of about 109,000,000 barrels, or 11 per cent from the 1929 output, of 1,007,323,000 barrels. Production of raw materials other than crude, that is, natural gasoline and benzol, also declined in 1930, imports of crude petroleum and refined oils were lower, and the total new supply of all oils amounted to 1,056,305,000 barrels as compared with 1,171,359,000 barrels in 1929. The trend in stocks of all oils was reversed in 1930, when a net decline of 23,296,000 barrels was recorded as compared with a net increase of 68,156,000 barrels in 1929. Exports of crude and refined oils in 1930 totaled 156,666,000 barrels as compared with 163,120,000 barrels in 1929. The daily average indicated domestic demand for all oils in 1930 amounted to 2,529,000 barrels as compared with an average of 2,576,000 barrels in 1929. This decrease reflects the decline in crude throughput at refineries.

As the year 1930 opened, production was steadily declining from the record levels of 1929. In February, production in the two leading producing States, Texas and California, increased materially and the upward trend in crude output

was resumed. Then followed four months of relatively steady output, during which the restrictive effects of proration were about balanced by the increased demand for crude by refineries. The most effective curtailment in crude output in 1930 began in July and was continued throughout the remainder of the year. The output at the close of the year was at the lowest point in over four years.

Although 1930 was a year of continuous curtailment of output in the majority of fields, the total potential production, or the total shut-in production, showed a steady increase. This resulted from the completion of large wells in such fields as Oklahoma City and Hobbs, these wells being either capped or pinched back to a fraction of their initial output. The number of oil wells completed in 1930, 11,577, compared with completions in 1929, 15,572, indicated a material falling off in drilling activity, but the total initial output of the completions in 1930 was over 50 per cent higher than in 1929.

The rank of leading crude-oil producing States in 1930 was unchanged from 1929. Texas was again first, with a production of 289,965,000 barrels, a slight drop from the previous year. Production in California declined materially but the State retained second place, with an output of 228,099,000 barrels; Oklahoma was third, with an output of 215,227,000 barrels. Practically all of the States reported decreased output in 1930; the exceptions were Indiana, Louisiana, New Mexico, New York, and Pennsylvania. The gain in production in New Mexico—from 1,830,000 barrels in 1929 to 10,172,000 barrels in 1930—was particularly notable and resulted almost solely from the development of the Hobbs field in the southeastern part of the State. Production in Arkansas continued to decline as the output of the Smackover field fell off steadily. The decrease in production in California was quantitatively greater than for any of the States, and resulted primarily from reduced output in the Santa Fé Springs and Long Beach fields. Production in Kansas was curtailed in some fields but the total output in 1930 was just under the 1929 total. Louisiana was one of the few States that showed an increase in production in 1930; this gain resulted primarily from the development of the Zwolle field. Production in Oklahoma fell off from 255,004,000 barrels in 1929 to 215,227,000 barrels in 1930. This material decline can be attributed almost solely to the decline in output of the Seminole district. Production in the Oklahoma City field increased from 8,710,000 barrels in 1929 to 33,306,000 barrels in 1930, but the latter represents only a small fraction of what the field could have produced if rigid proration had not been practiced. The trend in production in the salt-dome pools of Texas continued upward in 1930; the total output of the rest of the State, exclusive of West Texas, increased, due largely to the development of the Darst Creek field. However, these increases were more than compensated by the decline in the West Texas fields. Production in Wyoming continued to decrease in 1930, as Salt Creek, the principal field, continued to decline. The production of Pennsylvania Grade crude, produced in the States of New York, Pennsylvania, West Virginia, and in southeastern Ohio, increased from 23,736,000 barrels in 1929 to 24,482,000 barrels in 1930. This increase resulted from developments in the Bradford-Allegany district, where the producers

have built up a substantial potential through the use of the five-point method of water flooding. Stocks of crude petroleum fell off in 1930, the first decline since 1926. Total stocks of crude petroleum, on Dec. 31, 1930, amounted to 512,797,000 barrels as compared with 535,264,000 barrels on hand at the beginning of the year. This represents a decline of over 20,000,000 barrels, nearly all of which occurred in the area east of California.

Imports of crude petroleum decreased for the second successive year; the 1930 total was 62,129,000 barrels as compared with 78,933,000 barrels imported in 1929. As had been the case for several years, Venezuela ranked first as a source of supply of foreign crude, although in 1930 Colombia was the only country to show an increase over 1929.

REFINED PRODUCTS. Runs to stills of crude petroleum in 1930 amounted to 927,447,000 barrels, a decline of 60,261,000 barrels from 1929. This decrease was partly due to the shutdown of a number of refineries which were unable to operate at a profit but refiners sought to maintain a balance between the supply and the demand for gasoline. Despite the decline in crude oil processed, the production of motor fuel showed a slight increase—from 439,393,000 barrels in 1929 to 441,534,000 barrels in 1930. This increase resulted from an increase in percentage yield of from 44.0 per cent in 1929 to 47.0 per cent in 1930. Imports of gasoline amounted to 16,927,000 barrels, or nearly double the 1929 figure. Exports of gasoline amounted to 65,621,000 barrels in 1930, which represented a small increase over 1929. The indicated domestic demand for motor fuel amounted to 395,560,000 barrels, an increase of 19,561,000 barrels, or 5 per cent over 1929. During the first six months of the year, the consumption of motor fuel was approximately 9 per cent above the previous year but during the last half of 1930 the full effects of the general business depression were felt and the indicated domestic demand figures for August, October, and November were below those of the same months in 1929.

The production of kerosene was lower for the second successive year and both the exports and indicated domestic demand declined. The decrease in output exceeded the drop in consumption and stocks of kerosene were reduced to 6,883,000 barrels, the lowest point since 1923. The output of gas oil and fuel oil declined materially during 1930. Imports of fuel oil rose from 20,545,000 barrels in 1929 to 26,080,000 barrels in 1930. The trends of the statistics for the related products, lubricants and wax, in 1930, were very similar. The production, indicated domestic demand, and exports for each fell off and stocks increased.

NATURAL GASOLINE. The production of natural gasoline did not show its usual increase in 1930, the total output for the year dropping off from 2,195,400,000 gallons in 1929 to 2,172,900,000 gallons in 1930. This decline in output was closely related to the drop in crude output and the Seminole district, which showed a very rapid de-

cline in crude output, was also credited with the most material loss in the production of natural gasoline. The output of the Kettleman Hills field amounted to 156,700,000 gallons in 1930, as compared with a comparatively small amount in 1929. This increase more than compensated for the losses in production in the rest of the State and the California total for the year, 814,100,000 gallons, represented a small gain over the 1929 output. Production in Texas, the third-ranking State, increased as the result of gains in output of the Panhandle plants.

The world production of natural gasoline increased from 41,470,069 barrels in 1927 to 58,200,357 barrels in 1929, a gain of 16,730,288 barrels, or 40 per cent, according to a survey conducted by E. B. Swanson, Chief Petroleum Economist of the U. S. Bureau of Mines, through which the first complete quantitative data on natural gasoline production and utilization in foreign countries were assembled. During the period covered by the survey, United States production accounted for more than 90 per cent of the world total, but the output of foreign plants formed an increasing proportion of the total, advancing from 5.8 per cent of the total in 1927 to 8.6 per cent in 1929. The relative proportions of domestic and foreign production of natural gasoline are shown in the table at the bottom of the page.

WORLD'S PRODUCTION OF CRUDE PETROLEUM. The world's production of crude petroleum during 1930 reached a total of 1,418,723,000 barrels, a decrease of 65,318,000 barrels, or 4 per cent, from the total of 1,484,041,000 barrels recorded for 1929, according to preliminary figures compiled by E. B. Swanson of the U. S. Bureau of Mines. United States production dropped from

**IMPORTS AND EXPORTS OF CRUDE PETROLEUM
IN 1929 AND 1930 ***

| [Thousands of barrels of 42 U. S. gallons] | | | |
|--|--------|--------|--|
| | 1930 | 1929 | |
| Imports: | 62,129 | 78,933 | |
| From Venezuela | 85,081 | 50,653 | |
| From Mexico | 10,098 | 12,663 | |
| From Colombia | 14,204 | 12,620 | |
| From other countries | 2,751 | 2,997 | |
| Exports: | 23,706 | 26,401 | |
| Domestic oil: | | | |
| To Canada | 18,965 | 22,412 | |
| To other countries | 4,740 | 8,982 | |
| Shipments | 1 | 7 | |
| Foreign oil | 8,427 | 7,907 | |
| California crude oil ^b | | | |

* From Bureau of Foreign and Domestic Commerce.

^b Included in total exports of domestic crude.

**WELLS DRILLED FOR OIL AND GAS IN THE
UNITED STATES IN 1929 AND 1930 ***

| | 1930 | 1929 | |
|-------------|--------|--------|--|
| Oil | 11,577 | 15,572 | |
| Gas | 2,885 | 2,870 | |
| Dry | 6,703 | 7,914 | |
| Total | 21,165 | 26,356 | |

* From *Oil and Gas Journal* and California office of the American Petroleum Institute.

DOMESTIC AND FOREIGN PRODUCTION OF NATURAL GASOLINE

| | 1927 | | 1928 | | 1929 | |
|---------------------|------------|----------|------------|----------|------------|----------|
| | Barrels | Per cent | Barrels | Per cent | Barrels | Per cent |
| United States | 39,074,857 | 94.2 | 43,191,286 | 91.9 | 53,183,048 | 91.4 |
| Foreign | 2,895,212 | 5.8 | 3,832,265 | 8.1 | 5,017,309 | 8.6 |
| Total | 41,470,069 | 100.0 | 47,023,551 | 100.0 | 58,200,357 | 100.0 |

WORLD CRUDE-OIL PRODUCTION, 1928-1930 *

[Figures in thousands of barrels]

| | 1930 ^b | | 1929 | | 1928 | |
|--------------------------|---------------------|-------------------|---------------------|-------------------|---------------------|-------------------|
| | Quantity | Per cent of total | Quantity | Per cent of total | Quantity | Per cent of total |
| United States | 898,000 | 63.3 | 1,007,323 | 67.9 | 901,474 | 68.0 |
| Venezuela | 187,675 | 9.7 | 187,472 | 9.3 | 105,749 | 8.0 |
| Russia | 135,165 | 9.5 | 99,507 ^c | 6.7 | 84,704 ^c | 6.4 |
| Persia | 45,420 ^d | 8.2 | 42,145 ^d | 2.8 | 43,461 | 3.3 |
| Rumania | 41,680 | 3.0 | 34,689 | 2.3 | 30,773 | 2.3 |
| Netherland East Indies | 40,150 | 2.8 | 38,072 | 2.6 | 32,118 | 2.4 |
| Mexico | 39,530 | 2.8 | 44,688 | 3.0 | 50,151 | 3.8 |
| Colombia | 20,346 | 1.5 | 20,385 | 1.4 | 19,897 | 1.5 |
| Peru | 12,458 | .9 | 13,422 | .9 | 12,006 | .9 |
| Trinidad | 9,120 | .7 | 8,716 | .6 | 7,684 | .6 |
| Argentina | 8,910 | .6 | 9,391 | .6 | 9,070 | .7 |
| India, British | 8,280 | .6 | 8,866 | .6 | 8,741 | .7 |
| British Borneo (Sarawak) | 5,880 | .4 | 5,279 | .4 | 5,223 | .4 |
| Poland | 4,840 | .3 | 4,988 | .3 | 5,492 | .4 |
| Japan (including Taiwan) | 1,950 | .1 | 2,010 | .1 | 1,944 | .1 |
| Egypt | 1,910 | .1 | 1,864 | .1 | 1,842 | .1 |
| Sakhalin, Russian | 1,670 | .1 | 1,076 | .1 | 677 | .1 |
| Ecuador | 1,559 | .1 | 1,350 | .1 | 1,084 | .1 |
| Canada | 1,500 | .1 | 1,121 | .1 | 624 | .1 |
| Germany | 1,161 | .1 | 711 | .1 | 630 | .1 |
| Iraq | 750 | | 798 | | 713 | |
| France | 520 | | 497 | | 512 | |
| Czechoslovakia | 150 | .1 | 93 | .2 | 94 | .3 |
| Italy | 63 | | 44 | | 46 | |
| Bolivia | 56 | | | | | |
| Other Countries | 30 | | 34 | | 24 | |
| | 1,418,723 | 100.00 | 1,484,041 | 100.00 | 1,324,733 | 100.00 |

* Compiled by E. B. Swanson, Chief Economist, Division of Petroleum Economics.

^b 1930 figures are subject to slight revision.^c Production for fiscal year ended Sept. 30, calendar year 1929 production estimated at 103,000,000 barrels; 1928, 87,800,000 barrels.^d Net production; actual production less oil returned to structure.

1,007,323,000 barrels in 1929 to approximately 898,000,000 barrels in 1930, a decline of about 109,000,000 barrels, or 11 per cent. Production in countries other than the United States, however, increased from a 1929 total of 476,718,000 barrels to 520,723,000 barrels in 1930, an increase of 44,005,000 barrels, or 9 per cent. United States production, consequently, accounted for 63.3 per cent of the world's total, the lowest ratio since 1921.

Based on annual totals, Venezuela held its position as the second largest producing country, with Russia (U. S. S. R.) in third place. Venezuelan production held very closely to the 1929 figure, but production in Russia reached a total of 135,165,000 barrels, an increase of 31 per cent over the 1929 calendar year estimate of 103,000,000 barrels. During the latter part of 1930, it was reported, monthly production in Russia exceeded that of Venezuela. Persia, Rumania, and the Netherland East Indies all recorded increased production, while the decline in Mexican production continued, with the result that Mexico dropped from fourth to seventh place among the world's oil producing countries, with Persia succeeding Mexico in the fourth position and followed in order by Rumania and the Netherland East Indies. Among the smaller producing countries, Germany made the most marked advance, its production exceeding a million barrels for the first time in the post-war period. Bolivia was added to list of crude-oil producing countries during 1930. See CHEMISTRY, INDUSTRIAL; GEOLOGY.

PHELAN, JAMES DUVAL. An American lawyer and former United States Senator, died in San José, Calif., Aug. 7, 1930. He was born in San Francisco, Calif., Apr. 20, 1861, and was graduated from St. Ignatius College in 1881, later studying law at the University of California. While practicing his profession in San Francisco, he became prominent in the Democratic party, and was elected mayor of the city for three suc-

cessive terms, from 1897 to 1902. In 1900 he was chairman of the association which secured a new reform charter for San Francisco, and in the same year received the complimentary vote of the Democratic minority in the State Legislature for United States Senator. After the disastrous San Francisco earthquake and fire in 1906, he was one of the most efficient leaders in relief and reconstruction, being chairman of the committees of fifty and forty for these purposes and president of the Red Cross Fund. In 1913 he was appointed by the Department of State to visit various European countries and invite their governments to participate in the Panama-Pacific Exposition. He served as United States Senator from California from 1915 to 1921, during which period he was particularly active in legislation affecting Japanese immigration and ownership of land and leases on the Pacific Coast. An honorary Ph.D. degree was conferred on him by Santa Clara College in 1903, and he also served as regent of the University of California. He was the author of *Travel and Comment*, an account of his trip around the world during 1921-22.

PHENOMENOLOGY. See PHILOSOPHY.
PHILHARMONIC-SYMPHONY ORCHESTRA. See MUSIC.

PHILIPPINES, fil'i-pîns, -pêns -pîns. The largest island group of the Malay Archipelago; a possession of the United States, ceded by Spain in the Treaty of Apr. 11, 1899. Capital, Manila.

AREA AND POPULATION. Only 466 of the 7000 islands which make up the group have an area of one square mile or more. The most important islands with their area in square miles are as follows: Luzon, 40,814; Mindanao, 36,906; Samar, 5123; Negros, 4902; Palawan, 4500; Panay, 4448; Mindoro, 3794; Leyte, 2799; Cebu, 1695; Bohol, 1534; and Masbate, 1255. Total area, 114,400 square miles; population, according to the census of 1918, 10,314,310. An estimate of the population in 1928 placed it at 11,921,600, or a

density of 104.2 per square mile. The population of Manila was 285,306 in 1918; estimated at 344,200 in 1927. Other cities, with the population in 1918, were Cebu, 65,502; Legaspi, 52,756; Iloilo, 49,114. From 1923 to 1927 the average annual birth rate per 1000 inhabitants was 32.8 and the death rate 18.1. From 1924 to 1929 an average of 11,862 immigrants entered yearly, as against 1134 emigrants.

At the census of 1918 the race distribution was as follows: Brown, 9,386,826; yellow, 50,826; white, 12,399; Negro, 7623; half-breed, 34,663. About 91 per cent of the population was Christian and 932,953, or 9 per cent, were Moros and pagans. Much of the commerce and business of the islands is in the hands of Chinese, Americans, and Europeans, but Filipinos in 1930 were entering these fields in increasing numbers.

EDUCATION. Education is free, secular, and co-educational. Schools are conducted in English. In September, 1929, there were 1,163,039 pupils in the public schools, 93,618 in private schools, and 7642 students in the state-supported University of the Philippines at Manila. The total school population was 3,179,570. Teachers in the public schools in 1928 included 293 Americans and 25,958 Filipinos. About 40 per cent of the children of school age were attending school in 1930. Illiteracy was estimated at between 50 and 60 per cent and about 1,000,000 of the 12,000,000 inhabitants spoke English. Approximately 21 per cent of all expenditures in 1929 were for education.

PRODUCTION. Agriculture is the main support of the population, the value of all agricultural crops in 1928 amounting to \$236,293,000, as compared with \$251,833,000 in 1927. The cultivated area in 1929 was about 9,900,000 acres; grass and open land, 13,100,000 acres; and forest land, 46,500,000 acres. The Government owns 98 per cent of the forest lands. About 34,580,000 acres of idle land are suitable for cultivation.

The acreage and production of the chief crops in 1929 was as follows: Rice, 4,387,000 acres and 68,152,000 bushels; corn, 1,273,000 acres, 13,994,000 bushels; manila hemp (abaca), 1,198,000 acres, 469,465,000 pounds; tobacco, 204,000 acres, 100,133,000 pounds; coconuts (1928), 1,274,000 acres, 1,906,804 coconuts; coffee, 3000 acres, 2,863,000 pounds; cacao, 4000 acres, 2,675,000 pounds; sugar, 637,000 acres of cane, 1,650,200,000 pounds of raw sugar. Raw sugar accounted for nearly 33 per cent of the total value of exports in 1929. Coconuts and coconut products accounted for 32 per cent of the exports, a decrease of 2 per cent compared with 1928 resulting from damage to coconut groves by the leaf miner, an insect pest. Rubber, tea, citrus fruits, quinine, and camphor are other products. Lumber production in 1929 increased 23 per cent to a record total of about 754,000,000 board feet, and shipments increased 16 per cent to 104,697,000 board feet, valued at \$3,619,000.

Livestock in 1928 included 1,220,000 cattle, 1,950,000 carabaos (water buffalo), 10,300,000 swine, 410,000 sheep, 1,415,000 goats, and 325,000 horses and mules. Gold is the principal mineral mined, the output in 1929 totaling 139,000 troy ounces (92,000 troy ounces in 1928). There is a small production of silver, platinum, coal, chromite, and iron. The total value of mineral production in 1928 was \$6,359,000. The output of the chief manufactured articles in 1929 was: Cigarettes, 4,427,000,000; cigars, 295,000,000; copra, 1,066,000,000 pounds (for year ended June 30);

coconut oil, 434,000,000 pounds; cut timber, 754,000,000 board feet; split rattan, 5,589,000,000 pounds; unsplit rattan, 19,416,000 linear feet.

Business conditions became progressively more unfavorable after the first six months of 1929 with the continued fall in prices of export products. The depression in 1930 was particularly acute in the textile trade. In his report for the calendar year 1929, Governor General Davis stated that the per capita increase in the consumption of steel since 1903 was more than 40 per cent; in cotton goods, over 200 per cent; in meat and dairy products, over 300 per cent; wheat flour, 276 per cent; silk, 421 per cent; and paper, 450 per cent.

COMMERCE. Despite falling prices and somewhat irregular trade conditions, the total foreign trade in 1929 was valued at \$311,607,500, compared with \$300,562,500 in the previous record year of 1920. Exports totaled \$164,447,000, against \$155,055,000 in 1928, while imports increased to \$147,160,500 from \$134,657,000 in 1928. The balance of trade in 1929 was favorable by \$17,287,000. The United States in 1929 increased its share of Philippine imports, supplying 63.4 per cent of the total, as against 62 per cent in 1928. Of the total Philippine exports, 76 per cent went to the United States, as compared with 75 per cent in the previous year. China, Japan, Great Britain, Spain, and Germany were the other leading nations in the commerce of the island.

Leading Philippine exports were: Sugar, 695,868 metric tons, valued at \$53,244,000; manila hemp, 189,400 metric tons, \$28,420,000; copra, 173,570 tons, \$15,565,000; coconut oil, 190,52 tons, \$29,170,000; copra meal, 113,790 tons, \$3,790,000; desiccated coconut, 22,285 tons, \$3,540,000. Sugar, manila hemp, and coconut products accounted for 80.5 per cent of the total exports in 1929. Other important export commodities were leaf tobacco, cigars, embroideries, lumber and timber, maguery fibre, and hats.

The chief imports in 1929 were: Cotton manufactures, \$26,977,000; iron and steel product (excluding machinery and parts), \$12,830,000; petroleum products, \$9,785,000; machinery and parts, \$8,943,000; vehicles, \$7,362,000; rice, \$5,310,000; wheat flour, \$5,060,000. Preliminary estimates for 1930 placed total exports at 276,600,000 pesos (\$138,300,000) and imports at 257,200,000 pesos (\$128,600,000). Exports declined 16 per cent from 1929 and imports 13 per cent. The favorable export balance of 19,400,000 pesos was 44 per cent below 1929.

FINANCE. According to the Governor General's report, ordinary revenues in 1929 totaled 87,270,576 pesos, an increase of nearly 5,000,000 pesos over 1928, while ordinary expenditure totaled slightly less than 78,000,000 pesos, a decrease of about 800,000 pesos from the previous year (1 peso equals \$0.50 at par). The surplus at the end of 1929 amounted to over 51,000,000 pesos, of which over 41,000,000 pesos had been allotted for future expenditure, leaving a net unappropriated cash surplus of 10,021,000 pesos. The 1930 budget, as approved by the Governor General, balanced at 77,600,000 pesos, and the 1931 budget at 77,347,000 pesos. The Governor General on June 3, 1930, announced that the Government faced a deficit of 900,000 pesos in the insular and public works budgets for 1931, due to the cost of undertakings and falling revenues.

The net bonded debt increased by 1,400,000 pesos during 1929 to a total of 176,637,000 pesos.

The Philippine National Bank made a net profit of 3,265,027 pesos from operations in 1929.

COMMUNICATIONS. At the end of 1928 there were 791 miles of railway line in operation. Passengers carried during the year totaled 10,773,000 and freight, 2,170,000 tons. Gross receipts were \$6,566,000 (\$6,426,000 in 1927). During 1929 about 14 miles of new line were completed and placed in operation. At the end of 1929, there were 4200 miles of first-class highways, 2256 miles of second-class, and 1398 miles of third-class roads, a total of 7854 miles, compared with 3479 miles in 1910. A total of \$7,840,000 was expended on roads and bridges during 1929. There were (1928) 9915 miles of telegraph wire, 40,389 miles of telephone wire, and 58 radio stations. Consolidation of all private telephone interests in the Philippine Long Distance Telephone Company was effected in 1930. A radio station communicating directly with the United States was opened at Manila, Dec. 1, 1930.

Vessels in the overseas trade entering the ports in 1929 numbered 1510 of 5,617,000 net registered tons (4,325,243 tons in 1928), of which 1,763,000 tons were American, and 1,706,000 tons British. Entrances at Manila totaled 4,190,000 tons; Iloilo, 376,000 tons; and Cebu, 773,000 tons.

GOVERNMENT. Executive power rests in a governor general, appointed by the President of the United States; and in six departmental secretaries, all Filipinos except the vice governor, who is secretary of public instruction. A senate of 24 members and a house of 93 members are elected by popular vote (except for nine representatives and two senators appointed by the Governor General). A council of state, headed by the governor general, serves to link the executive and legislative branches. Governor General in 1930, Dwight Filley Davis.

HISTORY

INDEPENDENCE MOVEMENT. The Philippine independence movement made noticeable progress during 1930, gaining an important victory in the favorable report on the Hawes-Cutting bill submitted to the United States Senate by its Committee on Territories on June 2. The bill provided for the grant of complete independence to the Philippines if a plebiscite at the end of five years of autonomous, probationary government by Filipinos showed the islanders to be still in favor of separation from the United States. The vote in the committee was eight to four in favor of the bill, despite opposition to its provisions voiced by Secretary of State Stimson, former Governor General of the Philippines, and by Secretary of War Hurley. A minority report, signed by Senator Bingham, chairman of the committee, and three other members, attacked the bill as "tantamount to a proposition for immediate independence" and predicted that its adoption would result in disaster to both the Filipinos and American interests in the Philippines and the Far East. Due to the union of forces between those advocating independence for the Philippines on moral grounds and those who wished to erect a tariff wall against sugar and other Philippine products, and to exclude Filipino immigrants, the prospects for adoption of the Hawes-Cutting bill during 1931 seemed bright. Representatives of farm and labor organizations exerted powerful influence on behalf of the measure.

Members of the Philippine Independence Mission, who returned to Manila August 22 after a

sojourn of several months in Washington, reported that the outlook for independence was favorable. Secretary Stimson and others reported opposition to immediate independence on the part of Philippine business and other non-political elements. A number of events in the islands, however, showed the nationalist movement gaining rapid headway. The veteran General Emilio Aguinaldo, head of the short-lived Philippine Republic and later an advocate of the continuance of the American connection, announced on June 12 that he would accept the invitation to cooperate in the campaign for independence. The appointment by President Hoover on July 29 of Nicholas Roosevelt of New York, to be Vice Governor of the Philippines, aroused such a storm of protest in the islands that Mr. Roosevelt later withdrew his acceptance. In a book on the Philippines and articles in American journals, Mr. Roosevelt had opposed independence for the islands.

A new nationalistic party, known as the *Bagong Katipunan*, was launched by Speaker Manuel Roxas of the Philippine House of Representatives on November 15. Its programme included control of natural resources, independence, encouragement of the use of local products in place of foreign-made articles, elimination of corruption in public office, and the development of a distinctive Philippine culture. The movement won the support of powerful political leaders and of Filipino business and shipping interests. General Aguinaldo on November 22 announced himself opposed to the movement on the ground that it was political and not patriotic.

The threat to the Philippines offered by Japanese and Chinese immigration was emphasized during the year when the native Secretary of Commerce and Communications reported to Governor General Davis that lack of enforcement of the immigration laws had resulted in an influx of some 12,000 Japanese into Davao Province, where they were in many cases displacing Filipino laborers and farmers. The Japanese immigrants were admitted by customs officials as merchants, the secretary reported, but only 2000 of the 12,000 were so engaged. The laws forbid the immigration of Oriental laborers. It was pointed out that an independent Philippine government might have difficulty in excluding Japanese or Chinese immigrants without antagonizing their respective governments. Secretary Stimson, in his testimony before the Senate Committee on Territories, declared that immediate independence for the Philippines would inevitably result in the submerging of the existing Malay civilization by the Chinese, a process already far advanced in the Straits Settlements and other Malay territories.

THE ECONOMIC DEPRESSION. The necessity of strict economy in Government expenditures to offset the decreasing revenues caused by the business depression was stressed by Governor General Davis in his message delivered at the opening of the Philippine Legislature July 15, 1930. The Governor General declared that economic development was "the most important problem of the Philippines."

In the first five months of 1930, Mr. Davis reported, revenue collections fell off 11 per cent from the same period in 1929, while in May the decrease was over 24.4 per cent. His appeal for economy was coupled with a demand for the elimination of graft. He urged the diversification

of agriculture, encouragement of foreign investments, and inter-island air services as needed steps in the islands' development.

OTHER EVENTS. In April, a typhoon demolished 13 towns in Leyte Province and seriously damaged the coconut groves of that region. Moro outlaws fought off attacks of Philippine constabulary units in Lanao Province, Mindanao Island, during May and June, killing one officer and four soldiers and wounding three officers and 15 soldiers during a clash on May 7. Governor General Davis on December 19 dismissed the Provincial Governor of Davao for irregularities in office.

Consult Dean C. Worcester, *The Philippines, Past and Present*, New York (1930); Nicholas Roosevelt, "Independence and Peace in the Pacific," *Foreign Affairs*, April, 1930.

PHILLIPS UNIVERSITY. A coeducational institution of higher learning at University Station, Enid, Okla.; founded in 1907. The enrollment for 1929-30 in all departments was 861. The faculty numbered 39. The productive endowment amounted to \$548,830. The library contained 19,158 volumes, exclusive of public documents. President, Isaac Newton McCash, D.D., LL.D.

PHILOLOGY, CLASSICAL. The best way to gain a fair conception of the more important contributions to classical philology is to examine lists of articles and books, or abstracts of them, or both, given in certain periodicals—*The American Historical Review*, *The American Journal of Philology*, *Antiquity*, *The Classical Journal*, *The Classical Quarterly*, *The Classical Review*, *The Classical Weekly*, *Historical Outlook*, *History*, *Athenaeum* (published at Pavia, Italy), *Bulletin Bibliographique et Pédagogique du Musée Belge* (a companion to *Le Musée Belge*, *Revue de Philologie Classique*), *Philologische Wochenschrift*, *Gnomon*, and *Revue de Philologie*. The reviews, too, in these periodicals are very helpful. Especially valuable is *Bibliotheca Philologica Classica*, *Beiblatt zum Jahresbericht über die Fortschritte der Klassischen Altertumswissenschaft*, whose aim is to cover all publications, both articles and books (except such as are definitely pedagogical in character), in the whole field of classical philology. No attempt is made, however, to indicate the relative importance of items listed. A very valuable feature of this work is the "Namenverzeichnis," which gives in alphabetical order the names of the scholars whose articles or books are named in the body of the work, with references back to the numbered items which describe articles or books. For a notice, by C. Knapp, of vols. liii-iv, covering the years 1926, 1927, 1928 see *The Classical Weekly*, xxiii, pp. 158-159.

The Year's Work in Classical Studies, published in England, lists material that appears between July 1 and June 30, under such captions as "Greek Literature," "Latin Literature," "Greek History," "Roman History," "Greek and Roman Religion," "Ancient Philosophy," "Greek Archaeology and Excavation," "Italian Archaeology and Excavation," "Papyri," and "Roman Britain."

To *The Loeb Classical Library* (see YEAR BOOKS, 1911-1929) additions were made, on the Greek side, of versions of Aristotle, *Physics* (the first of two volumes), P. H. Wicksteed and F. M. Cornford; Arrian, *History of Alexander and India*, E. I. Robson; Athenaeus, *Deipnosophistai* (the fourth of seven volumes), C. B. Gulick; Josephus, *Jewish Antiquities* (the fourth of eight volumes: Books i-iv of the *Jewish Antiquities* are here translated), H. St. J. Thackeray; Plato,

Timaeus, *Critias*, *Cleitophon*, *Menaeus*, *Epistles*, R. G. Bury; Plato, *Republic* (the first of two volumes, covering Books i-v), P. Shorey; Strabo, *Geography* (the seventh of eight volumes covering Books xv-xvi), H. L. Jones. On the Latin side there were added translations of Cicero *Pro Quinctio*, *Pro Roscio Amerino*, *Pro Rosci Comoedo*, *Contra Rullum*, J. H. Freese; Florus *Epitome of Roman History*, E. S. Forster, and Nepos, J. C. Rolfe (in one volume); Livy (the fifth of thirteen volumes, covering Books xxi-xxii), B. O. Foster; Ovid, *The Art of Love*, and *Other Poems*, J. H. Mozley. On *The Loeb Classical Library* see *The Classical Weekly*, vol. xxiv pp. 1-4, 9-11, 17-18.

The great *Lexicon Plautinum*, by G. Lodge, was very greatly advanced by the publication of vol. ii, parts vi and vii, pages 481-672. This part contains the articles "Quidem . . . Sapiō." Sixteen hundred pages of this monumental work have appeared; it is gratifying to know that the manuscript of the remaining 190 pages is ready. It is hoped that the remaining two parts will be published in 1931. This work is the most extensive undertaking that any American classical scholar has thus far, single-handed, essayed and accomplished.

In *The American Journal of Philology*, li, appeared "Bucephalas and his Legend," A. R. Anderson; "When did Alexander Reach the Hindu Kush?" C. A. Robinson, Jr. (the author thinks "that Plutarch's statement of a four months' halcyon by Alexander in Persis should be cut to seven weeks, so that Alexander may spend the winter of 330-29 at the Hindu Kush, and the next two winters at Zariaspa and Nautaca respectively"). "A Yale Papyrus and a Reconsideration of the Chronology of the Year 238 A.D.," P. W. Townsend; "The Authenticity of Letter 41 in the Julio-Basilian Correspondence," Sister Agnes Clare Way (there is "a growing tendency of scholarship, based on the scores of subject-matter and manuscript tradition, to consider the letter unauthentic"); "Tradition in the Epithalamium," A. L. Wheeler (material preserved by certain Greek rhetoricians, material derived from lost Greek epithalamia, was used by Roman poets; through a study of this material we gain increased knowledge of the epithalamium); "On the Use of the Term 'Ellipsis,'" H. C. Nutting; "Lucretius and Thomson's Autumnal Fogs," Gertrude G. Cronk; "Hittite and Indo-European Nominative Plural Declension," W. Petersen; "Vocalic Alternation in the Disyllabic Base in Indo-European," Louis H. Gray; "Chariton and his Romance from a Literary-Historical Point of View," B. E. Perry ("Chariton . . . is the truest spokesman of the culture upon which the Greek erotic romance in its beginnings rests . . ."); "The *Lex Lutatia* and the *Lex Plautia De Vi*," J. N. Hough; "Authorship of the *Ciris*," R. B. Steele (the *Ciris* is one of the poems of the *Appendix Vergiliana*; Professor Steele inclines to the view that the *Ciris* is a youthful work of Vergil); "Roman Census Statistics from 508 to 225 B. C.," T. Frank; "Vergil and Pollio," H. Bennett; "Particularism in the Roman Empire during the Military Anarchy," C. E. Van Sickle; "Medea's Waxing Wrath," J. E. Harry.

From *Classical Philology*, xxv, may be mentioned "The *Babylonians* of Aristophanes," G. Norwood; "Petronius in the Mediaeval *Florilegia*," B. L. Ullman; "The Silkworm of Aristotle," W. T. J. Forbes; "Boccaccio's Knowledge

of the Life of Vergil," C. G. Osgood; "Virgil's Knowledge of Greek," H. R. Fairclough (at the end of this paper the author asks, "can we longer tamely submit to the reckless and unfounded assertions that have been published by certain scholars that Virgil had an indifferent knowledge of Greek?"); "The Magic Elements in Roman Prayers," E. E. Burriess; "Contrast and Repetition as Devices in the Technique of Character Portrayal in Roman Comedy," O. L. Wilner; "How Thucydides Wrote His History," W. K. Prentice; "The Text of Petronius in the Sixteenth Century," B. L. Ullman; "Extenuating Circumstances in Athenian Courts," A. P. Dorjahn; "Episodes in Old Comedy," G. Norwood; "Silence in Tragedy and the Three-Actor Rule," A. C. Schlesinger (the author's conclusion is ". . . I hope this paper may help to lay the ghost of the three-actor rule by removing some apparent evidence for it. May the attention of the reader be directed instead to the lean effectiveness of the Greek dramatic masterpieces"); "Senatorial and Civil Years in Athens," B. D. Meritt (by 407-406 "the old senatorial year had ceased to exist as a separate entity. When it passed out of existence it could, of course, no longer be used as a chronological framework for the records of state expense . . ."); "Livy's Account of the Equites," H. Hill ("... Livy conceived of a double grouping of *equites* under the republic: first, the eighteen centuries of *equites equo publico*; and, second, the *equites equo privato*, whose qualification was the *census* . . ."); "The Athenian *Proedroi*," S. B. Smith; "St. Chrysostom and the Greek Philosophers," P. R. Coleman-Norton; "Ancient Texts of Terence," L. W. Jones; "Interrelation of the Latin Poets Under Domitian," R. B. Steele; "Mediaeval Latin Vocabulary, Usage and Style: As Illustrated by the *Philobiblon* (1345) of Richard De Bury," C. C. Mierow; "The Wooden Horse," W. F. J. Knight ("... The wooden horse of Troy was a magical, not a tactical device, intended to break the magical potency of the ring-wall of Troy . . .").

In *The Classical Journal*, xxiv, xxv appeared "Dionysius of Syracuse—Financier," C. J. Bullock; "The Vogue of Ovid since the Renaissance," R. H. Coon; "The Nationality of Vergil," Leanora R. Furr (the author seeks to show, by an examination of Latin inscriptions, that the *Gens Vergilia* and the *Gens Magna*, the *gentes* respectively of Vergil's father and mother, were of Samnite origin; she refuses to believe that Vergil was of Celtic origin. She concludes thus: "... Vergil is a genuine Italian singing the glories of his own race"); "Tennyson and Lucretius," O. L. Wilner; "The Earliest Prose Work of Athens," G. Norwood; "Plato, Artist and Puritan," W. R. Agard; "Political Campaigns in Roman Municipalities," Eva M. Sanford; "Light Reading from the Papyri," Adelaide B. Hawes (by an examination of *Oxyrhynchus Papyri* i-xvii, 1898-1927, the author seeks to throw light on the life of the Greek common people); "The Conflict of Languages in the Roman World," R. J. Bonner; "Some Mediaeval Conceptions of Vergil and their Origins," E. T. Sage; "Vergil's Detractors," N. W. DeWitt; "Zoologically Speaking," Lillian B. Lawler (a title defective at once in taste and in syntax for an article in which the author discusses the attitude of the Romans toward animals); "Navigation on the Tiber," J. E. Eubanks; "What do we know About Vergil?," T. Frank; "The Aeneid as a Work of Art," J. W.

Mackail; "Vergil and the Tragic Drama," N. W. DeWitt; "Virgil, an Appreciation," T. R. Glover; "Virgil the Magician," E. K. Rand; "The Present Status of the Virgilian Appendix," H. W. Prescott; "The Later Tradition of Vergil," M. B. Ogle; "The Influence of Virgil Upon the Forms of English Verse," H. R. Fairclough; "Some Remarks on the Character of Aeneas," C. Knapp; "The Function of the Gods in Vergil's Aeneid," Dorothea C. Woodworth; "The Development of the Character of Aeneas," G. Howe; "Catullus—A Pivotal Personality," F. M. Debatin.

The Classical Weekly, xxiii-xxiv, contained the following articles: "Vergil's Treatment of Trees in the Aeneid," T. W. Valentine; "The Objects of a Roman's Prayers," E. E. Burriess; "The Art of Terence," L. A. Post; "The Influence of Isocrates' Political Doctrines on Some Fourth Century Men of Affairs," M. L. W. Laistner; "Homeric Litotes," F. P. Donnelly; "Marcus Caelius Rufus," M. M. Odgers; "Imagination in the Study of the Classics," G. Lodge; "The Literary Interpretation of Caesar," G. Lodge; "The Loeb Classical Library—Recent Additions," C. Knapp; "Greek and Roman Weather Lore of Winds," E. S. McCartney; "Schiller and Vergil," E. S. Gerliard; "Homer and Sir Arthur Conan Doyle," S. E. Bassett (by a study of a posthumous story by Sir Arthur Conan Doyle Professor Bassett disposes of the criticism directed against inconsistencies in Homer; in a subjoined comment Prof. C. Knapp applies the argument to the inconsistencies in the Aeneid); "The Use and Worship of Fire Among the Romans," E. E. Burriess; "Ambrose and Cicero," M. B. Emeneau; "Vergil and the Roman Forum," H. F. Rebert.

In *Transactions and Proceedings of the American Philological Association*, lx, which contains the papers read before the Association at its meeting of December, 1929, the following articles appeared: "The Preludes to Plato's *Laws*," L. A. Post; "The Relationship of Hittite to Indo-European," E. H. Sturtevant; "The Fate Motive and its Echoes in the *Oresteia*," J. W. Pugsley; "Homer and the Cult of Heroes," R. K. Hack; "The Murderers of Laius," W. C. Greene; "Tiberius' Refusal of Divine Honors," Lily R. Taylor; "The Sociative Ablatives," B. M. Allen; "Plutarch and the Ruler Cult," K. Scott; "The Character of Clytemnestra in the *Agamemnon* of Aeschylus," Florence M. B. Anderson; "Scheria and the Phaeacians," A. D. Fraser; "The Manuscripts of the *Integumenta* on the *Metamorphoses* of Ovid by John Garland," L. K. Born; "The Distinctive Character of Enjambement in Homeric Verse," M. Parry; "Evidence from Early Roman Religion Concerning the Growth of the City," Inez G. Scott.

From the *Philological Quarterly*, ix, we may mention "Die Urform des Einganges in der Attischen Tragödie," W. Nestle; "Aristotle's Pity and Fear," M. T. Herrick; "Hypermetric Lines and Interlinear Hiatus in Latin Hexameter Verse," Alice H. Carpenter; "Taylor, Aristotle, and Blake," F. E. Pierce.

In England the more accessible depositories of the results of classical study are *The Year's Work in Classical Studies* (see the second paragraph of this article), *The Classical Quarterly*, and *The Classical Review*. The articles in *The Classical Review* are very numerous, and are in consequence very short. Their combined value, however, is great. From *The Classical Quarterly*, xxiii, we mention "Ancient Italian Beliefs Concerning the

Soul," H. J. Rose; "Nerikos," A. Shewan (the author holds that there was only one town with the name Nerikos; he considers various views concerning the location of that one town); "An Alleged Anomaly in Pindar's Metric," C. M. Bowra; "Terence Quotations in Servius," J. D. Craig; "Plato and Allegorical Interpretation," J. Tate ("... Plato, far from giving an impetus to allegorism, actually placed a curb on it by compelling those who respected the poetic traditions to admit that the poets often expressed mere opinion and not truth..."); "Anaxagoras' Theory of Matter," F. M. Cornford; "The Year of the Armistice, 423 B.C.," H. T. Wade-Gery; "Priscian's Quotations from Terence," J. D. Craig; "Historical Elements in the Story of Coriolanus," E. T. Salmon; "The Dating of Plautus' Plays," W. B. Sedgwick; "The Seventh and Eighth Platonic Epistles," L. A. Post.

There remains only space enough to mention a few of the more important books that have come to the writer's attention. Since it is, in general, clear from its title to which field of classical philology each book belongs, the books are listed in the alphabetical order of their authors' names. In a few instances a needed word of commentary is added:

W. Aly, *Formprobleme der Frühen Griechischen Prosa*; W. N. Bates, *Euripides, A Student of Human Nature*; F. Beckmann, *Geographie und Ethnographie in Caesar's Bellum Gallicum*; C. H. Beeson, *Lupus of Ferriceras as Scribe and Text Critic* (this is a study of Lupus's autograph copy of Cicero, *De Oratore*; the book presents also a facsimile of the manuscript, Harleianus 2736); R. J. Bonner and Gertrude Smith, *The Administration of Justice from Homer to Aristotle*, vol. i; C. M. Bowra, *Tradition and Design in the Iliad*; J. Burnet, *Essays and Addresses*; A. Calderini, *Aquileia Romana: Recherche di Storia e di Epigrafia*; R. G. Collingwood, *The Archaeology of Roman Britain*; P. E. Corbett, *The Roman Laws of Marriage*; H. R. Fairclough, *Love of Nature Among the Greeks and the Romans*; T. Frank, *Life and Literature in the Roman Republic*; E. W. Gardiner, *Athletics of the Ancient World*; C. B. Gulick, *Goodwin's Greek Grammar*, revised; M. T. Herrick, *The Poetics of Aristotle in England*; L. Herrmann, *Les Masques et les Visages dans les Bucoliques de Virgile*; R. Hope, *The Book of Diogenes Laertius, Its Spirit and Its Method*; M. A. Johnstone, *Etruria Past and Present*; G. Lugli, *The Classical Monuments of Rome and its Vicinity*, vol. i, translated from the Italian, by G. Bagnani; J. W. Mackail, *The Aeneid, Edited with Introduction and Commentary*; A. Meillet, *Aperçu d'une Histoire de la Langue Grecque; Mélanges Paul Thomas, Recueil de Mémoires Concernant La Philologie Classiques* (this volume, containing over 750 pages, is a tribute to a distinguished classical scholar, Paul Thomas, Professor Emeritus in the University of Ghent). The seventy-eight papers cover a wide variety of topics. Two are by Americans: "Notes on the Andria of Terence," Charles Knapp, of Columbia University, and "Les Idées de Platon et l'Évolution d'Aristote," Paul Shorey, University of Chicago.

C. W. E. Miller, *Selections from the Brief Mention of Basil Lanneau Gildersleeve* (this splendid work consists of selections from the comments which, under the title of "Brief Mention," Professor Gildersleeve, who, for forty years, was editor of *The American Journal of Philology*, used

to make, in issue after issue, on classical matters. The range of these comments was extraordinary; they had a profound interest and a great charm. Many a reader, on receiving his copy of *The American Journal of Philology*, looked first to see what was to be found there by way of "Brief Mention." These comments were, in effect, often reviews of books and articles, especially such as dealt with Greek syntax and Greek authors); J. S. Morgan, K. McKenzie, C. S. Osgood, *The Tradition of Vergil: Three Papers on the History and Influence of the Poet*; J. L. Myres, *Who Were the Greeks?*; B. Nardi, *The Youth of Virgil*, Translated from the Italian by B. P. Rand; A. Neuberger, *The Technical Arts and Sciences of the Ancients*, Translated from the German by H. L. Brose; E. K. Rand, *A Walk to Horace's Farm, and In Quest of Virgil's Birthplace*;

I. A. Richmond, *The City Wall of Imperial Rome*; Gisela M. A. Richter, *The Sculpture and the Sculptors of the Greeks*; G. McN. Rushforth, *Latin Historical Inscriptions Illustrating the History of the Early Empire*, second edition; Catharine Saunders, *Vergil's Primitive Italy*; M. Schuster, *Tibull-Studien*; H. H. Scullard, *Scipio Africanus in the Second Punic War*; L. R. Van Hook, *Greek Life and Thought*, revised edition; A. Walde, *Lateinisches Etymologisches Wörterbuch*, third edition, by J. B. Hofmann (two out of ten parts have appeared); W. L. Westermann, *Upon Slavery in Ptolemaic Egypt*; W. Will, *Vergil*; W. J. Woodhouse, *The Composition of Homer's Odyssey*.

PHILOLOGY, MODERN. In the survey presented in the 1929 YEAR BOOK, attention was called to the fact that because the spirit of internationalism was rapidly becoming the prevailing tendency of modern times—due in the main in the linguistic field to the extraordinary progress made by the radio, which renders uniformity of speech imperative—the struggle for predominance was confined to a few major languages, with English in the van, while the vast number of minor languages and dialects were threatened with swift and total annihilation. The natural consequence of the above-mentioned tendency was, as was anticipated in our survey of 1929, a revival of nationalism, which, interpreted linguistically, signifies merely an effort on the part of the minor nationalities to preserve the speech of their forebears.

Hardly had the YEAR BOOK gone to press when M. Tesnière, of the University of Strasbourg, whose many years of study of this subject assured him the rank of authority, stated that the injection of nationalism and race-feeling into the struggle for linguistic precedence had not only served to add coals to the fires of bitter political strife in Europe, but had further rendered the linguistic map as complicated, if not more complicated than ever.

Thus in the latter weeks of 1929 the Belgian Government resigned when it found itself unable to solve the problem as to whether French or Flemish should be the language of the University of Ghent. The new government of Premier Jaspas, after devoting its entire attention to this linguistic question for several weeks, finally yielded to the demands of the champions of Flemish and voted on February 27 to convert the University of Ghent into an entirely Flemish institution. To an outsider this appeared to be a very just solution to this vexing problem since the other state university of Belgium, Liège, was French-speaking, while in the two leading municipal uni-

versities of the country, Brussels and Louvain, the official language was also French. Until this decision was rendered, then, the Flemish population, though in the majority, could claim no state university as their cultural centre. Furthermore, since judges—and hence advocates—as well as other public officials previously had been educated only in the use of the French language, the Flemish-speaking element of the population, consisting mainly of peasants, had little to hope for in the way of public justice. Though Premier Jaspar urged in his address to Parliament that every high official should be bi-lingual, he nevertheless foresaw the difficulties presented by the language question and, therefore, prudently remarked that, since it was difficult for a Walloon to learn to read Flemish, the Flemish champions could not reasonably expect Walloon officials to be able to read documents in Flemish before some time within the first twenty years of their public service.

It is sad to relate, but on all sides we behold evidences of the destruction of linguistic barriers and the rapid disappearance of minor languages and dialects. That philologists are fully aware of this regrettable situation may be seen in their strenuous efforts to save what they can from the cataclysm with which they are threatened. They are therefore stressing the study of secondary languages concomitantly with the study of the primary languages in the various countries wherein more than one language is spoken. In this way they hope that at least some of the vestiges of the ancient dialects may be preserved. To the Linguistic Society of America belongs the credit of having sought to meet this problem in the most satisfactory as well as practical manner. Though only six years old this Society has achieved the most important results of any similar organization in America, or, for that matter, in any other country. Oblivious to all racial and linguistic differences this Society inaugurated its work with the publication of a quarterly review, *Language*, devoted to the study of all languages. This was followed by the creation of a series of monographs, free of all discrimination against dialects no matter how insignificant they may appear. But the greatest achievement of the Society lay in the inauguration, at Yale University in the summer of 1928, of the Linguistic Institute which had no parallel in any country.

The third and most successful session of the Institute was held at the College of the City of New York from July 7 to August 15, 1930. Thirty-three courses were offered, in all of which there were registrants save in Old Spanish and Turkish. Besides such general subjects as Introduction to Linguistic Science, Psychology of Language, and Study of Dialects, of which the teachers were Professors Sturtevant, Esper, and Roedder respectively, the offering included the following courses, the names of the teachers being listed in parentheses: Sanskrit and Pali (both by Prof. Edgerton of Yale); Comparative Grammar of Greek and Latin (Prof. Bolling of Ohio State University); Greek Dialects (Prof. Sturtevant of Yale); The Language of the Homeric Poems (Prof. Bolling); *La Langue et le Style latins* (Prof. Jules Marouzeau of the University of Paris); Ocean and Umbrian and Linguistics in High School Latin (Dr. Kerns of New York University); The Classical Element in English (Prof. Richardson of Yale); Vulgar Latin (Prof. Muller of Columbia); Old French (Dr. Winifred Sturdevant of Columbia);

Old and Middle Irish (Prof. Gerig of Columbia); Gothic and Old Norse (Prof. Schurt of George Washington University); Old High German (Prof. Roedder of the College of the City of New York); German Etymology and Old Saxon and Old Frisian (Prof. Prokosch of Yale); Old English (Prof. Lotspeich of the University of Cincinnati); Middle English (Prof. Reuning of the University of Breslau); History of the English Language (Prof. Lotspeich); American English (Prof. Kurath of Ohio State University); Lithuanian and Church Slavonic (Prof. Senn of the University of Kaunas, Lithuania); Comparative Grammar of the Semitic Languages, Hebrew and Arabic (Prof. Blake of Johns Hopkins University); and Finnish (Dr. Olli of the College of the City of New York).

Another indication of the rapid trend of events—impossible to anticipate even as late as three years previously—might be seen in the following: In 1925, as mentioned in our survey of that year, Prof. Edward Sapir, of the University of Chicago, published in the *Romanic Review* (XVI, 1925, 244-256) an article entitled, "Memorandum on the Problem of an International Auxiliary Language." Therein he urged the creation of a new international auxiliary language embodying the basic principles of all the leading languages of the world and adapted to meet the requirements of modern civilization. The article, though signed by Professors Leonard Bloomfield, Franz Boas, J. L. Gerig and G. P. Krapp, and distributed widely by the International Auxiliary Language Association whose headquarters are at New York, met with no immediate response of any importance. However, in March, 1930, exponents of six rival international languages—Esperanto, Ido, Nov-Esperanto, Occidental, Novial, and Latin without Inflections—held a meeting on linguistic research at Geneva under the chairmanship of the venerable and distinguished Otto Jespersen of Denmark.

According to Mrs. Dave H. Morris of New York, who was the sole representative of IALA at the meeting, it was the consensus of opinion of those present that one neutral language, secondary to all national languages and in conflict with none, be developed and established in accordance with general principles proposed by Professor Sapir. The experts further recommended that a committee selected by IALA undertake the task of preparing this new language. Accordingly announcement was made at the annual meeting of IALA held at the home of Mrs. Morris in New York on May 19 that preliminary work along these lines had been begun.

"That the need of such a language is now greater than ever," says the July-September issue of the *Romanic Review* (p. 281), "may be seen from the reports of the World Power Conference held at Berlin during June 16-25. According to the *New York Times*, the 4000 delegates to this conference hailed from more than fifty different countries. As a consequence of the number of tongues spoken there, it was found necessary to install head-telephones in the conference room, over which the speeches were translated into six different languages." It was obvious, therefore, that international language experts now realize the utter hopelessness of attempting to impose on the modern world a language that has emerged suddenly "full-armed," like Athena, from the brain of a single scholar. Furthermore, it required no prophet to foresee that, unless immediate co-

operative action were resorted to, unskilled persons would hasten to supply this need in much the same way as they have rather heedlessly created the technical terms required by most recent inventions such as the aeroplane, moving and talking pictures, radio, etc. It is to be hoped, therefore, that this projected language will become a reality.

GENERAL—Larz Ringbom's *The Renewal of Culture* (New York) is a translation from the Swedish of this work on the history and development of culture. Ales Hrdlicka's *The Skeletal Remains of Early Man* (Washington, D. C.) is a revised and enlarged edition of a study published in 1914 by the Smithsonian Institution under the title *The Most Ancient Skeletal Remains of Man*. G. Eliot Smith's *Human History* (New York, 1929) consists of a history of man's cultural development. E. M. Whishaw's *Atlantis in Andalusia* (London) supplies evidence of an advanced civilization prevailing in Spain at least 10,000 years B.C. W. Kirkconnell's *The European Heritage* (New York) consists of a synopsis of European cultural achievement as traced through racial stocks in some fifty languages and dialects. E. A. Speiser's *Mesopotamian Origins* (Philadelphia) comprises a study of the basic population of the Near East, issued by the University of Pennsylvania. F. Howell's *Aryan Blood in Modern Nations, and the Howells* (Boston) presents an account of the history of the Aryan race down to the formation of modern nations, supplemented by a history of the Howell name and a genealogy of the family. H. E. Proctor's *A Peculiar People or a Nation and a Company of Nations* (London) may be also called a peculiar book since the author attempts therein to link the ancient Britains to ancient Chaldaea. A. Mawer's *Problems of Place-Name Study* (Cambridge, Eng.) is a thoroughly scholarly work containing certain general methods that may be applied to the study of place-names.

In folklore and primitive religion we have A. H. Krappe's *The Science of Folklore* (New York), a comprehensive and critical introduction to the subject; Sir J. G. Frazer's *Myths of the Origin of Fire* (ib.), a valuable study by the author of the famous *Golden Bough*; Padraic Colum's *Orpheus: Myths of the World* (ib.), an anthology of myths belonging to various civilizations; E. Bendann's *Death Customs* (ib.), a new volume in "The History of Civilization" series; W. R. Dawson's *The Bridle of Pegasus* (London), consisting of studies in magic, mythology and folklore; H. R. Evans' *History of Conjuring and Magic* (Kenton, Ohio), a revised edition of a brief study of its history from the earliest times to the end of the eighteenth century; Geza Roheim's *Animism, Magic and the Divine King* (New York), being a study of cults, customs, charms, philtres, the meanings of myths and legends and the development of religions; G. H. Luquet's *Art and Religion of Fossil Man* (New Haven, Conn.), a study showing that primitive man believed implicitly in the survival of the dead, translated from the French by J. T. Russell, Jr., with a preface by G. G. MacCurdy; Odell Shepard's *The Lore of the Unicorn* (Boston), an attempt to trace the history of the fabulous animal through myths and legends of many peoples; and F. E. Williams' *Orokaiva Society* (London), being a study of the native people of Papua, with special emphasis on their ritual and their religious belief.

With relation to more modern religion we have F. J. Badcock's *History of the Creeds* (New York),

a study in religious history; and, of course, one cannot omit studies devoted to the ever-active adversary, without whose pernicious negative influence all positive religious thought might be impossible, i.e. the Devil. Father Louis Coulange's *Life of the Devil* (ib.), translated from the French, traces his history as well as his influence in the evolution of Christianity, while two French psychologists, Maurice Garçon and Jean Vinchon, give in *The Devil* (ib.), translated by H. Guest, a historical, critical, and medical study of the Evil One, for they consider belief in him to be a pathological problem.

This section may be closed with mention of the following important works: C. Wissler, *Introduction to Social Anthropology* (ib.), a discussion of the social aspects of primitive civilizations; W. C. D. Dampier-Whetham, *History of Science* (ib.), treating the development of scientific thought and its relation to philosophy and religion; M. Cary and E. H. Warmington, *Ancient Explorers* (ib., 1929), containing a study of the means and methods of ancient pioneers of travel; D. Hunter, *Paper Making through Eighteen Centuries* (ib.), presenting a history of the subject more comprehensively than in the same author's previous work on *Old Paper Making*; A. Neuburger, *The Technical Arts and Sciences of the Ancients* (ib.), relating their knowledge of mining, metal- and wood-work, agriculture, ceramics, etc.; and W. R. Dawson's interesting study of the history of ancient medicine entitled *The Beginnings: Egypt and Assyria* (ib.), which reveals that even in those pre-Christian times hartshorn, castor oil, cummin and coriander were used.

REFERENCE WORKS. Whatever may be our opinion regarding contemporary contributions to philology, literature, art, etc., there is no doubt that this epoch may be characterized, like that of fourteenth-century France, as one of great compilations, such as works of reference, dictionaries, etc. To mention but a few we have T. L. Stedman's *Practical Medical Dictionary* (New York) in an eleventh revised edition; J. Thomas's *Universal Pronouncing Dictionary of Biography and Mythology* (Philadelphia) in a fifth edition, revised and enlarged; *Crowell's Dictionary of Business and Finance* (New York) in a third revised edition; A. Macz and M. R. Paul's *Dictionary of Color* (ib.) which contains a list of all the color names recorded in the English language as well as a guide for relating colors with their names; Florence H. and H. E. Wilson's *Bibliography of American Biography* (Philadelphia); and the first volume of the *Dictionary of Industrial Administration* (London), comprising the organization, administration and management of modern industry, to be published in two volumes, edited by John Lee.

ARCHAEOLOGY. Excavations made in the past few years by archaeologists the world over have not only added much to our knowledge of ancient art and life, but have also contributed valuable information to hitherto little known languages. A good example may be seen in Hittite, to the study of which these discoveries have brought new zest. Inscriptions recently uncovered have in fact almost revolutionized our knowledge of this ancient people and its language. A few general works relating to this field may, therefore, be of interest. The ninth revised edition of C. M. Coburn's *The New Archaeological Discoveries* (New York, 1929) reveals their bearing upon the New Testament, and especially upon the life and

times of the primitive church. R. V. D. Magoffin's *Magic Spades* (*ib.*) is a popular survey of the recent great discoveries in this field. G. L. Robinson's *The Sarcophagus of an Ancient Civilization* (*ib.*) relates principally to the finds at Petra, Edom and the history of the Edomites. H. H. von der Osten and E. F. Schmidt's *The Alishar Huyuk* (Chicago, Ill.) is the first of two volumes which are to present the discoveries made in the first season's excavations at the Alishar Mound in Anatolia. C. Leonard Woolley's *Dead Towns and Living Men* (New York) contains the record of this famous archaeologist's adventures in the buried cities of the ancient world. The same scholar's *Ur of the Chaldees* (*ib.*) supplies a survey of seven years of excavation carried on by him as Director of the Joint Expedition of the British Museum and the Museum of the University of Pennsylvania to Mesopotamia. Finally *The Field Museum-Oxford University Expedition to Kish, Mesopotamia* (Chicago, Ill., 1929) contains an account of archaeological findings made in that field from 1923 to 1929. See article on **ARCHAEOLOGY**.

NON-INDO-EUROPEAN—Mention should be made here of *Confucianism* (New York) in which Prof. F. Starr, of the University of Chicago, presents not only a lucid and simple account of the life and thought of the great Chinese philosopher but also the development and changes that his ideas have undergone in modern times. Other works include L. C. Arlington, *Chinese Drama from the Earliest Times until Today* (Shanghai), a panorama of its history, including synopses of thirty Chinese plays; Kate Buss, *Studies in the Chinese Drama* (New York), a brief informative account; B. Marsh, *China and Japan in Our Museums* (Chicago), which contains the beginnings of a survey of resources available in North America for a study of the Orient; and finally W. Cohn, *Chinese Art* (New York), comprising a study of Chinese architecture, bronzes, sculpture, ceramics, etc. In *Shambhala* (*ib.*), the well-known artist, N. Roerich, provides a number of legends, parables, and notes that he collected in the course of his journey through Central Asia and especially Tibet.

Turning now to Africa, we have Prof. W. L. Westermann's interesting work entitled *Upon Slavery in Ptolemaic Egypt* (New York), which contains the text and translation of a fragment of a royal ordinance, dated about 198-7 B.C., of Ptolemy V, fixing the amount of the tax on sales of slaves in ancient Egypt. The author also supplies new information on law, taxation, and slavery in the Hellenistic period. Other works on Egypt include *Great Ones of Ancient Egypt* (New York), being historical studies by various Egyptologists, with portraits in color by Winifred Brunton; L. Spence, *The Mysteries of Egypt* (Philadelphia), relating the secret rites and traditions of the Nile; M. A. Murray, *Egyptian Sculpture* (New York), an account of its various styles and periods; and S. Clarke and R. Engelbach, *Ancient Egyptian Masonry* (London), a detailed study of the technical methods of construction used by the architects of ancient Egypt.

On Central and South Africa the more important contributions are: H. Obermaier and H. Kühn, *Bushman Art* (London), an elaborate account of the origins, technique, and meaning of the cave-paintings of South Africa; Capt. R. S. Ratray, *Akan-Ashanti Folk Tales* (London), collected in the Gold Coast Colony; Lobagoda, *The*

Folk-Tales of a Savage (New York), being tales of the West African bush; and F. Hives, *Ju-Ju and Justice in Nigeria* (London), which describes the thrilling experiences of a district commissioner in suppressing the terrorism exercised over the Aro people by priestly fetiches.

INDO-IRANIAN—Whatever may be one's personal reactions to the merits or demerits of the claims of India and England, two facts of extraordinary impressiveness stand forth, revealing the great value to mankind of India's historic culture: On the one hand, the splendid idealism of Sir Rabin-dranath Tagore and Mahatma Gandhi and, on the other, the extraordinary rôle being played by the recently emancipated women in the spiritual and intellectual revolution that was taking place in a country that has hitherto been supposed to be fettered by traditions of sequestration of women. No Occidental country—not even, in fact, the World War—can offer similar parallels. Surely then a civilization that can produce such admirable forces is worthy of being studied and preserved.

With this idea in view a group of Hindu and American scholars and devotees requested the writer of these lines to direct their efforts in the creation of an India Academy, the seat of which was located in New York and incorporated under its laws. One of the first important accomplishments of the India Academy has been, thanks to the combined efforts of Dr. J. C. Chatterji of Bombay, Dr. K. F. Leidecker and Hari Govil of New York, to bring about for the first time in history a federation of all Indian societies functioning in America. This much desired federation having become a *fait accompli*, the Academy could proceed to carry out its aims, which include instruction in the languages, philosophy and culture of India, and the publication of the various works which have been offered to it by American and Hindu scholars.

Among the valuable works relating to India that have recently come from the press were the following: *The Aryabhatiya of Aryabhata* (Chicago), an ancient Indian work on mathematics and astronomy, translated with notes for the Chicago University Press by W. E. Clark; *The Cloud Messenger* (New York), a translation from the Sanskrit of an Indian love lyric by C. King, issued in the Wisdom of the East Series; J. J. Meyer, *Sexual Life in Ancient India* (2 vols., *ib.*), a study in the comparative history of Indian culture; I. B. Horner, *Women under Primitive Buddhism* (*ib.*), an account of how Buddhism emancipated women from masculine domination; D. Goddard, *The Buddha's Golden Path* (London), a manual of practical Buddhism based on the teachings and practices of the Zen sect; N. K. Sidhanta, *The Heroic Age of India* (New York), a new volume in the History of Civilization Series; Wendell Thomas, *Hinduism Invades America* (*ib.*), a study of the rapidly growing influence of Indian thought; M. T. Titus, *Indian Islam* (London), a religious history of Islam in India; and, finally, *The Lights of Canopus* (*ib.*), described by J. V. S. Wilkinson, which is devoted to a MS. of Indian fables of the greatest period of Moghul art.

As for Persian, it may be stated that the year 1930 marked an epoch in the history of the *Rubaiyat* of Omar Khayyam, the most famous poem in Persian literature. It was first announced on April 8 that Prof. Mahfazul Huy of the Presidency College, Calcutta, revealed to the

members of the Asiatic Society there that he had discovered a manuscript of the poem, containing 206 quatrains, that was made in 1505, only 46 years after the priceless copy now in the Bodleian Library at Oxford. As this manuscript, transcribed by Sultan Ali of Mushbad, is illustrated with beautiful miniatures, it is now obvious that the first illuminated copy of the poem was produced by the East and not by the West as heretofore believed. Secondly, at least three new editions of English translations of the poem were issued: that of Dr. F. Rosen (London) which is claimed to be a more accurate version than Fitzgerald's, since it is based on recently discovered Persian manuscripts, and which also contains a new work attributed to Omar, *The Book of New Year's Day*; a new edition of Edward Fitzgerald's translation (New York) with an introduction by George Saintsbury and illustrations by Willy Pogany; and finally a facsimile of the first edition of the Fitzgerald translation (Denver, Colo.). In addition to the above translations of the *Rubaiyat*, mention may be made of Sir Arnold T. Wilson's *Bibliography of Persia* (London), and Basil Gray's *Persian Painting* (*ib.*), a survey prepared in readiness for the 1931 exhibition of Persian art at the Royal Academy, London.

EUROPEAN, GENERAL—Before considering the ancient languages and literatures of the different nations of Europe, it behooves us first of all to note a few general works of interest to students of philology and allied subjects. Of an historical character we note first C. E. Russell's *Charlemagne: First of the Moderns* (Boston), a biography of the great King of the Franks; the second volume of A. A. Vasiliev's *History of the Byzantine Empire* (Madison, Wis.), which goes from the Crusades to the Fall of the Empire in 1453; *The Cambridge Medieval History* (New York), planned by the late J. B. Bury, of which the fourth volume deals with the Victory of the Papacy; the fifth and concluding volume of T. F. Tout's *Chapters in Medieval Administrative History* (London); H. Lamb's *The Crusades* (New York), a popular account of the great period; and A. Hyma's *Erasmus and the Humanists* (*ib.*), a new volume in the Landmarks in History Series. The cultural aspect of the history of medieval Europe is dealt with in Preserved Smith's monumental *History of Modern Culture* (*ib.*) of which the first volume covers the period from 1543 to 1687; and E. Friedell's *Cultural History of the Modern Age* (New York), a translation from the German of the first volume discussing the Renaissance and the Reformation.

Special studies include A. C. Flick's *Decline of the Medieval Church* (2 vols., New York), a study of the forces operating within and without the Church from the 13th to the 15th centuries; C. J. Offer's *The Bishop's Register* (*ib.*), a translation of documents from medieval episcopal registers designed to illustrate their contents as well as various phases of medieval episcopal activity; the fourth volume of G. G. Coulton's *Life in the Middle Ages* (Cambridge, England), dealing with monks, friars, and nuns; O. Cargill, *Drama and Liturgy* (New York) in which the author attempts to prove the existence of a theatrical profession from the earliest times; C. Gill's, *Studies in Midland History* (Oxford), dealing with various aspects of medieval city and municipal development; Dorothy Hartley's *The Old Book* (London), an anthology of the Middle Ages, including love songs, carols, recipes, prayers, ser-

mons and curses; and Helen Waddell's delightful collection of *Medieval Latin Lyrics* (London), with text and translation on opposite pages.

ENGLISH. The outstanding event in English studies during the year 1930 was the founding of the Facsimile Text Society. The aim of this most welcome organization, which owes its existence to the vision of Prof. F. A. Patterson of Columbia University, is to reproduce for the use of scholars works, both ancient and modern, which are not easily available because of their rarity. During the year some eight volumes were published, and several more were proposed as soon as the necessary funds were forthcoming.

The early period of English literature is represented by the following works: T. Allison, *English Religious Life in the Eighth Century* (New York), a study based on contemporary letters; *Sir Gawain and the Green Knight* (*ib.*, 1929), an Anglo-Saxon romance translated by T. H. Banks; Ruth E. Messenger, *Ethical Teachings in the Latin Hymns of Medieval England* (*ib.*), dealing especially with the seven deadly sins and the seven principal virtues; *Everyman* (*ib.*), a new edition of the famous morality play; *A Treasury of Middle English Verse* (*ib.*), edited and rendered into modern English by Margot R. Adamson; and T. Burke, *The English Inn* (*ib.*), a descriptive and historical account.

The fascinating Geoffrey Chaucer, to whose extraordinary popularity attention was called in the 1929 YEAR BOOK, still held the limelight, if we may judge by the following works devoted to him and his poetry: Dorothy Martin, *A First Book about Chaucer* (New York), being a brief introduction to a study of him; O. F. Emerson, *Chaucer Essays and Studies* (Cleveland, O.), consisting of articles collected from scholarly periodicals and published as a memorial to the author by his colleagues; *The Canterbury Tales of Geoffrey Chaucer* (2 vols., New York), comprising the original text, together with a version in modern English verse; and *The Canterbury Tales* (*ib.*), translated into modern English verse by F. E. Hill. Special mention should be made here of Prof. A. J. Barnouw's beautiful rendering into Dutch verse of Chaucer's *Canterbury Pilgrims* under the title *De Vertellingen van de Pelgrims naar Kantelberg door Geoffrey Chaucer* (Haarlem).

Among important works devoted to the Elizabethan period we may note Sir Sidney Lee, *Elizabethan and Other Essays* (Oxford), consisting of selected essays and lectures edited by F. S. Boas; J. S. Harrison, *Platonism in English Poetry* (New York), a new edition of this study in 16th and 17th century poetry; the second volume of *Tottel's Miscellany* (Cambridge, Mass.), a new edition of the famous anthology of Elizabethan poetry edited by H. E. Rollins; the first book of Spenser's *Faery Queene* (New York), edited by G. N. Pocock; A. V. Judges, *The Elizabethan Underworld* (*ib.*), a collection of Tudor and early Stuart tracts and ballads, recounting the lives and deeds of Elizabethan thieves and vagabonds; and W. S. Davis, *Life in Elizabethan Days* (*ib.*).

Sir Richard Paget's *Human Speech* (New York), while dealing with speech in general, is of primary interest to students of the English language. It consists of observations, experiments, and conclusions as to the nature, origin, and purpose, and, finally, possible improvement of human speech. E. Weekley's *The English Lan-*

guage (ib.) is an authoritative work which explains the contribution made to the formation of the English language by Anglo-Saxon, Middle English and Modern English as well as the influences from within and from without that have aided in producing the modern language. Janet R. Aiken's *Why English Sounds Change* (ib., 1929) is a contribution to the history of the language. S. A. Leonard's *The Doctrine of Correctness in English Usage* (Madison, Wis.) is devoted to the development of the language from 1700 to 1800. Janet R. Aiken's *English, Past and Present* (New York) attempts to explain the changes that are continually taking place in the use of the English tongue. E. Weekley's *Adjectives and Other Words* (ib.) not only deals with the origin, history, and use of many English adjectives, but discusses also a great variety of words, of speech characteristics, and of changes in language. G. A. Harttrampf's *Vocabularies* (Atlanta, Ga., 1929) supplies a long list of synonyms, antonyms and relatives. B. H. Clark's *Speak the Speech* (Seattle, Wash.) attacks all efforts at standardizing English, which, the author maintains, will result only in making its users "as indistinguishable from one another as filling stations, and just as interesting." He hopes, therefore, to see an organized movement to encourage provincialism in speech, through which the language can alone preserve its character. Finally, *The Little Oxford Dictionary of Current English* (Oxford) defines some 30,000 commonly used words.

GERMANIC. Unsettled political conditions combined with the high cost of printing, due to the autocratic power wielded by labor organizations, were threatening Germany's century-old renown as the seat of philological erudition. Among the contributions deserving mention are Prof. A. J. Barnouw's *A Middle Low German Alexander Legend* (New York), which had been edited from a newly discovered manuscript in the possession of the author; *Goethe and Faust: An Interpretation* (ib.), being a critical study, with passages newly translated into English verse, by F. M. Stawell and G. Lowes Dickinson; part one of Goethe's *Faust* (Princeton, N. J.), translated by W. P. Andrews, and edited and revised by G. M. Priest and K. E. Weston; *The Sorrows of Young Werther* (London), a new translation of Goethe's novel, with an introduction by Dr. W. Rose; *The Ring of the Nibelung* (New York), a modernized version of Wagner's tetralogy by C. L. Le Massena; and H. G. Atkins's *Heine* (ib.), a biography. In folklore and lexicography we have *Swiss Legends* (ib.), collected and translated by J. S. Kennard; H. W. Mitchell's *Tales from the Swiss Alps* (Chicago), translated from the German; A. Wobell's *German-English Technical and Scientific Dictionary* (New York), containing about 75,000 references and a mass of technical data, numerous chemical formulas, scientific and botanical terms; the fourth edition of E. Christiani, *Bürgerlich Rechts-Lexikon* (Leipzig); and J. Kreppel's *Handwörterbuch für Politik und Wirtschaft die Gegenwart* (ib.), of which the first volume goes as far as Chile. To this may be added the *Tourist's Vade Mecum of Dutch Colloquial Conversation* (ib.), including phrases in general use, vocabularies, tables and imitated pronunciation.

The millenary celebration of the establishment of democratic government in Iceland served to direct the attention of the world to the Scandi-

navian people. In commemoration of this great event we have S. Johnson's *Pioneers of Freedom* (Boston), which is a history of the Icelanders and the Icelandic Free State from 874 to 1262; W. Kirkconnell's *The North American Book of Icelandic Verse* (New York), consisting of an anthology with brief biographical sketches of the poets represented therein; A. Thorgilsson's *The Book of the Icelanders* (*Islendingabók*) (Ithaca, N. Y.), edited and translated, with introduction and notes, by H. Hermannsson; J. A. MacCulloch's *Eddic Mythology* (Boston), the eleventh volume in the *Mythology of All Races Series*; A. Olrik's *Viking Civilization* (New York), a study in the heroic period of Scandinavia, revised after the author's death by H. Ellekilde; T. D. Kendrick's *History of the Vikings* (London), stressing their colonial enterprises; Rosa Hobhouse's *Norse Legends* (New York), retold from the Eddas; and the fifth volume of *Studies and Records* (Northfield, Minn.), a collection of historical papers dealing with Norwegian-American relations, published by the Norwegian American Historical Association.

SLAVIC. The fact that Vernadsky's *History of Russia* (New Haven, Conn.) had passed through a third edition proved the interest of Americans in Russia. F. Nowak's *Medieval Slavdom and the Rise of Russia* (New York) traces the rise of the Slavs to European power. In folklore we have the following interesting works: W. W. Strickland, *Panslavonic Folk-lore* (ib.), translated and compared, with notes, comments, introductions, etc.; Nandor Pogany, *Magyar Fairy Tales* (ib.), illustrated with drawings by Willy Pogany; *Fairy Tales from Baltic Shores* (Philadelphia), consisting of folklore stories from Estonia, adapted and translated by Eugenie Mutt; and Ida Zeitlin, *King's Pleasure* (New York, 1929), containing legends of Serbia.

CELTIC. An epoch in the history of Celtic studies was marked by the publication of Dr. J. F. Kenney's monumental *Sources for the Early History of Ireland* (New York), the first volume of a Columbia University doctoral dissertation which is devoted to the ecclesiastical sources and which appeared at the close of the year 1929. This scholarly work, which was pronounced by Provost E. J. Gwynn of Trinity College, Dublin, as "quite the most important work on *res Celticae* which has appeared since the publication of Thurneysen's *Heldensage*," gives, in its first chapter, in broad synthesis the history of historical writings in Ireland from early times to the present. The succeeding chapters present the ecclesiastical sources, both in manuscript and published form, from the earliest times to about 1170. For the first time a successful attempt has been made to offer critical guidance in the extensive literature of the subject. When complete, the work will include a second volume discussing the secular sources of early Irish history. Another work of great value, notwithstanding the fact that it is of much more technical character, is R. D. Scott's *The Thumb of Knowledge in Legends of Finn, Sigurd and Talesin* (New York), also a doctoral dissertation of Columbia University. Through extensive researches the author has shown that this motif—that the placing of the finger, after touching certain foods, against a tooth produces omniscience—is found in many early literatures.

V. Bertoldi's *Arcaismi e innovazioni al margine del dominio celtico* is an important contribution

to the *Silloge Linguistica* (Turin), dedicated to the memory of G. I. Ascoli, Italy's greatest philologist. Other studies in Irish history include M. V. Ronan's *The Reformation in Ireland under Elizabeth, 1558-1580* (New York), which serves as a sequel to the author's *The Reformation in Dublin, 1536-1558*; J. E. Pomfret's *The Struggle for Land in Ireland, 1800-1923* (Princeton, N. J.), a discussion of Irish land troubles; and D. Gwynn's biography of *Daniel O'Connell: The Irish Liberator* (New York). Irish folklore is discussed in N. J. O'Connor's *There Was Magic in Those Days* (ib.), a fairy tale drawn from ancient Celtic lore; and Padraic Colum's *Cross Roads in Ireland* (ib.), containing sketches of Irish life. *The Journal of the American Irish Historical Society, 1929-1930* (ib.), published under the editorship of the learned Dominick Hackett, contains papers on the achievements of the Irish in the United States. Dr. J. Sampson, author of a standard work on the dialect of the Welsh gypsies, has compiled an anthology of writings on the Romany called *The Wind on the Heath* (London). Prof. T. Gwynn Jones's *Welsh Folklore and Folk Custom* (ib.) is based on manuscript sources and oral tradition as well as on printed books.

Attention has frequently been called herein to the multifarious activities of the American Iona Society. As the Society planned to construct in the city of Inverness a college for the purpose of preserving the Scottish language, traditions and culture, it had in press a volume on the *History and Distribution of the Universities of Great Britain* by Hugh Gunn. Among useful works published during the year 1930 are G. M. Thomson's *Short History of Scotland* (London); A. Morgan's *Makers of Scottish Education* (ib.); and F. R. Hart's *The Disaster of Darien* (Boston), the story of the Scots Settlement on the Isthmus of Darien at the close of the 17th century and the causes of its failure. J. H. Easterby's *History of St. Andrew's Society of Charleston, S. C., 1729-1929* (Charleston) was published by the Society on the occasion of its 200th anniversary.

ROMANCE. French. The Institute of French Studies in the United States, whose publications are issued under the scholarly and efficient editorship of Prof. G. L. van Roosbroeck, continued its activity during the year. Among the publications issued were the following: Bibliography—M. M. Barr, *A Bibliography of Writings on Voltaire (1825-1925)*; A. E. Terry, *Jeanne d'Arc in Periodical Literature (1894-1929)*; L. F. Strong, *Bibliography of Franco-Spanish Literary Relations*. General—R. Caulfield, *The French Literature of Louisiana*. Comparative Literature—H. D. MacPherson, *R. L. Stevenson: A Study in French Influence*; J. Rossi, *The Abbé Galiani in France*; R. D. Scott, *The Thumb of Knowledge in Legends of Finn, Sigurd and Taliesin: Studies in Celtic and French Literature*. Linguistics—E. Cross, *Syncopé and Kindred Phenomena in Latin Inscriptions From the Parts of the Roman World Where Romance Speech Developed*. Old French—E. Brugger, *The Illuminated Tree in Two Arthurian Romances*; H. E. Manning, *La Vie de Saint Thibaut: An Old French Poem of the Thirteenth Century*; J. Harris, *Marie de France: The Lays Gueemar, Lanval and a Fragment of Yonec* (with a study of the life and work of the author). Sixteenth and 17th Centuries—J. L. Gerig, *Antoine Arlier and the Renaissance at Nîmes*; H. D. MacPherson, *Censorship under Louis XIV (1661-1715): Some Aspects of Its Influence*; I. Leaven-

worth, *The Physics of Pascal*; G. L. van Roosbroeck, *The Unpublished Poems of the Marquis de la Fare (1644-1712)*; G. L. van Roosbroeck, *The Genesis of Corneille's "Mélite"*; H. L. Cook, *Georges de Scudéry's La Mort de César* (republished with an introduction); B. Matulka, *Georges de Scudéry's Le Prince Déguisé* (republished with an introduction). Eighteenth Century—D. E. Smith, *D'Alembert's Discours sur la Philosophie*, a facsimile reproduction of the original manuscript; G. L. van Roosbroeck, *Alzirette: An Unpublished Parody of Voltaire's Alzire*; G. L. van Roosbroeck, *L'Empirique: An Unpublished Parody of Voltaire's Mahomet*; G. L. van Roosbroeck and A. Constans, *Polichinelle, Comte de Paonfier: An Unpublished Parody of the Glorieux de Destouches (1732)*; E. H. Polinger, *Pierre Charles Roy, Playwright and Satirist (1683-1764)*. Modern French Literature—S. A. Rhodes, *The Cult of Beauty in Charles Baudelaire* (2 vols.); I. Brown, *Leconte de Lisle: A Study on the Man and His Poetry*. Original and Rumanian Studies—G. L. van Roosbroeck, *Grotesques*; L. Feraru, *The Development of Rumanian Poetry*. The Publications of the Institute of French Studies, Inc., is a non-commercial cooperative and inter-university organization, designed for the service of scholarship in the broad sense of the word.

Important articles published in the *Romanic Review* (New York) include "La Notion de Radical en Français" (pp. 291-295) by A. Meillet, the great philologist of the Collège de France; "Essais de Sociologie linguistique" (pp. 99-115) by Leo Jordan, professor in the University of Munich; and M. Halperin's "The Duke of Saxony and the Date ad quem of Cliges" (pp. 239-242). In "French Names in Our Geography" (pp. 195-203), H. G. Bayer supplies some curious etymologies of American place-names, selected from his collection of over 5000 such names of French origin.

Old French is represented by the following publications: Jane Beardwood, *Rhyme of Latin and French Words in Old French* (Phila.), a doctoral dissertation of the University of Pennsylvania; F. G. Yeandle, *Bertrand de Bar-sur-Aube, Chanson de Geste* (New York), a Columbia dissertation edited according to MS BXIX (Royal) of the British Museum; Lucy A. Paton, *Sir Lanclot of the Lake, A French Prose Romance of the Thirteenth Century* (ib.); E. Brugger, *Der sog. Didot-Perceval*, published in the *Zeitschrift für Romanische Philologie*; and Bro. L. L. Boll, *The Relation of Diu Krône of Heinrich von dem Türlin to La Mule sanz Frain, A Study in Sources* (Washington, D. C.), a dissertation of the Catholic University of America.

In the 14th and 15th centuries we note Mabel D. Holmes, *Joan of Arc* (Phila.), a biography; F. S. Shears, *Froissart: Chronicler and Poet* (London); and E. Gabory, *Alias Bluebeard* (New York), the biography of Gilles de Raiz, the notorious criminal who was a lieutenant of Jeanne d'Arc.

Contributions to the French Renaissance include *A Distinguished Family of French Printers of the 16th Century: Henri and Robert Estienne* (Brooklyn, N. Y.), a monograph in an edition limited to 400 copies; A. Gide, *Montaigne* (New York), an essay in two parts, translated from the French; H. D. Sedgwick, *Henry of Navarre* (Indianapolis, Ind.), a biography of Henry IV of France; and the following works devoted to

famous women of the period: J. D'Orliac, *The Moon Mistress: Diane de Poitiers* (Philadelphia), the life of a celebrated French beauty, translated by F. A. Atkinson; P. Rival, *The Madcap Queen* (New York), the story of Marguerite de Navarre, translated from French; and J. H. Mariejol, *A Daughter of the Medici* (ib.), the romantic life of Margaret of Valois, also translated from the French.

Among contributions to the seventeenth century may be cited, J. Chevalier, *Pascal* (ib.), a biographical and critical study of the French philosopher, translated from the French; C. C. J. Webb, *Pascal's Philosophy of Religion* (Oxford), a collection of lectures; *The Fables of Jean de La Fontaine* (2 vols., New York), translated by J. Auslander and J. LeClercq; and two interesting biographical and critical studies of Molière (New York), one by J. Palmer and the other by H. Ashton. Studies in the eighteenth century include Georg Brandes, *Voltaire* (2 vols., ib.), a biography; N. L. Torrey, *Voltaire and the English Deists* (New Haven, Conn.), a Yale doctoral dissertation, forming Vol. I in the Yale Romanic Studies; H. Hoffding, *Jean Jacques Rousseau and His Philosophy* (ib.), a translation from the Danish; J. Carpentier, *Rousseau, The Child of Nature* (New York); Anna E. Burlingame, *Condorcet: The Torch Bearer of the French Revolution* (Boston); C. D. Brenner, *L'histoire nationale dans la Tragédie française du XVIII^e siècle* (Berkeley, Calif.); M. Souriau's edition of Bernardin de Saint-Pierre's *Paul et Virginie* (Paris); and the following of special interest to Americans: R. L. Hawkins, *Mme. de Staël and the United States* (Cambridge, Mass.), a monograph based on her correspondence with various Americans; S. W. Jackson, *Lafayette* (New York), a bibliography; Lida R. McCabe, *Ardent Adrienne* (ib.), a biography of the wife of Lafayette; and G. Chinard, *The Letters of Lafayette and Jefferson* (Baltimore).

Finally, one or two titles of the nineteenth century may be noted: R. Escholler, *Victor Hugo* (New York), translated from the French by L. Galantière; R. Kayser, *Stendhal, or the Life of an Egoist* (ib.), a biography translated from the German; M. G. Wright, *The Role of the Auditive Sense in Baudelaire's Works* (Phila.), a University of Pennsylvania doctoral dissertation; and O. Theis, *Sprache und Stil Mérimées in seinen Novellen* (Frankfurt).

To conclude, the following historical studies are of interest to those who are seeking the background of French literature and philology: J. S. C. Bridge's masterly *History of France* (vols. 3 and 4, London); C. Guignebert, *A Short History of the French People* (2 vols., New York), a translation from the French; F. Funck-Brentano, *The Old Regime in France* (ib.), a study of the social organization of pre-Revolutionary France, translated from the French; C. J. H. Hayes, *France, a Nation of Patriots* (ib.); and R. M. Haig, *The Public Finances of Post-War France* (ib.). See FRENCH LITERATURE.

ITALIAN. An important cultural organization founded during the year was the Society of Friends of the University of Rome, of which the officers were: J. J. Freschi, President; Dean A. Bouton of New York University and J. L. Gerig, Vice-Presidents; and Philip Le Boutillier, Treasurer. Among the founders were Dr. Nicholas Murray Butler, President of Columbia University; Dr. John Grier Hibben, President of Princeton Uni-

versity; Robert Underwood Johnson and Henry P. Fletcher, former Ambassadors to Italy; Dr. John H. Finley, William Guggenheim, Sam. A. Lewisohn and Jerome Hess, all of New York. The aim of the organization is to aid in constructing the American Section of the Città Universitaria of the University of Rome.

Of general interest are J. Jud, *La Valeur documentaire de l'Atlas linguistique de l'Italie et de la Suisse méridionale*, reprinted from the *Revue de Linguistique romane*; *Lares, Organo nazionale per le tradizioni popolari*, founded by P. Toschi; G. Pedrotti and V. Bertoldi, *Nomi dialettali delle piante indigene del Trentino e della Ladinia dolomitica* (Trento); E. G. Gardner, *The Arthurian Legend in Italian Literature* (New York), a study in literary history; E. H. Byrne, *Genoese Shipping in the Twelfth and Thirteenth Centuries* (Cambridge, Mass.), a publication of the Medieval Academy of America; and T. Okey, *Venice and Its Story* (New York), a new and revised edition.

Special studies include Rev. A. R. Bandini, *Dante's Purgatorio* (San Francisco), a lineal and rhymed translation; Gertrude Leigh, *New Light on the Youth of Dante* (Boston), the course of the poet's life prior to 1290 traced in the *Inferno*; T. C. Chubb, *The Life of Giovanni Boccaccio* (New York); *The Decameron of Giovanni Boccaccio* (ib.), in two translations, one by R. Aldington (2 vols.) and the other by Frances Winwar (2 vols.); J. Burkhardt, *The Civilization of the Renaissance in Italy* (ib.), translation of the fifteenth German edition; and B. Castiglione's *The Book of the Courtier* (ib.), a reprint of the translation of a famous Italian work of the sixteenth century. See ITALIAN LITERATURE.

SPANISH. Probably the leading Spanish society of the day is the Hispanic Society of America, located in New York. It not only possesses the largest and finest Spanish library—excepting, of course, the Biblioteca Nacional of Madrid—in the world, but issues every year numerous beautifully printed and very valuable publications. The most important one of the past year is Elizabeth Du Gué Trapier's *Catalogue of Paintings (14th and 15th centuries) in the Collection of the Hispanic Society of America*. Other works of importance published during the year are J. D. Bordona, *Spanish Illumination* (2 vols., New York), a history from the Visigothic period through the sixteenth century; Marie R. Madden, *Political Theory and Law in Medieval Spain* (ib.), a philosophical study of the theory of law and monarchy as developed in medieval Spain, issued by Fordham University; W. T. Walsh, *Isabella of Spain: The Last Crusader* (ib.), a biography of the famous Queen; P. E. Douglass, *The Comedia Ypolita* (Philadelphia), a University of Pennsylvania doctoral dissertation; Miguel de Cervantes, *Don Quixote* (New York), Ozell's revision of the translation of Peter Motteux; and A. Flores, *Lope de Vega* (ib.), a biography of the Spanish dramatist. General works include E. Mérimée, *History of Spanish Literature* (ib.), translated from the French, revised and enlarged by S. G. Morley; J. P. de O. Martins, *History of Iberian Civilization* (Oxford), a translation from the Spanish; and *Spain* (New York), a reference book on Spain for readers and travelers and a guide to studies in Spanish history, literature, art, etc., edited by E. A. Peers. See SPANISH LITERATURE.

Important works devoted to South America include S. G. Inman, *Trailing the Conquistadores* (ib.), a brief historical survey; T. Maynard,

De Soto and the Conquistadores (ib.), a biography; Stella B. May, *The Conqueror's Lady: Ines Suarez* (ib.), the story of a Spanish adventures who accompanied the Conquistadores to America; C. S. Braden, *Religious Aspects of the Conquest of Mexico* (Durham, N. C.), a historical study of a neglected aspect of the invasions of the Conquistadores; R. B. C. Graham, *José Antonio Paéz* (Philadelphia), a study of his adventures; and biographies of *Ferdinand Magellan* (New York), by E. F. Benson; and *Simon Bolívar* (ib.), by Hildegard Angell. See SPANISH-AMERICAN LITERATURES.

PHONETICS. T. Larsen and Frances C. Walker's *Pronunciation* (Oxford) is a practical guide to American standards. Other works are H. B. Gough, Lousene Rousseau, Mary E. Cramer and J. W. Reeves, *Effective Speech* (New York); Helen Stockdell, *Speech Made Beautiful* (ib.), and W. Johnson, *Because I Stutter* (ib.).

Exponents of the international language Interlingua seem to be the only ones who are showing signs of activity. During 1930 they issued the fifth volume of *Schola et Vita, Organo de Academia Pro Interlingua* (Milano) and *Interlingua* (Cavoretto-Torino) by G. Peano.

PHILOSOPHY. The leading problem before American philosophers for 20 or 30 years has been the nature of our knowledge of Nature. Is it direct or indirect? The New Realists in their volume answered the question affirmatively, while the Critical Realists in their polemical reply took the negative. The former group followed the lead of James's *Does Consciousness Exist?* and *A Pluralistic Universe* and espoused the views which have become known as epistemological monism and psycho-physical monism. The Critical Realists, on the other hand, reasserted the old epistemological, and psychophysical, dualism of Descartes and Locke, developed it in various directions to meet the new attack of its modern assailants, but confined themselves for the most part to polemic against the opposing views of the New Realists. Unfortunately the New Realists, after the first madness of conciliation, found that they did not agree among themselves as much as they had believed or hoped for, and the same was true, later, of the New Realists. The doctrinal development in both groups proved diffusive and the same lack of agreement was to be found among the corresponding groups in England.

Prof. Arthur O. Lovejoy's volume, *The Revolt against Dualism* (1930), which expounds and compares all these diverse and tangled doctrines in a masterly, thorough, and comprehensive treatise, was, therefore, especially welcome. We are accustomed, of course, to the thoroughness and rigor of Broad's epistemological discussions, but Professor Lovejoy's thoroughness is of a different sort. It is scholarly. Indeed, there is hardly a writer on the subject in question who is not appraised and criticized in a careful, sympathetic fashion on the basis of ample quotations. In the meantime the general issues and the unity of the argument as a whole are not forgotten. His chief contention is that perceptual knowledge is always mediated by ideas or sense-data, and that these are never identical with the surface of any physical object and form no part of nature.

Lovejoy's criticism of the various recent forms of New Realism (the opposing doctrine) is intricate and ingenious. Thus "Objective Relativism," a view which originates with Professor Whitehead, is guilty, according to the writer, of a num-

ber of fatal confusions. That motion is always relative to a reference frame, for one thing, does prove that all the qualities of physical objects are relative to, or "respective to," an organism. Such a view turns out, on analysis, to be an impossibility. If "an object has a quality" always means "an object has a quality from this place," Objective Relativism ends in complete subjectivism and skepticism, for the whole world in that case is only "for me" or for my organism at a particular point of space-time.

Professor Lovejoy has also made an elaborate attack on Bertrand Russell's theory of "aspects," and tries to show that this attempt to unify mind and matter and to eliminate the duality of knowledge is also fallacious. Nor does he spare his fellow Critical Realists. Santayana and Drake are taken to task for their theory of essences. According to this theory the essence is revealed in sense perception, but since an essence can be in more than one place at the same time, the same essence may belong to the very physical object which the essence, qua sense-datum, mediates the knowledge of. Thus the essence we see may belong to the existent which we can know only indirectly. Professor Lovejoy argues that, if the essence is seen, it is in space and time; it therefore cannot be an essence, and therefore cannot belong to the existent, or physical object in the sense in which it is given in sense-perception.

The old argument for epistemological dualism, based upon the time-lapse between the physical event which leads to a perception and the perception itself, is also reaffirmed and defended against the contentions of Bertrand Russell and followers of Einstein. It must be admitted that the event in a star in the Milky Way, which is responsible for my seeing a point of light, occurred some hundred years before my actual perception. At the time of the perception, however, the same event is not occurring, and perhaps the star has passed into a different phase, or disappeared. Therefore I cannot be seeing the star but a sense datum which mediates my knowledge of the star. The facts of Relativity do not vitiate this argument a bit, according to Professor Lovejoy. For there is no proof on the General Relativity Theory that a time-interval does not exist between the event in the distant star and my seeing of the star.

Closely related with this point is a discussion by the same writer, in *The Journal of Philosophy*, November, 1930, "The Dialectical Argument against Absolute Simultaneity," in which the Relativistic denial of Absolute Simultaneity is criticized and rejected. In the January number of *The Philosophical Review*, Professor Lovejoy also published another article concerning the curious consequences of the modern doctrine that the passage of time is relative to the frame of reference and the speed of light. It is supposed that Peter goes off at about the speed of a light ray to a distant constellation leaving his twin brother, Paul, behind on the earth. When he returns, still a young man, he finds that Paul has long been dead but that his grandchildren still remember him. The writer believes that these paradoxes, raised by the recent sensational developments of modern physics, have the most important implications in metaphysics and epistemology and should be studied critically by philosophers, for philosophical conclusions, he insists, should not be accepted passively at the hands of the scientists.

Another significant contribution to philosophy in 1930 was the English translation of Jean Nicod's brilliant book, *Foundations of Geometry and Induction*. It consists of two extended essays, treating of two of the most difficult problems in the logic of science. The first, which is concerned with the foundations of geometry, seeks to bridge the gap between the sense-data of experience and the constructions of pure geometry in a bold and original fashion. Professor Whitehead had attempted to solve this problem by the method of "extensive abstraction" but Nicod finds this procedure unsatisfactory. His own method is to begin with simple sensations and to build constructs out of our experience which will square with points, lines, and figures of pure geometry. The second essay on "The Logical Problem of Induction" is partly a criticism and partly a vindication of J. M. Keynes's, *A Treatise on Probability* (1921) and rivals this book in its depth and penetration. Together they constitute according to Bertrand Russell the last word in the theory of induction. Nicod attacks Keynes's doctrine, however, at various points. He takes exception to the proof of various theorems, maintains that induction by simple enumeration is fundamental and indispensable and denies that Keynes's attempt to show that an increasing probability approaches certainty is successful.

Two important books have also appeared in the field of aesthetics: *Beauty, An Interpretation of Art and the Imaginative Life*, by Helen Huss Parkhurst, and *Philosophy of Art*, by C. J. Ducasse. The former book is distinguished from most treatments of beauty by being beautiful itself and by dealing with such minor senses as smell and taste. The author believes that touch, taste, and odor may provide aesthetic experiences of great richness, but little structure. This is why they have been neglected. In style and bias the book resembles Santayana's *Sense of Beauty*. Although the book is systematic, it is also rich in concrete insights and well-chosen illustrations. In Professor Ducasse's book the interest in aesthetic theory, as opposed to art itself, is much more in evidence. It contains a lucid treatment of the usual theories and interesting original variations of the doctrines of Groos and Santayana. The book suffered, nevertheless, a great deal of criticism at the annual meeting of the American Philosophical Association at Charlottesville, Virginia, and Professor Monroe put his criticism in the form of an amusing myth. Professor Monroe also published a book during the year, *Great Pictures of Europe*, in which he attempted to demonstrate his curious theory that scientific rigor may be attained in aesthetics, if only critics can be brought by careful study and comparison to agree with one another.

In the philosophy of religion Prof. William P. Montague's book, *Belief Unbound*, constitutes a brief but original contribution. It is an attempt to establish a religion of freedom and happiness, without recourse to a dogmatic theology or a dogmatic ethics or any other superstructure save the eternity and impartiality of the Platonic Ideas.

Phenomenological literature was enriched by the publication of three books of especial merit. Emmanuel Levinas's volume, *La Theorie de l'Intuition dans la Phénoménologie de Husserl*, is the first general book on the philosophy of Husserl to appear in France. In 1925 M. Hering had published *Phénoménologie et philosophie religieuse* but since then only an article or two had

appeared. Now the French public is provided with a very valuable introduction to phenomenology which ought to prove extremely fruitful of results, especially in a country in which philosophy has taken, in general, such a different turn of development. Professor Levinas' book is extremely lucid and well-arranged, and he has been at great pains to document his statements by frequent references to the *Logische Untersuchungen* and the *Ideen*. Unfortunately Husserl's last book, *Transcendentale und Formale Logik* was published too late in the year 1929 to be included in Professor Levinas's excellent survey.

Martin Heidegger's *Kant und das Problem der Metaphysik* will also prove of great interest to many readers, who are interested to know the relation between the phenomenological developments and the Kantian philosophy. On the one hand, phenomenology owes a great deal to the transcendental analysis of the *Critique of Pure Reason*. On the other hand the denial of the possibility of metaphysics contained in that work is quite opposed to the new tendency toward ontology among the phenomenologists. Heidegger undertakes the analysis of some parts of the mental life which Kant had neglected and he attempts to rescue metaphysics from the subversive attack of the great "Critique."

The eleventh volume of the *Jahrbuch für Philosophie und Phänomenologische Forschung* also contains three important contributions to this field. Herbert Spiegelberg furnishes a long ontological analysis of "the essence of the Idea" in which a number of Husserl's doctrines are expanded and elaborated. Eugen Fink writes on "representation and image" while Hermann Mörchén discusses "the faculty of imagination according to Kant." The most interesting article is that of Oscar Becker on the Logic of Modality, in which he contrasts the "material implication" of Russell with the "strict implication" of C. I. Lewis and attempts a formal development of the latter. Brouwer's intuitionism is also discussed and Ernst Cassirer's *Philosophie der Symbolischen Formen*. Though Dr. Becker's article is very brief, it gives an intimation of the sort of work that phenomenologists should do in the future, if their analyses are to be put on a formal and rigorous basis. The publication of the third volume of Bolzano's *Wissenschaftslehre*, which continues the logical analysis of ideas and judgments of volumes i and ii in a remarkably original and painstaking fashion, should prompt to further developments of phenomenology and, perhaps, bring to light one of its main sources.

Among the historical books published during the year none was more welcome than Professor McKeon's *Selections from Medieval Philosophers*, vol. ii, *From Bacon to William of Ockham*. This volume contains selections from the writings of Roger Bacon, Saint Bonaventura, Saint Thomas Aquinas, Mathew of Aquasparta, John Duns Scotus, and William of Ockham, clearly and faithfully translated, and calculated to show the main trends and controversies of the great period of scholastic philosophy. Professor McKeon presents, for example, the clearest picture of the agreement and opposition of Scotus and Saint Thomas; he shows us the complicated and ubiquitous influence which Plato, Aristotle and Saint Augustine have had upon the development of the scholastic systems; and his brief introductions give us a more thorough and comprehen-

sive view of these writers than is afforded by the other books which have appeared in English.

Perhaps the most important philosophical event of the year was the seventh International Congress of Philosophy which met at Oxford, England, in September. The presence of Croce and Whitehead added a special glamour to the occasion, and distinguished philosophers from France, Germany, Italy, Soviet Russia, India, America, and several other countries came together to exchange ideas and establish friendship. A high point of the congress was Professor Montague's defense of the experienced necessity in the causal relation. Another exciting session was furnished by Professor Hans Driesch's sweeping attack on the school of phenomenology. To phenomenologists present on this occasion Professor Driesch's criticisms seemed to admit of easy answers but unfortunately there was no time for them to speak.

BIBLIOGRAPHY. As usual there is presented a list of the more significant works of the year in the field of philosophy, their titles indicating the general subject matter and scope. They are as follows: George Boas, *A Critical Analysis of the Philosophy of Emile Meyerson*; Bernard Bolzano, *Wissenschaftslehre*, vol. iii; Emil Brehier, *Histoire de la Philosophie*, vol. ii; *Le Dix-huitième Siècle*; R. D. Carmichael, *The Logic of Discovery*; Rev. M. C. D'Arcy, S.J., *Thomas Aquinas*; John Dewey, *The Man and His Philosophy*; Homer H. Dubs, *Rational Induction: An Analysis of the Method of Science and Philosophy*; C. J. Ducasse, *Philosophy of Art*; Howard O. Eaton, *The Austrian Philosophy of Value*; Warner Fite, *The Living Mind, Essay on the Significance of Consciousness*; Martin Heidegger, *Kant und das Problem der Metaphysik*; Edmund Husserl, *Jahrbuch für Philosophie und Phänomenologische Forschung*; *Lectures on Ethics* by Immanuel Kant, translated from the German by Louis Infield; John Laird, *Knowledge, Belief, and Opinion*; E. Levinas, *La Théorie de l'Intuition dans la Phénoménologie de Husserl*; Arthur O. Lovejoy, *The Revolt against Dualism*; Wincenty Lutoslawski, *The Knowledge of Reality*; Richard McKeon, *Selections from Medieval Philosophers—From Roger Bacon to William of Ockham*; William P. Montague, *Belief Unbound*; Jean Nicod, *Foundations of Geometry and Induction*; Helen Huss Parkhurst, *Beauty: An Interpretation of Art and the Imaginative Life*; Joseph Ratner, *Spinoza on God*; George Santayana, *The Realm of Matter*; Herbert W. Schneider, *The Puritan Mind*; S. Harrison Thomson, *Johannis Wyclif*; William Pearson Tolley, *The Idea of God in the Philosophy of St. Augustine*; Wilbur Marshall Urban, *Fundamentals of Ethics*; John W. Warbeke, *The Searching Mind of Greece*; Leo Richard Ward, C.S.C., *Philosophy of Value: An Essay in Constructive Criticism*.

PHIPPS, HENRY. An American steel manufacturer and financier, died in Great Neck, N. Y., Sept. 22, 1930. He was born in Philadelphia, Pa., Sept. 27, 1839, and attended the public schools in Allegheny City, Pa. In 1861, five years after he had begun as an office boy with Dillworth and Bidwell, spike manufacturers in Pittsburgh, he became the partner of a former employer in a distributing agency for the Du Pont Powder Company. At this time he was also part owner of a small iron mill, and his success in these ventures led to his association with Andrew Car-

negie and to his becoming eventually, next to Carnegie, the largest stockholder in the Carnegie Steel Company. On the organization of the United Steel Corporation in 1901, Mr. Phipps became one of the directors. He devoted much money and time to philanthropic and artistic undertakings. He contributed large sums to aid in the treatment and elimination of tuberculosis in Philadelphia and other cities and gave more than \$3,000,000 to the University of Pennsylvania for the endowment of the Phipps Institute for tuberculosis research and treatment. He also endowed the Phipps Psychiatric Clinic in connection with the Johns Hopkins University, and in 1907 gave \$1,000,000 to a commission for the erection of model tenement houses in New York City. The LL.D. degree was conferred on him by the University of Pennsylvania in 1913.

PHONETICS. See PHILOLOGY, MODERN.

PHOSPHATE ROCK. North Africa, including Algeria, Egypt, Morocco, and Tunis produces about 50 per cent of the world's supply of phosphate rock, and, consequently, interest attached to the approval of the French Senate in January, 1930, of the plan for constructing a railway from Tebessa to the frontier of Tunis so as to afford a new rail outlet for phosphate from Algeria. The leading phosphate producing company in Algeria was increasing its plant capacity and production, while in Tunis increased production also was recorded for 1930. In the United States about 36 per cent of the world's supply is produced, and this comes, in the main, from Florida. According to the U. S. Bureau of Mines, the production of phosphate in the United States in 1929 was 3,761,164 long tons valued at \$13,153,259. In the same year there was imported for consumption 44,899 long tons valued at \$469,171, and exported 1,142,746 long tons valued at \$5,386,919. In 1930 the American phosphate producers maintained their activity, and their exports, which afford an indication of the state of the industry, amounted to 65,992 tons of high-grade hard phosphate rock valued at \$447,432, and 1,159,129 tons of land pebble and other phosphate rock valued at \$5,180,110, the corresponding values in 1929 being \$473,031 and \$4,913,888. Tampa, Florida, is a leading port for export and Japan took the place of Germany as the leading market for American phosphate rock. During the year improved technical methods found increased application, so as to save fine phosphate hitherto lost. Other chemical treatments were in process involving furnace processes, acid decomposition methods, and the treatment of superphosphates. See FERTILIZERS.

PHOTO CELL. See PHYSICS.

PHOTOGRAPHY. Each year, the difficulties of photography under poor lighting conditions are becoming fewer as materials of increased sensitiveness, lenses of larger aperture and greater correction, and accessories such as flash powders are made available. Equipped with fast panchromatic film and a good camera, and having available flashlights which were noiseless, odorless, and smokeless, the press photographer of 1930 could tackle almost any assignment with confidence and bring back good pictures.

The quality of sound motion pictures continued to improve throughout the year as greater knowledge was gained in their preparation and application. Considerable thought and experimentation was devoted to the plan of introducing a wider film than the standard 35 mm. for taking and possibly showing sound pictures but no large-

scale production was attempted. A number of sound pictures by a two-color subtractive process were released for theatre presentation but this programme was curtailed during the latter part of the year along with others affected by the business depression.

Demonstration of television in variety theatres showed that encouraging progress was being made in this interesting field. The use of amateur motion picture sets was extended by the introduction of toy outfits selling at low prices. Further uses were made of photography, notably in astronomy, where it aided in the discovery of the ninth major planet, in aerial records for long-distance photography, and in analysis of high-speed motion.

APPLICATIONS OF PHOTOGRAPHY. Greater control of retouching of negatives or positives for photomechanical processes was made possible by the introduction of the Peridak process, which consists in using the two chemicals, hypo and potassium ferricyanide (Farmer's Reducer) in various proportions and at certain temperatures. Intaglio photolithography, originally introduced previous to 1900, was revived during 1930 under the name "offset deep." (*Printing*, 52, Nov. 29, 1930, p. 46 et. seq.) A photocomposing machine designed by Uher of Budapest was marketed, which according to Gamble (*Penrose's Annual*, 33, 1931, p. 1) works with great speed and precision. As each line of printed type or sign is completed, it is photographed automatically on a narrow film strip while the operator continues striking keys for the next line.

There was gradual but marked improvement noted in the quality of sound motion pictures during the year and a fair percentage of these were shown in color by a two-color subtractive process. Although the technical quality of the color process was improved, there was still much to be desired before full benefit of color could be realized (*J. Soc. Mot. Pict. Eng.*, 15, 1930, p. 68). Great interest was shown throughout the year in pictures on wide films, but all producing organizations concerned were proceeding cautiously. A limited number of such pictures were shown in theatres. A picture width-to-height ratio of 1.8 to 1 was agreed upon as proposed by a committee of engineers and film negative widths of 70 mm. and 65 mm. were most favored. Reduction printing to a positive film, intermediate in width between these negative widths and the standard 35 mm. width was considered a practical scheme. (*J. Soc. Mot. Pict. Eng.*, 15: 1930, p. 818.)

Sound picture projection installations were being made rapidly in Europe as well as in Australia, and South America, and an increasing demand was prevalent for pictures in native dialogue. Sound-on-film records appeared to be gaining in favor over disk records. The use of separate films for the sound and picture records for theatre presentation was thought by some to have certain merits. Valuable surveys were made by recognized committees who dealt with methods of silencing cameras and arc lights, the acoustics of set materials, and the use of standard release prints. Most of the tricks of the silent picture were worked out by cameramen for sound picture use.

Improvements in projector mechanisms were numerous, such as redesigning and positioning of the shutter to help reduce the heat on the film gate, the use of a single standard for mounting

two sound projectors, the introduction of new types of lamps, and the simplification in the construction of sound reproducer parts. A non-intermittent projector was demonstrated effectively at the May, 1930, meeting of the Society of Motion Picture Engineers (*J. Soc. Mot. Pict. Eng.*, 15: 1930, p. 20).

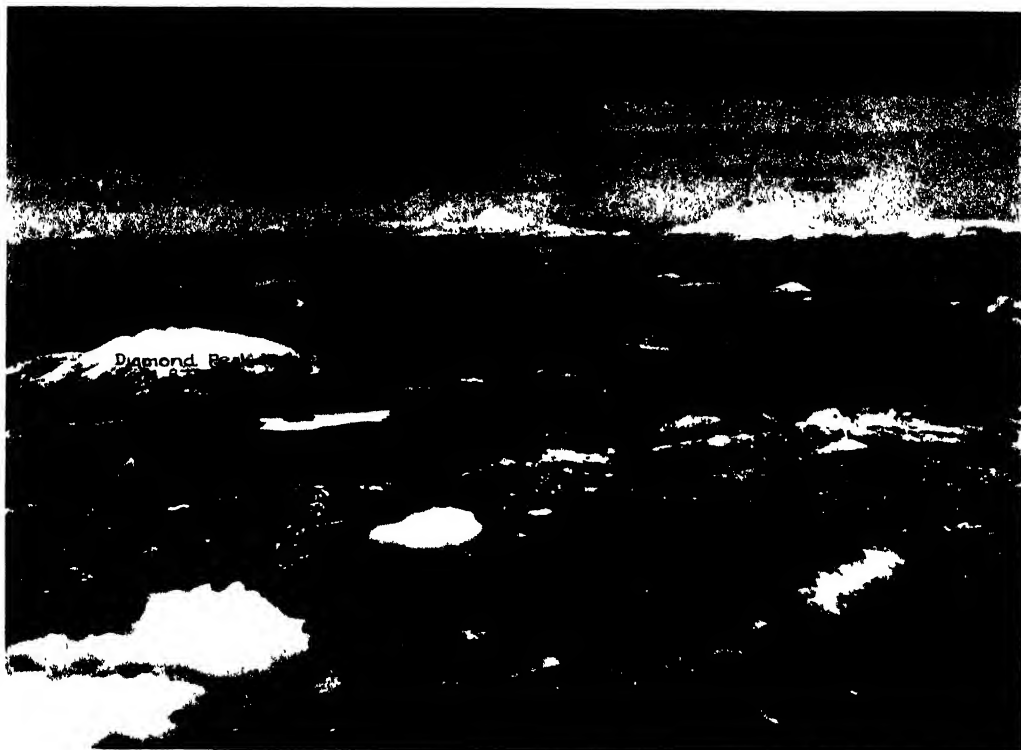
Encouraging progress was noted in television and public demonstrations were given of two processes in several American cities and in Europe as part of the regular programme of variety houses. In one of these demonstrations a sound motion picture was televised. (*The Observer*, London, July 6, Aug. 17, 1930.)

Besides their application as an entertainment medium, motion pictures were finding increasing use in other fields, as records of industrial processes, for classroom instruction, for historical and archaeological investigation, for time and motion studies, etc. Fifteen medical films were prepared under a programme in the United States and others were made by continental surgeons recording valuable details of their technique. A camera was perfected, capable of making 40,000 exposures per second, and offered a useful means of studying rapidly moving phenomena. (*Proc. Imp. Acad. Japan*, 5: 1929, p. 334.)

It was estimated that over 200,000 home motion picture projection sets in one form or another had been sold. Several models of new amateur ciné cameras were introduced during the year. One camera was designed to photograph four pictures on each frame of 16 mm. film. Late in the year, several very inexpensive 16-mm. film projectors were marketed, designed as toys for children. A growing interest was apparent in amateur equipment for reproducing sound with pictures, but all sound records for amateur use were on phonograph disks. One instrument combined a radio, a phonograph turntable, and an amateur projector. (*Kinemat. Weekly*, 155: Jan. 23, 1930, p. 67.)

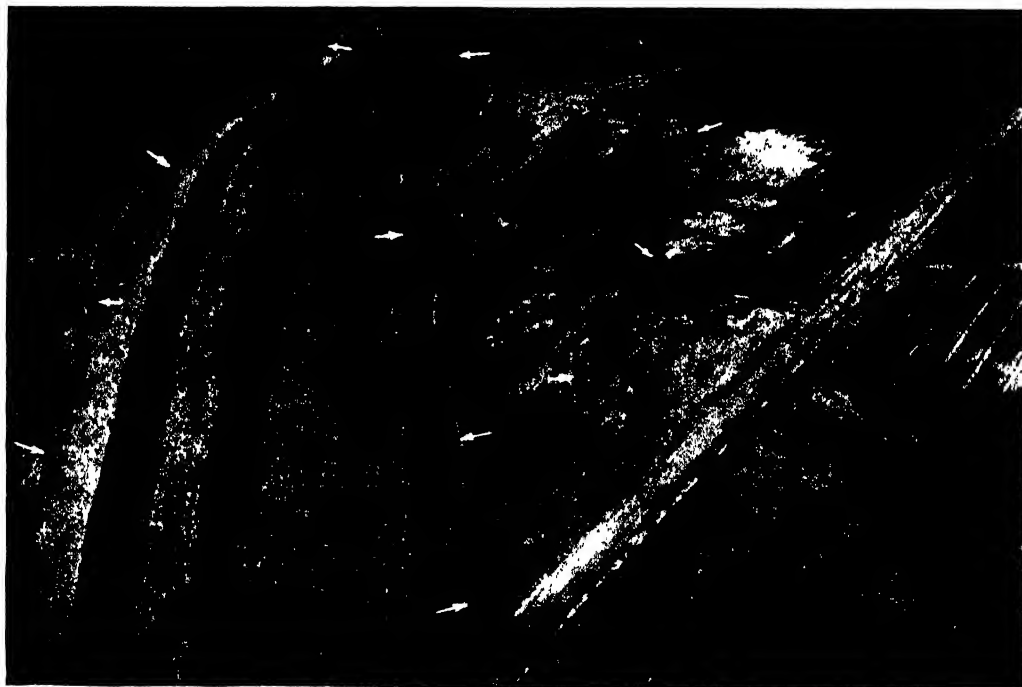
Although a few additive color motion picture processes were being exploited during 1930, the chief interest from a production basis appeared to remain in subtractive methods. A screen plate was introduced using a separable regular screen and a fast panchromatic emulsion which permitted the first color photographs to be made from an airship (*National Geographic Magazine*, 58: Sept. 1930, p. 344). A few processes for making color prints were introduced but the three-color carbon transfer method retained its position as the most satisfactory workable process. A process using dye printing from gelatine reliefs was described by Wheeler for which it was claimed that the final prints could be made from a set of negatives in three hours; subsequent prints at three or four per hour. (*Penrose's Annual*, 33: 1931, p. 142.)

Photographic enlargements several feet long and 40 inches wide were used as murals for the decoration of homes and of business offices (*Commercial Phot.*, 5, May 1930, p. 405). Low magnification photomicrographs (5x to 10x) of small areas on paintings were made to determine the artists' identity (*Il. prog. fot.*, 36: 1931, p. 361). Storch of Vienna made ultra-rapid motion analysis studies of micro-organisms (*J. Soc. Mot. Pict. Eng.*, 15: 1930, p. 223), and Cant of London filmed the growth of normal, and of cancer cells. Progress in the technique of photomicrography with ultra-violet radiation was made by Lucas (*Bell Lab. Record*, 8: August 1930, p. 574),



LONG DISTANCE PHOTOGRAPH MADE ON INFRA-RED SENSITIVE FILM

Taken over Crater Lake, Oregon, of Mt. Ranier, Washington, 266 Miles Distant, by Capt. A. W. Stevens,
U. S. Army Air Corps



Reproduced by courtesy of U. S. National Museum and U. S. Army Air Corps

AÉRIAL PHOTOGRAPH SHOWING PREHISTORIC INDIAN CANALS NEAR MESA, ARIZONA
(ABOUT 1200 A. D.)

PROGRESS IN PHOTOGRAPHY

and by Trivelli and Foster. (*Science Supp.* 72: Nov. 7, 1930, p. 411.)

Further advance was made in aerial photography with the aid of improved equipment and more sensitive film. Over 1500 miles of territory in Alaska were mapped. Capt. A. W. Stevens of the U. S. Army Air Corps made two remarkable long-distance photographs on infra-red sensitive films. In April, 1930, he succeeded in photographing Mount Rainier in the State of Washington from a position 266 miles southward at an altitude of 20,000 feet over Crater Lake in Oregon, as reproduced on the accompanying plate. Later in the summer, he photographed Mt. Aconcagua in the Andes mountains from a position 320 miles away. This picture was taken under the auspices of the National Geographic Society and was the first to show clearly the earth's curvature.

An elaborate system of canals in Arizona, built by Indian engineers about 1200 A.D., were photographed by N. M. Judd of the U. S. National Museum working with U. S. Army air pilots. Most of these are completely invisible from the ground but can be detected easily in the aerial photograph, a specimen of which is shown herewith. When it is impractical to employ an airplane, very satisfactory pictures may be obtained by attaching a camera to a small balloon controlled from the earth as was done by one expedition studying the Megiddo Mound in the plain of Armageddon in Palestine. The work was carried out under the direction of C. Breasted of the Oriental Institute, University of Chicago.

The discovery of the new planet "Pluto" was made possible by photography, although its position had been calculated mathematically some time previously. See ASTRONOMY.

Motion picture studies of heart movements were made by "raying" the heart through a colored lead screen. With the aid of an improved fluorescent screen, a special camera equipped with an $f/1.25$ lens, and a highly sensitive film, x-ray motion pictures were obtained of the chest, throat, and mouth. (*Kinotechnik*, 12: June 1, 1930, p. 336.)

PHYSICAL MEASUREMENTS. A shielded photoelectric cell with a range of 100 to 3000 foot candles was devised by McCoy for the determination of the light values in motion picture sets. (*J. Soc. Mot. Pict. Eng.*, 14: 1930, p. 357.) Two types of portable photometers were made available for photographic use, one of which has the novel feature of a zigzag boundary between the two comparison fields (*Phot. Korr.*, 65: 1929, 218). Three instruments for precise analysis of photographic sound records were designed by Lindvik, namely, a microdensitometer, a sound track densitometer, and a variable slit sensitometer (*J. Soc. Mot. Pict. Eng.*, 15: 1930, p. 201). **Manufacture of Sensitized Materials.** The first commercial panchromatic plates were placed on the market in London in 1906. Since that date, new panchromatic emulsions were introduced for process work, portraiture, aerial and motion picture photography. Late in 1930, a panchromatic plate of extreme speed and increased green and red sensitiveness was introduced. A new class of dyes for panchromatization were developed by Steigmann which sensitize chloride chlorobromide emulsions but not bromiodide emulsions (*Zeit. wiss. Phot.*, 27: Oct. 1929, p. 1). Baines described a new method of determination of silver in photographic papers which

should prove a useful addition to analytical technique (*J. Soc. Chem. Ind.*, 49: Feb. 21, 1930). A descriptive outline was published by Knoche of a series of German patents on methods for the prevention of halation in photographic emulsions. (*Phot. Ind.*, 28: Mar. 5, 1930, p. 298.)

A negative paper film for use in roll film cameras was introduced from which the prints were to be made by reflected light (*Brit. J. Phot.*, 77: May 16, 1930, p. 297). A transparent paper support was announced which could be coated with either a negative or positive emulsion, and was claimed to be suitable for motion picture work (*Kinemat. Weekly*, 159: May 29, 1930, p. 41). A double-coated paper was marketed suitable for use with display illuminators, the back side of the print usually being colored so that by reflected light it showed as an ordinary print and by transmitted light as a colored photograph. (*Studio Light*, 22: June, 1930, p. 1.) The sensitiveness of X-ray films was increased during 1930; one material was introduced which was said to be 50 per cent more effective than previous samples and to be suitable for easy inspection before a window instead of the usual illuminator.

Additional photographic materials were introduced during 1930 possessing infra-red sensitiveness. Babcock used infra-red plates sensitized with neocyanine, and a chloroform solution of this dye as a filter to record the solar spectrum up to wave length 11,500. For the preliminary work, a small dispersion spectrograph was used requiring very short exposures but for the more accurate work a large concave grating spectrograph was employed. Over 350 lines were recorded between wave length 9867 and 11,634. Infra-red materials also were finding greater application for aerial photography.

NEW APPARATUS. No radical improvements in small camera design were noted, although the number of cameras in use having colored coverings appeared to have increased. A series of cameras were introduced by an English firm which were constructed of oxidized brass and fitted with insect-proof bellows especially recommended for use in tropical climates. Improved compact soundproof housings were developed for motion picture cameras for use both with standard 35 mm. film as well as film for color cinematography. Most sound cameras were electrically cranked with the aid of synchronous drives.

A unique lens was described for motion picture work which is equipped with a moving component connected to the shutter mechanism, focusing first on near objects, and lastly on infinity each time the shutter opens and closes during exposure of every frame of a motion picture. (*Bioscope*, 83: May 28, 1930, p. ix.) An English lens of 58 mm. focus working at $f/2$ was reported to be in use in Hollywood for wide film. Telephoto lenses for amateur cine cameras were finding some application.

Printing machines, automatic in operation and of improved design, were made available for both professional and amateur photographers. Self-focusing enlargers found increased use and most professional workers used one or more types of projection printing devices.

Rolling tripods of sturdy construction, microphone booms, and a beam microphone which could be focused like a large search-light were made available for the cameraman taking sound motion pictures. An adjunct for the still cameraman, or the commercial or press photographer,

was a photo-flash lamp consisting of a bulb filled with aluminum foil and oxygen. No smoke, noise, or odors accompanied its ignition either with ordinary house current or with a small flash-light battery. (*Abel's Weekly*, 46: Aug. 23, 1930, p. 233.)

Three types of editing equipment were introduced for use with motion pictures with sound on a disk or film. (*Amcr. Cinematographer*, 10: Feb. 1930, p. 33.) Improvements were noted in motion picture projector design with regard to decreasing fire hazard.

An amateur camera was made available which used 16 mm. film but exposed four pictures on the space usually taken by one frame. The projector used with the film was fitted with a movement working alternately, vertically and horizontally. (*Movie Dealer*, 2: Oct. 1929, p. 19.)

THE PHOTOGRAPHIC PROCESS. Abribat made a useful study of the electrolytic oxidation of photographic developers (*Sci. ind. phot.*, 1: Jan. 1930, p. 1), and Hamer and collaborators gave further facts on the use of desensitizers and sensitizer dyes. (*Phot. J.*, 70: May, June, September, 1930, pp. 232, 374, and 436.)

Certain useful practical tests were suggested on (a) the degree of exhaustion of developers (*J. Soc. Mot. Pict. Eng.*, 15: 1930, p. 389) and (b) on the determination of the presence of hypo in washed prints. (*Brit. J. Phot.*, 76: Nov. 29, 1929, p. 714) and (*J. Soc. Mot. Pict. Eng.*, 14: 1930, p. 419.) Hydrogen peroxide was suggested as having advantages over ammonia for use in hypersensitizing baths. (*Brit. J. Phot.* 77: May 9, 1930, p. 276.)

A toning bath formula was published which contained an oxidizing agent, ammonium persulphate, in addition to the usual chemicals, and was claimed to make possible the production of any tone from a warm black to a rich sepia. (*Studio Light*, 22: Sept. 1930, p. 1.)

A modified bromoil process called "oleobrom" was described which differed from its parent in that the ink was applied with ground-rubber rollers instead of brushes, and the print received a "developing treatment under water immediately between the two inkings" (*Brit. J. Phot.*, 77: May 23, 1930, p. 313).

PHOTOGRAPHIC THEORY. Each year a few new facts are added to the store of knowledge regarding the cause of sensitiveness of photographic emulsions. According to the present state of our knowledge, sensitiveness to light varies with the size and distribution, preëxistent to exposure, of certain "sensitivity specks" (silver and silver sulphide) on the surface of individual silver halide grains. Much evidence exists for the assumption that the latent image produced by visible light lies practically on the surface of the grains. Apparently the mechanism of the formation of the X-ray latent image is different from that of light and there is a much greater probability that centres of developability will be formed within the grains than on their surfaces. (*Phil. Mag.*, 9: Supp. May 1930, p. 787.)

Pauling confirmed the opinion held by several investigators that the lattice energy of silver halides is fundamental for their light absorption and photochemical decomposition, and developed a quantitative expression for the limits of photochemical absorption. (*Phys. Rev.* [2], 34: 1929, p. 954). This work was discussed and criticized by Sheppard and Vanselow (*J. Phys. Chem.*, 34: 1930, p. 2719). Toy and Harrison gave an

expanded account of their work on photoconductance. (*Proc. Roy. Soc.*, 127A: 1930, p. 613 et seq., also NEW INTERNATIONAL YEAR BOOK, 1929, p. 671.)

In an extensive investigation, Wulff and Seidl of Professor Fajans' laboratory, Munich, gave very definite experimental evidence confirming S. E. Sheppard's theory that chemical development involves the production of an absorption complex of developer and silver halide which then decomposes into silver and other products. (*Zeit. wiss. Phot.*, 28: 1930, p. 239).

Trivelli proposed a hypothesis on the formation of the solarized latent image for visible light exposures in which he states that "this phenomenon is mainly restricted to the surface of the grain." (*J. Franklin Inst.*, 209: March, 1930, p. 373.) Solarization in a photographic material results from excessive exposure over the maximum normally given and instead of obtaining greater density on development with increased exposure, less density is obtained until, with still greater exposure, the density again increases slightly. A critical investigation led Trivelli to accept the regression theory upon which his hypothesis was then built. A diminution in the size of the developable centre resulting from the action of halogen liberated by light was advanced as a cause of the first reversal of the solarization. (*J. Franklin Inst.*, 209: January, 1930, p. 37.) Arens, who with several others supported a progression theory of solarization, published data showing that bromide ions were effective in increasing solarization only if present during exposure. (*Zeit. wiss. Phot.*, 28: 1930, p. 91.)

Using photoelectric spectrophotometry of large single crystals of the halides of alkalis and silver, Hilsch and Pohl showed that the product of light action is measurable after exposures of the order of those for the latent image. The absorption spectrum of the latent image was measured and appeared to correspond to slightly aggregated atoms of metallic silver, whereas the product of the alkaline halides is monatomic alkali metal (*Zeit für Physik*, 64, 1930, p. 606).

Quantitative data were published on the effect of red and infra-red radiation on latent images produced with light exposures of different intensities. The bleaching-out of the latent image so obtained is called the Herschel effect. The maximum effect was found to shift to the lower densities as the intensity of first exposure was decreased. (*J. Franklin Inst.*, 207 and 208: 1929, pp. 765 and 483.

A loss to the field of theoretical research was the formal disbandment of the British Photographic Research Association which occurred in November. During the twelve years of its existence, many valuable scientific papers were contributed to the literature by its members. See also SPECTROSCOPY.

BIBLIOGRAPHY. General reviews of photographic progress are published annually by the Society of Chemical Industry (British), the *British Journal of Photography* (London) and the *American Photographic Publishing Company* (Boston, Mass.). A progress report of the motion picture industry is published semi-annually in the *Journal of the Society of Motion Picture Engineers* (New York). The more notable books published during 1930 include: H. M. Cartwright, *Photogravure* (Boston, Mass.); A. E. Krows, *The Talkies* (New York); Various Authors, *Technical Digest* (Hollywood, Calif.); J. R.

Cameron and J. F. Rider, *Sound Pictures and Trouble Shooters Manual* (Manhattan Beach, N. Y.); V. I. Pudovkin, *On Film Technique* (London); W. H. Hays, *See and Hear* (New York); H. H. Sheldon and E. N. Grisewood, *Television* (New York); K. Jacobsohn, *Theorie und Praxis der Hypersensibilisierung* (Berlin); K. Jacobsohn, *Das Arbeiten mit farbenempfindlichen Platten und Filmen* (Berlin); R. R. Rawkins, *Photographic Printing* (London); O. Wheeler, *Photographic Printing Processes* (London); F. C. Tilney, *Principles of Photographic Pictorialism* (Boston); C. W. Ackerman, *George Eastman* (New York.)

Several handbooks and annuals were issued as follows: J. Milbauer, *Chemische Tonungsmethoden*, vol. xiii of *Photofreund Bücherei* (Berlin); *Handbuch der wissenschaftlichen und angewandten Photographie*, edited by A. Hay, 9 vols. (Vienna)—volumes issued during 1930, vol. iv on *Erzeugung und Prüfung lichtempfindlicher Schichten. Lichtquellen*, by H. Lux, M. Andresen. F. Formstecher, R. Jahr, R. Heyne, A. Trumm; vol. vii on *Photogrammetrie und Luftbildwesen*, by R. Hugershoff; *Veröffentlichungen des Wissenschaftlichen Zentral-Laboratoriums der Photographischen Abteilung* vol. i Agfa (Leipzig); *Soviet Photo Almanac* (Moscow); *Kinematograph Year Book* (London); *Year Book of Motion Pictures* (New York); *Cinematographic Annual* (Hollywood).

PHOTOPLAYS. See MOTION PICTURES.

PHYSICAL ANTHROPOLOGY. See ANTHROPOLOGY.

PHYSICAL CHEMISTRY. See CHEMISTRY.

PHYSICS. The year 1930 was one of steady progress in physics. Atom theories converged, atom pictures came to the front again, spectra of atoms and molecules were intensively studied, cosmic physics and biophysics made substantial gains. Einstein arrived at Mt. Wilson to work with the Observatory staff on problems affecting relativity. Michelson built a vacuum tube one-mile long for measuring the speed of light. Many new books on physics by masters made the year notable. For sensational progress, however, applied physics dominated the year 1930. Outstanding were screen grids in radio receiving sets and perfected loud speakers, television with many experimenters and a host of amateurs busy nightly, dial telephone system which automatically transforms dialed numbers into clear audible speech, the Adler planetarium in Chicago giving star study a universal appeal, storage and deferred use of 2500 tons of solid carbon dioxide, a crystal clock devised to keep adjusted within one second for 3000 years.

Other achievements include Claude's power from temperature differences in sea water, Goddard's progress on high-altitude rockets for study of the upper atmosphere, frontal attack on the noise menace of cities, blind flying in fog or night by the U. S. Bureau of Standards system, the rapid increase in popular science in newspapers and in the readiness of research laboratories to open up their bag of wonders for the general public—these are samples of a year full of activity in applied physics. Each subject merits an extended account. The photo cell is a brilliant example.

The photo cell, for example, acts as a relay to ring a bell, turn on a fan or a light, count objects, measure turbidity, warn traffic at intersections, keep illumination at a set value, control

trains, indicate presence of smoke, turn on a fire extinguisher, control mechanical operations, operate talking pictures, operate television systems, transmit speech over a beam of light, give quantitative analyses, time sporting events, transmit still pictures by wire, record speech and music from sound films, measure light and temperature, measure light absorption or reflection, reverse shop machinery by reflected light, and an endless variety of complex reactions which will engage technicians for decades to come.

There are thus a host of industrial uses for the photoelectric cell—counting, sorting by size, form, or color; opening doors, stopping and starting machines—what not? At this writing news comes of a cell which turns on the water when the cup is placed under the faucet. The photoelectric cell is indeed the Aladdin's lamp of modern science, hailed as a device of unlimited applications.

Another development of applied physics was the new grid-glow current plotron tube which can measure 10^{-17} ampere, a current bearing about the same ratio to the current passing through a 50-watt lamp as two drops of water compare to the total volume of water pouring over Niagara Falls in a year. Combined with the photoelectric tube, the new grid-glow tube is an efficient device for measuring the radiant energy from individual stars.

Other new devices, gifts of physics to the world, were numerous. During the year in Pittsburgh there was produced by an electric arc in a nearly perfect vacuum, a temperature said to be equivalent to 900,000° Fahrenheit or 90 times hotter than the sun's surface, as a part of a research on the properties of arcs in vacuum.

An unexpectedly wide use was found for ironless induction furnaces. Some yield a ton of steel per hour, and designs of several times this capacity present no difficulty.

The high efficiency of mercury turbines, 85 per cent as compared with steam plants, 25 per cent, brought enlarged production of mercury and in turn provided for a larger use of mercury, for example, in the production of physical instruments.

A new ultraviolet microscope, reported from the Bell Laboratories, allows 3600 diameters magnification and sharply distinguishes planes of a thinness of ten one-millionths of an inch.

The largest American made telescope mirror (cast at the Bureau of Standards) was being figured by Fecker with an accuracy better than $\frac{1}{600,000}$ of an inch or one-tenth of a wave length of yellow light.

Pease reported the completion of the new 50-foot stellar interferometer devised by Michelson and Pease for measuring the diameters of stars by optical interferometry of the diffraction rings. With this device it is possible to measure a star one one-hundredth of a second of arc, a task equivalent to determining the diameter of a one cent piece at a distance of 250 miles, for example, from Washington to New York. A scientific journal calls this achievement at Mount Wilson "a legitimate scientific sensation."

Many important advances in physics cannot readily be translated into popular terms. Abstruse theories and equations, complex physical constants and numerical data underlying the science of physics are examples. Amid uncertainty and conflict of theories, spectroscopists

have kept steadily advancing in their accurate knowledge of wave lengths in the spectra of both atoms and molecules.

Raman was recognized as 1930 Nobel prize winner for a new type of spectra discovered in 1926 which had eluded keen scrutiny—the spectra of scattered radiation, which promised to throw so much light on atom groups in molecules and on the molecules themselves.

The new International Committee on Atomic Weights hereafter was to publish annually the only official atomic weight table and national tables were not to be issued.

Progress in atomic theory was such that as Swann truly said: "Wave mechanics is so definite that utilizing no experimental data other than the magnitude of the electronic mass, the electronic charge, and that mysterious constant h , which is known as Planck's constant because he first introduced it in the theory of heat radiation, it is possible to calculate from pure theory the mean life of an atom in any excited state."

Credit was due to many workers in spectral measurement which helped to create a new astronomy, and a new atomic conception. Almost sensational theories abound. Dirac's theory of the proton was the year's most astonishing. He assumes that if electrons fill most of the states of negative energy there will be some unoccupied "holes," as he calls them. The motion of these in an external electromagnetic field would appear negative energy giving a charge of $+e$. Dirac concludes that these may be "protons." If an electron of positive energy drops in the hole, the proton and electron are annihilated with emission of radiant energy.

Meggers, at the end of the year, had just completed his first measurements of the spectrum of the newly discovered element rhenium, atom No. 75, finding hyperfine structure characteristic of odd numbered elements with nuclear asymmetry.

Using the sharp magnesium spectral wave length 4481, Elvey measured the rotations of stars, finding an average of 60 kilometers per second, or thirty times that of our sun. The variable star W Ursæ Majoris with a diameter of 650,000 miles was found to rotate in a third of a day, a peripheral speed of about 600 miles per second.

In the field of molecular physics, gaseous molecules are known to possess rotational frequencies of 10^{12} , about the same as the elements of crystal lattices. Absorption spectra yield much data on molecular structure, moments of inertia, geometrical form and dimensions, types of binding, and (through the Raman effect) something of the atomic aggregates in the molecule.

Carpenter describes nine methods of forming single crystals, two from the vapor phase, three from the liquid, four from the solid phase, and discusses their production, orientation, and properties. Single crystals permit the accurate determination of the properties of pure structures.

Spectroscopy yields new estimates of the motion of our system of stars, the galaxy—300 kilometers per second and a complete rotation in 230,000,000 years.

Hubble finds that there are 30,000,000 galaxies perceptible with the 100-inch telescope within a distance of 300,000,000 light years. He finds new assurance of the homogeneous structure of

the universe. Recent measurements disclose the strange fact that all nebulae are receding from our system with speeds 100 miles per second higher for each million light years distance from us, the maximum now measurable being 75,000,000 light years distant. The farthest detectible nebula is estimated as at a distance of 300,000,000 light years. See ASTRONOMY.

The explanation of the steadily increasing red shift of spectral lines with distance from our system is attributed to relativity effect, or to some cause in interstellar space, rather than being an index of true recessional velocity. Calcium absorption lines are strongest in the most distant stars, proving that the calcium is in the intervening space with a density compared to air of one to ten billion. Plaskett and Pearce, after a study of Eddington's theory of interstellar calcium, positively ionized, state that there can be no possible doubt that Eddington's hypothesis of uniform distribution of the interstellar matter is fully confirmed.

Armellini, in a rigorous mathematical treatment of the latest theory of stellar evolution, found reason to support the theory of the transformation of mass into energy as the explanation of observed results. Stewart computed that ions in the sun may be accelerated tens of trillions of times per second, each acceleration lasting 10^{-16} second, and that electrons undergo accelerations 3600 times greater than this estimate and perhaps 60 times more frequently. Kinetic theory suggests that in the heart of a star ions may be accelerated 10^{-21} times gravity and free electrons 10^{-24} times gravity.

Luby noted that tidal effects of the planets cause solar activity periods, holding that Jupiter is mainly responsible, being 23 times as powerful as Saturn.

Without using the Non-Euclidian geometry of relativity theory, Kunz computes the three quantitative predictions of Einstein—the rotation of the perihelion of Mercury, deflection of light by the sun, and red shift of solar rays. With the quantum condition that light of frequency ν has a mass $h\nu/c^2$, he assumes that the potential energy of the gravitational field manifests itself as a change in ν , that the principle of conservation of energy holds, and that there are two masses, transverse and longitudinal, of a mass in motion (either as matter or energy).

Satisfactory results were obtained at the U. S. Bureau of Standards on the Waidner-Burgess standard of light—a hollow inclosure of fused thoria immersed in a bath of pure freezing platinum. Its advantages are that radiation from a hollow inclosure is always of the same quality and energy distribution, that platinum freezes at a definite temperature, that the radiation is independent of the kind of material, and an accuracy of $1/10$ per cent has been attained in comparing it with the Bureau's carbon filament standards. Quite accidentally, the color of the new standard is the same as the color of the carbon lamp, which still serves as a means of maintaining the accepted unit of candlepower.

Research on X-rays is one of the most active and prolific fields in physics. Among X-ray researches during 1930 may be cited: the study of asbestos to identify its useful types and disclose the mines from which they came; discovery of the cause of plasticity in lime; study of paint materials—composition, particle size, and crystallization as affecting the covering power,

tint, wear, and so on, of enamels and pigments; gaining new knowledge of how long grease molecules stand on end, keeping metal surfaces apart much as the "pile" on rugs permits one to rest on another without intimate contact; analysis of crystal structure and the measurement of the sizes of molecules of waxes, soaps, and other organic compounds; proof of the reality of the benzene structure.

We note that while spectroscopists are busy with X-ray energy levels, quanta and wave lengths, the general physicist is developing X-ray methods for very practical uses: development of procedure for inspecting the disposition of the parts of a completed electron tube; structure and internal strain of spark plugs; discovery that rubber is crystalline; discovery that rubber may stretch many times its supposed limit; discovery of a very important type of rayon through a study of the behavior and constitution of the crystalline threads of cellulose and silk; examination of molten metals inside of furnaces for study of melting points and surface tension; finally, for complete listing is impossible, the detection of optimum constitution and particle size of catalysts for high-pressure synthesis of methanol and other products.

Physics has few applications as interesting and varied as those of X-rays. X-rays are tools of industry. From inspecting the fitting of feet in new shoes, to the discovery of new chemical elements, X-rays give promise of unlimited uses. By X-rays doctors locate and treat tumors therapeutically; accelerate a hundred fold insect mutations in experimental evolution research; explore and chart atomic corridors of crystal fine structure; disclose the fact that a curious fish disease is a form of rickets. X-rays are used to examine the internal symmetry of golf balls; to inspect Swiss cheese in bulk for its internal holes; to examine, without opening, suspicious packages in the mails, and to detect concealed articles on the person at the customs; to check the soundness of metal castings; to locate pearls in oysters; gall stones in the body; nails or knots in wood for veneer cutting. Most of our knowledge of mummies comes through observation with X-rays, without unwinding their wrappings. They guide the surgeon and the dentist. They reveal elements of atomic structure through the knowledge they disclose of sub-atomic energies, and their uses are multiplying.

Young and Stetson found a method to analyze and synthesize vowels by electrical means—condenser microphone, amplifier system, filter tubes, tube oscillograph,—recording the changing intensities of the various frequency bands as the vowels are uttered. Gutzman, at the Congress on Experimental Phonetics, showed an X-ray speech film, designed to reproduce the respective movements of the speech organs, larynx, tongue, and hyoid, concurrently with the speech sounds.

Recent practical measurements of the noisiness of noise and the development of devices, methods, and units for such work is a notable effort to promote the comfort and well-being of people in communities. Laird found that noise caused typists to use up 19 per cent more energy for a given work than needed under quiet conditions. Skilled typists were the most adversely affected. Quiet gave a gain in speed of 4.3 per cent.

The physical properties of materials are a fertile field for physical research. W. H. Smith

produced the purest rubber ever made, dissolved it in ether and by cooling it to 80° below zero C., produced the first known crystals of rubber—an outstanding achievement of the year.

Correlations of solar activity and terrestrial weather were growing. Deeley's analysis of air pressure data showed that Arctic air pressures vary inversely with the number of spots central on the sun. Abbott found a short period of solar variation affecting the temperature of the United States, such that an 0.8 per cent change in the sun causes a 5° change at Washington.

Maris and Hulbert hold that above 400 kilometers (248.55 miles) free paths are large, impacts few, and ultraviolet a chief factor in ionization. Solar activity increases greatly the ultraviolet radiation. If, for example, we could remove 0.01 per cent of the sun's outer surface (6000°) the solar constant would increase 1 per cent only, but the ultraviolet content in sunlight would increase 100,000 times.

From studies of the upper air, Hulbert computed that at 100 miles there are 300,000 electrons per cubic centimeter. Radio reception over 50 miles from its source shows an echo from the ionized layer produced by solar ultraviolet. These heights are far above the blue sky which is caused at levels less than 30 miles. Data are obtained from studies of meteor trail drifts, theoretical distribution of the rare gases at high altitudes, temperatures by day and night, magnetic storms, and radio transmission and reception. Computation and observation showed that the ionization layer was lifted 50 miles higher during magnetic storms from the sun.

Stormer, whose report of long-interval radio echoes roused such interest as the first extra-terrestrial effect produced and observed by man, successfully predicted the time of recurrence, as confirmed by several physicists. Indo-Chinese physicists time echoes as high as 30 seconds after the signal and of one-third the original amplitude. Long-period radio echoes may afford a method of exploring electron streams in space far beyond the limits of the atmosphere of the earth.

In speculative physics discussions were active during the year. Lodge said that Einstein and he agreed that matter is passive, space active, and that matter merely serves to display the energy which fills space, sailing along the path of least resistance like a straw in a stream. They both hold that energy belongs to space. Spinney, in discussing the ether concept in modern physics, says that "the astounding history of the ether concept, of its rise and fall, its resurrection and its continuing power is probably without parallel in the records of the scientific world."

Most astonishing was the turn which the new principle of uncertainty was taking. Even the principle of causality was threatened. Born and Jordan, realizing that causality is not needed for the existence of physical laws, did not believe such laws are definite but that they indicate only probabilities that certain things will happen. According to them nature has some degree of freedom, is not bound rigorously by accurate laws, but only so far as the laws forecast the probability of the definite changes. Heisenberg, however, felt that there may be a principle of causality connecting present and future, but that we cannot find the laws.

Bridgman reviewed the astounding and rapid changes in physical thought and theory, and

suggested some generalized principles to give the physicist some sense of security. "We must be prepared," he said, "for unexpected new facts." We should know the limits of accuracy attainable in each kind of measurement. The actual experimental world transcends all our efforts to get into perfect mental contact with it. Uniqueness in an explanation is impossible and the quest for reality which connotes uniqueness is meaningless. He cites with approval Poincaré's statement that for every phenomenon there is an infinity of purely mechanical explanations. All this was leading the physicist to a changed attitude toward mathematical theory, to take it less seriously for it contains less of reality than he had realized. Finally, Bridgman stated that "a systematic development of the conceptual experiment . . . would be found by many . . . to give a more illuminating insight than a painful exposition of the details of the present-day mathematical picture." He then gave 21 searching questions to be answered only in terms of conceptual experiments.

BIBLIOGRAPHY. The year 1930 was remarkable for new books on physics. The three master works on wave mechanics by de Broglie, Sommerfeld, and Haas would alone make the year notable. *General Physics* by Franklin and Grantham is full of the senior author's personality. He uses the term "earthpull" for "weight" and "weight" is used interchangeably with "mass." Roller's *The Terminology of Physical Science* is informing and suggestive and Ferry's *Handbook of Physical Measurements* is a concise reference work for industrial technicians. Other books of the year include Schackel's *Heat, Light, and Sound*; Wood's *Sound*; MacMillan's *Theoretical Mechanics: The Theory of the Potential*; Haldane's *The Theory of Heat Engines*; and Kretschmann's *Atom und Welle*.

Dirac's *Principles of Quantum Mechanics* comes from the pen of a brilliant Cambridge physicist. Ruark and Urey published *Atoms, Molecules, and Quanta*. Applied physics is emphasized in *Matter and Radiation* by Buckingham, while Lindgh's *Röntgen Spektroskopie* gives a review of this rapidly advancing subject.

The infra-red spectrum is covered by Schaefer and Matossi's *Das Ultra-Rote Spektrum*. In special topics we find the following: James' *X-ray Crystallography*; Grant's *The Measurement of Hydrogen Ion Concentration*; Barnard's *The Selenium Cell*; Zworykin and Wilson's *Photocells and Their Application*.

Introductions to modern views of matter and energy are given in Wendt and Smith's *Matter and Energy* and in Andrade's *The Mechanism of Nature*. During the year the 24th volume of Wien-Harms *Handbuch der Experimental Physik* was issued.

Full of interest and suggestion are Adam's *The Physics and Chemistry of Surfaces*; and Kohlschutter's *From Atom to Shaped Body*, both setting forth the influences which determine form and structure.

Darrow's new and interesting work *The New World of Physical Discovery* opened the "door of science to the layman." Always interesting, Sir Oliver Lodge in *Beyond Physics* discussed the part that physics might play in interpreting life and the mind when a physics of organisms is developed to supplement the classical physics of mere aggregates since organisms are more than aggregates, they are in fact organizations.

The book year was marked by a return to the model or picture in atomic physics. Because of the significance of this trend at the beginning of the year 1931, Pauling and Goudamit's work *The Structure of Line Spectra* merits special mention. In basing it on the vector model and quantum mechanics, the authors state "The justification of the model is its usefulness in aiding the memory, in assisting in the interpretation of deductive results and their application to experiment, in suggesting new experiments and the theoretical explanation of new facts." The authors refer to the explanation of relativity doublets, noting "two such different mechanisms as the relativistic change in mass of the electron and interaction of its spin moment and orbital motion should lead to the same equation (Sommerfeld's no longer acceptable derivation of his still valid highly complicated formula) is without parallel in the history of physics." Dirac now derives the spin from relativistic equations so that the electron spin may now be considered a relativistic phenomenon, justifying the use of Sommerfeld's term "Relativistic doublets."

At the end of the year the outlook for further physical research was most promising. The great laboratories continued to grow and new laboratories at the rate of one or two a week were being established. In conclusion an example of a most important research in biophysics will recall to us how intimately physics is bound up with life. A new result attained by Crile was most significant. It will be recalled that in his *Bi-polar Theory of Living Processes* he postulated that vitality consists of the maintained difference of potential between the positively charged nucleus of the living cell and the negatively charged cytoplasm, the potential being preserved by the nuclear wall. In a new experiment he punctured the cell wall with a needle negatively charged. This increased the vitality of the cell, an amoeba being used. When the needle was positively charged (against the amoeba) the negative charge on the cytoplasm was neutralized and vitality dropped. Again reversing the charge on the needle, vitality was restored. The experiment furnishes one more proof of his thesis that difference of electrical potential between organs of the body, such as the brain and liver, and between the nucleus and the cytoplasm of the cell is the essence of life itself.

PHYTOPATHOLOGY. See BOTANY.

PIERS. See BRIDGES; FOUNDATIONS.

PIGS. See LIVESTOCK.

PILSUDSKI, JOSEPH. See POLAND under *History*.

PINE TREES. See FORESTRY.

PINK BOLL WORM. See ENTOMOLOGY, ECONOMIC.

PISTOL SHOOTING. See SHOOTING.

PITTSBURGH, UNIVERSITY OF. A nonsectarian institution of higher education for men and women in Pittsburgh, Pa.; founded in 1787. The total autumn enrollment for 1930 was 11,638, distributed as follows: College, 1866; engineering, 609; mines, 121; business administration, 694; education, 938; graduate, 1090; medicine, 264; law, 323; pharmacy, 283; dentistry, 327; retail training, 15; downtown division, 3370; Johnstown centre, 856; Erie centre, 639; Uniontown centre, 243. The extension division had an enrollment of 946 and the 1930 summer session, of 3509. There were 972 faculty members. The productive endowment amounted to \$1,944,973,

and the income from endowment to \$106,336; the annual income from the Pennsylvania State Legislature was \$600,000. The following bequests were received: \$325,000 from Leon Falk, Jr., and his sister, Mrs. Marjorie Falk Levy, for the erec-

tion of a model elementary school, under the direction of the school of education, in memory of their mother, Fanny Edel Falk; \$70,000 from the Buhl Foundation, given jointly to the Historical Society of Western Pennsylvania and the university, for research in local history; \$55,000 for the Andrew Johnson Kelly, Jr., Professorship of Real Estate, a memorial endowment fund; and \$30,600 from the Buhl Foundation for special research in medicine to cover a period of three years. The Falk Clinic costing \$900,000 was under construction. In September, 1930, a new course in safety engineering was opened, and a department of commercial education was established under the school of education. The library contained 136,300 volumes. Chancellor, John G. Bowman, LL.D.

PLANETS. See ASTRONOMY.

PLANT DISEASES. See BOTANY.

PLANT FOOD. See FERTILIZERS.

PLANT PATHOLOGY. See BOTANY, under *Plant Physiology*.

PLANT QUARANTINE. See ENTOMOLOGY, ECONOMIC; HORTICULTURE.

PLATE GLASS INSURANCE. See INSURANCE.

PLATINUM. The most significant item in connection with the mining and distribution of platinum during 1930 was the decline in the price of the metal, which opening the year with an average of \$61.923 per ounce in New York fell gradually to \$27 an ounce on September 19, and after a recovery and an agreement among producers remained at about \$32 wholesale during the year. There was no decline in the demand for platinum, but an increased production, particularly from South Africa, which resulted in competition and the consequent decline to the lowest level recorded since 1910. The consumption of platinum was greater, however, than in previous years, except in the jewelry industry where there was a smaller amount used. The imports of platinum into the United States in 1930 consisted of 81,229 troy ounces of grain, nugget, sponge, and scrap valued at \$3,363,858; and ingots, bars, sheets, and plates, 24,926 ounces valued at \$961,334. Corresponding figures in 1929 were 74,063 troy ounces valued at \$4,466,149, and 40,594 ounces valued at \$2,640,097. The platinum refiners of the United States in 1929 purchased 516 ounces of crude placer platinum of domestic origin and 51,618 ounces of foreign crude platinum, according to the U. S. Bureau of Mines. Domestic material purchased in 1929 included 294 ounces from Alaska, 208 ounces from California, and 14 ounces from Oregon. Purchases of foreign crude platinum in 1929 were: from Australia, 852 ounces; from Canada, 7 ounces; from Colombia, 45,687 ounces; from Russia, 6 ounces; and from South Africa, 5066 ounces.

NEW PLATINUM METALS RECOVERED BY REFINERS IN THE UNITED STATES, 1925-1929
[In troy ounces]

| Year | Platinum | Palladium | Iridium | Osmiridium | Others | Total |
|------------|----------|-----------|---------|------------|--------|--------|
| 1925 | 41,800 | 7,358 | 283 | 648 | 54 | 49,643 |
| 1926 | 76,154 | 6,437 | 234 | 2,118 | 43 | 84,981 |
| 1927 | 41,121 | 3,879 | 256 | 691 | 163 | 46,050 |
| 1928 | 51,427 | 5,148 | 1,658 | 458 | 348 | 59,089 |
| 1929 | 41,760 | 5,295 | 802 | 864 | 256 | 47,977 |

PLATYHELMINTHES. See ZOOLOGY.

PLAYGROUND AND RECREATION ASSOCIATION OF AMERICA. See NATIONAL RECREATION ASSOCIATION.

PLAYS. See THEATRE; LITERATURE, ENGLISH AND AMERICAN; FRENCH LITERATURE; GERMAN LITERATURE; ETC.

PLUTO, A NEW PLANET. See ASTRONOMY.

PNEUMONIA. See MEDICINE, PROGRESS OF.

POETRY. See LITERATURE, ENGLISH AND AMERICAN; FRENCH LITERATURE; GERMAN LITERATURE; ITALIAN LITERATURE; SCANDINAVIAN LITERATURE; SPANISH LITERATURE; PHILOLOGY, MODERN.

POLAND. A European republic formed Nov. 9, 1918, as a result of the World War and comprising the territory formerly divided among Austria-Hungary, Russia, and Prussia, from the three partitions of Poland in 1772, 1793, and 1795, which were confirmed by the Congress of Vienna in 1815. After the World War, Poland, in addition to this original territory known as Congress Poland, acquired Prussian Poland, Polish Galicia, Upper Silesia, and a portion of the Vilna territory. Capital, Warsaw.

AREA AND POPULATION. With an area of 149,958 square miles, Poland had a population on Jan. 1, 1930, of 30,733,000, or 468,000 more than on the same date in 1929, according to the Central Statistical Bureau. At the census of 1921, the population was 27,176,717. The birth rate per 1000 of population in 1928 was 32.6 and the death rate, 16.7. Emigrants in 1928 totaled 186,630, of whom 85,375 went to Germany, 32,145 to France, 27,036 to Canada, 22,007 to Argentina, and 8507 to the United States. The largest cities with estimated populations in 1928, and the 1921 census population in parentheses, were Warsaw, 1,050,182 (936,713); Łódź, 580,529 (451,974); Lemberg, 238,303 in 1927 (219,388); Posen, 236,265 (184,758); Kraków, 191,385 in 1927 (183,706); Wilno (Vilna), 200,000 (128,954); Katowice, 115,697 in 1927 (104,868). Poles formed 69 per cent of the population in 1921, and Ruthenians 15 per cent.

EDUCATION. At the census of 1921, 29.4 per cent of the males and 35.8 per cent of the females over 10 years of age were illiterate. Elementary education is free and nominally compulsory. In 1928-29, there were 26,575 elementary schools, with 3,496,934 pupils, 777 secondary schools, with 203,939 pupils; 237 colleges for teachers, with 38,332 pupils; and 868 technical and professional schools, with 56,354 pupils. The 20 universities or institutions of university rank enrolled 43,249 students in 1928-29, divided among the universities as follows: University of Warsaw, 9181; Cracow, 6502; Łwów, 6092; Posen, 4126; Vilna, 3086.

PRODUCTION. Agriculture, stock raising, and forestry support about 65 per cent of the popula-

tion. Of the total area in 1928, 48.6 per cent was arable land; 16.9 per cent permanent grass and pasture; 23.1 per cent wood and forest. About 57.7 per cent of the arable land was devoted to cereals. Production of the chief crops (in quintals of 220.46 pounds) in 1929, with comparative figures for 1928 in parentheses, was: Wheat, 17,925,000 (16,116,881); rye, 70,098,000 (61,101,577); barley, 16,598,000 (15,272,051); oats, 29,531,000 (24,977,023); maize, 953,000 (850,399). The 1929 figures are preliminary. Production of other crops (in quintals) in 1928 was: Potatoes, 276,604,880; sugar beets, 49,027,518; linseed, 612,944; flax, 520,005. Hops, chicory (succory), and hemp are other important crops. Livestock in Poland on June 30, 1929, included 9,056,749 cattle, 4,046,734 horses, 2,523,493 sheep, and 4,828,641 swine. Lumbering operations account for about one-fourth of the total foreign trade of Poland.

Although the year 1929 witnessed the beginning of a decline in business and industrial activity, due largely to the decreased purchasing power of the agricultural population, the mineral and metallurgical industries continued their expansion. Production in millions of metric tons in 1929, with figures for 1928 in parentheses, was: Black coal, 46,236 (40,599); lignite coal, 74 (74); coke, 1858 (1669); steel ingots and castings, 1380 (1439); zinc, 167.8 (162); lead, 29 (36); raw potash, 352 (342); salt, 407 (401). Silver production in 1928 totaled 6937 kilograms. Gross crude-oil production in 1929 totaled 4,722,823 barrels, a decline of 9.2 per cent from the 1928 figure of 5,200,972 barrels. Natural gas production increased to 16,515,651,500 cubic feet from 16,226,288,604 cubic feet in 1928. Oil products exported totaled 249,281 tons (261,337 in 1928). The number of oil and gas wells in exploitation at the beginning of 1930 was 2825 (2690 in 1928). Industrial establishments on Jan. 1, 1930, included 775 textile factories, with 123,456 workmen; 734 metal works and factories, with 86,231 workmen; and 679 wood-working plants, with 43,407 workmen. Poland ranks as one of the leading industrial nations of eastern Europe. In 1930, the industrial depression increased. The number of unemployed at the end of July, 1930, totaled about 204,982 (105,069 in July, 1929).

COMMERCE. The heavy adverse balance of trade of 1928, attributed to large post-war foreign borrowings, showed a marked decline in 1929, falling to 297,600,000 zlotys (1 zloty equalled \$0.1119 in 1929) from the 1928 figure of 854,300,000 zlotys. Imports for home consumption decreased to 3,110,900,000 zlotys from 3,362,200,000 zlotys in 1928, while domestic exports increased to 2,813,300,000 zlotys from 2,507,900,000 zlotys in 1928. The decrease in imports and increase in exports of foodstuffs accounted for 71 per cent of the total improvement in the 1929 trade balance, as compared with 1928. The principal imports, by value, in 1929 were raw cotton, 258,806,000 zlotys; machinery, 131,822,000 zlotys; raw wool, 131,442,000 zlotys. Leading exports were wood and timber, 423,200,000 zlotys; coal and lignite, 384,392,000 zlotys; swine, 185,182,000 zlotys; eggs, 142,504,000 zlotys. Imports in 1929 came chiefly from: Germany, 850,408,000 zlotys; United States, 383,650,000 zlotys; United Kingdom, 265,027,000 zlotys; Czechoslovakia, 227,845,000 zlotys. Polish exports were purchased principally by: Germany, 877,121,000 zlotys; Czecho-

slovakia, 296,237,000 zlotys; Austria, 294,688,000 zlotys; and the United Kingdom, 288,255,000 zlotys.

Imports from the United States declined 82,996,000 zlotys (\$9,312,000), or 18 per cent, from the 1928 total. About half of the decrease was due to smaller imports of raw cotton from America. On the other hand, exports to the United States rose to 30,793,000 zlotys in 1929 from 19,000,000 zlotys in 1928. In 1930, all Polish imports totaled 2,245,973,000 zlotys and exports 2,433,244,000 zlotys, the balance of trade being favorable by 187,271,000 zlotys.

FINANCE. The budget for the fiscal year commencing Apr. 1, 1930, as passed by Parliament March 29, proposed expenditures of 2,940,922,000 zlotys, as against anticipated revenues of 3,038,737,000 zlotys, leaving an estimated surplus of 97,815,000 zlotys (par value of zloty equalled \$0.1122). Of the anticipated surplus, the Minister of Finance was authorized by the budget law to allocate 25,000,000 zlotys for short-term credits to small farmers and 65,000,000 zlotys to certain Government officials and to pensioners and their families as a housing subsidy.

Compared with actual receipts and disbursements in the fiscal year 1929-30, the 1930-31 estimates represented an increase of 8,062,000 zlotys in the anticipated revenues, a reduction of 29,820,000 zlotys in the proposed expenditures, and an increase of 37,882,000 zlotys in the tentative surplus. In 1929-30 actual revenues (in zlotys) totaled 3,030,675,000, as compared with the budget estimate of 2,954,967,000, and actual expenditures, 2,970,742,000, as against the estimate of 2,787,783,000. The actual surplus was 59,933,000 zlotys.

Compared with actual receipts for 1929-30, the estimated revenue items in the 1930-31 budget show a 15 per cent reduction in the aggregate of direct taxes and a reduction in all indirect taxes combined, exclusive of customs duties, of less than 4 per cent. Compared with actual disbursements for 1929-30, appropriations for 1930-31 were reduced by 20,605,000 zlotys for national defense, by 19,984,000 zlotys for labor and social welfare, by 11,597,000 zlotys for the Ministry of Finance, and by 39,619,000 zlotys for pensions. Appropriations for education and social welfare were increased by 18,369,000 zlotys, for the Minister of Justice, by 10,090,000 zlotys; for invalids' relief, by 7,600,000 zlotys; for the Ministry of Agriculture, by 5,493,000 zlotys; and for the Ministry of the Interior, by 2,838,000 zlotys. The appropriation for the service of the public debt was increased by 45,025,000 zlotys. Of the total expenditures budgeted for 1930-31, 28.7 per cent represented appropriations for national defense, 16 per cent, education; 8.6 per cent, interior administration; and 10.8 per cent, public-debt service.

The total public debt on Jan. 1, 1930, stood at 4,211,530,000 zlotys, of which 3,690,794,000 zlotys represented the external and 520,732,000 zlotys the internal debt. On the same date in 1929, the total debt was 4,018,008,000 zlotys. In United States dollars, the debt on Nov. 19, 1930, was reported at \$512,139,000, or about \$17 per capita.

COMMUNICATIONS. On Jan. 1, 1929, there were 10,695 miles of main line and 1422 miles of narrow-gauge line open to traffic, most of it owned and operated by the Government. Operating revenues in 1928-29 totaled 1,490,653,000 zlotys and operating expenses, 1,568,545,000 zlotys. The

budget for 1930-31 contained an item of 35,000,000 zlotys for railway construction. A new railway line connecting the new Polish port of Gdynia with Bromberg, about 100 miles distant on the southern edge of the Polish Corridor, was opened to traffic in November, 1930. Highways extended about 53,600 miles, and there were 1875 miles of navigable waterways, of which 298 miles were accessible to vessels of over 400 tons. In 1930, there were 733,950 kilometers (about 455,000 miles) of telephone lines, of which 356,710 kilometers were state owned.

SHIPPING. Merchandise imported and exported through the new Polish port of Gdynia increased from 10,167 metric tons in 1924 to 1,957,769 in 1928 and 2,822,502 in 1929. Of 2,492,858 tons of merchandise loaded at the port in 1929, coal constituted 2,447,895 tons. Improvement of the facilities of the port, which is government owned, continued steadily during 1930. The Polish government in 1930 purchased a controlling interest in the Baltic-American Line and inaugurated a steamship service from Gdynia to New York. A total of 1541 vessels of 1,445,291 tons entered Gdynia in 1929, and 1552 vessels of 1,457,713 tons cleared.

GOVERNMENT. Under the constitution adopted Mar. 17, 1921, executive power is vested in the President, chosen by both houses of the National Assembly for a period of seven years; and legislative power is vested in the National Assembly, consisting of the Senate of 111 members and the Diet (444 members), called the Sejm, both elected by universal suffrage. President in 1930, Ignace Moscicki, elected June 1, 1926. The Cabinet at the beginning of 1930 was composed as follows: Prime Minister, Casimir Bartel; War, Joseph Pilsudski; Foreign Affairs, August Zaleski; Finance, Ignacy Matuszewski; Justice, Felix Dutkiewicz; Interior, Henryk Jozewski; Commerce and Industry, Eugene Kwiatkowski; Agriculture, Dr. Leon Janta-Polczynski; Agrarian Reforms, Witold Staniewicz; Communications, Alphonso Kühn; Labor and Social Affairs, Aleksander Prystor; Public Works, Dr. Maksymilian Matakiewicz; Education, Dr. Slawomir Czerwinski; Posts and Telegraphs, Ignacy Boerner. The composition of the Sejm following the election of Mar. 4, 1928, was: Government Bloc, 122; Radical Peasant party, 69; National Minorities, 65; Polish Socialists, 65; Catholic National, 37; Peasant party, 21; Socialist National Minorities, 19; Christian Democrats, 16; National Workers' party, 14; Communists, 7; others, 9.

HISTORY

INTERNAL DIFFICULTIES. Marshal Joseph Pilsudski, for a decade the dominant figure in Polish politics, emerged from the unusually troubled political arena of 1930 with his dictatorial powers strengthened and extended. Parliamentary elections held in November regained for his bloc the safe majority in the Sejm which had been dissipated during the Marshal's illness in May, 1928. For years Pilsudski had denounced with fierce contempt the parliamentary system of government as a menace to Poland's national development and foreign policy. However, during the bitter party struggles of 1930 he observed the outward ritual of constitutionality, although violating it in spirit, his aim being to secure the legal revision of the Constitution along lines which would strengthen the powers of the executive and materially weaken those of Parliament.

The struggle between Pilsudski and his opponents in the Sejm opened in earnest in March, when a non-confidence motion directed against the Marshal's close friend, Minister of Labor Prystor, was carried by a vote of 197 to 120. The Socialist, Nationalist, and Peasant parties supported the motion. The Bartel government accordingly resigned March 14, after only ten weeks in office. President Moscicki, who was considered the official mouthpiece for Pilsudski, called upon Professor Stanislaw Szymanski, Marshal of the Senate, and then upon Jan Pilsudski, brother of the general, but the efforts of both to form a new Cabinet failed. On March 29, despite the absence of a Government, Parliament passed the budget for the fiscal year commencing Apr. 1, 1930. Immediately thereafter, Marshal Pilsudski induced the President to prorogue Parliament for an indefinite period. On the same day Col. Walery Slawek, leader of the Pilsudski bloc in Parliament, formed a minority Cabinet, which, with the exception of Premier Slawek and Minister of Justice Car, was composed entirely of the former members of the Bartel Ministry (see above under *Government*).

The personnel of the Slawek Cabinet was evidence of Pilsudski's intention openly to defy the Opposition. At a time when the serious economic and financial condition of the country called for internal harmony, the conflict between the Government and the Opposition became increasingly violent. A petition for an extraordinary session of the Sejm was submitted to President Moscicki May 9 by the Opposition groups of the Left and Centre and, in accordance with a Constitutional provision, he was obliged on May 20 to call the extraordinary session for three days later. An hour before the scheduled convening of the Sejm, a Presidential decree was delivered to the marshal of that body, postponing the session for 30 days. The decree stated that the Sejm could not be permitted to obstruct the Government when the economic crisis demanded the mobilization of all the nation's resources.

The Opposition's demand for the resignation of the Cabinet and new Parliamentary elections to permit the establishment of a majority government was strengthened by the formation on June 20 of a new anti-government bloc of six Left and Agrarian groups, with 160 votes in the Sejm and representing more than 5,000,000 voters. The Government's farcical constitutionalism reached its climax the following day when a Presidential decree formally closed the extraordinary session of Parliament, which had never met. Huge Opposition demonstrations "in defense of law and public liberties" were held during June and July in Warsaw and Cracow. Extraordinary sessions of the Sejm and the Senate were again demanded and it was decided to organize a nation-wide network of committees "to protect the public against administrative abuses and political reprisals." On August 25, Marshal Pilsudski responded in characteristic fashion to the agitation of the Opposition by assuming full dictatorial powers and forming a new Cabinet with himself as Premier. Five days later, President Moscicki proclaimed the dissolution of Parliament, fixing elections for the Sejm and the Senate on November 16 and 22, respectively.

The issue in the electoral campaign was the Marshal's effort to secure a two-thirds majority of Parliament to permit revision of the Constitution in accordance with his proposals of 1929

for a powerful executive and a weak legislature (see 1929 YEAR BOOK). The election was preceded by administrative measures intended to paralyze, if not destroy, the Opposition. About 80 Opposition leaders were summarily thrown into prison, while numerous Opposition candidates and voters were disqualified on technical grounds, or called for military service. The result of the elections was a moderate victory for the Government bloc, which won a working majority in the Sejm but failed to secure the two-thirds necessary to revise the Constitution. The Socialist and Peasant parties, forming the Opposition bloc, were the principal losers, while the National Democrats (Fascists), who opposed the Government, were the only other party to register gains at the polls. The Pilsudski adherents were thus squarely faced with responsibility for a constructive political and economic programme. The new Sejm, for the first time in the history of modern Poland, had a strong government majority. The lineup of the parties was: Government bloc, 249; Opposition bloc (Socialist and Radical Peasant groups), 80; National Democrats (Fascists), 63; Ukrainians and White Russians, 21; Christian Democrats, 14; Jews, 7; Germans, 5; and Communists, 5. Pilsudski's success in the Senatorial elections November 22 was proportional. The Government bloc won 75 of 111 seats, whereas it formerly held 46.

In advance of the opening of the new Parliament on December 9, Pilsudski resigned (December 4) as Premier and resumed his former position as the directing power behind the scenes. Col. Walery Slawek was again called to head the new Cabinet, which included: Vice Premier, Col. Bronislaw Pieracki; Interior, Gen. Felician Skladowski; Foreign Affairs, August Zaleski; War, Marshal Joseph Pilsudski; Justice, Czeslaw Michalowski; Education, Slawomir Czerwinski; Agriculture, Leon Janta-Polczynski; Industry and Commerce, Col. Aleksander Prytor; Communications, Alphonso Kühn; Public Works, Gen. Mieczyslaw Norwid Neugebauer; Labor, Gen. Stefan Hubicki; Land Reform, Leon Kozlowski; Posts and Telegraphs, Col. Ignacy Boerner; Finance (Acting), Col. Ignacy Matuzewski.

The Government's majority in the Sejm was demonstrated at the opening session December 9, when former Premier Casimir Switalski was elected Speaker by a vote of 238 out of 407. He announced that the immunity of Deputies would thereafter be waived. The budget for 1931-32 was introduced the following day. It placed the total estimated income at \$321,168,000, as against estimated expenditures of \$319,211,000, the latter figure being \$18,000,000 below the 1930-31 expenditure budget. The opening days of Parliament were marked by Opposition demands for the freeing of seven Deputies and of some 21 former Deputies who were still held in prison. It was charged that the prisoners were subjected to torture, starvation and humiliation. With his followers firmly in the saddle, Pilsudski left Poland in December for an extended vacation in Madeira.

FOREIGN RELATIONS. Poland's relations with Russia reached a critical stage during the spring of the year, but alarming rumors of war failed to materialize (see RUSSIA under *History*). Alleged terrorism employed to stifle the German minority in Upper Silesia during the parliamentary elections of November 22 ag-

gravated the tension between the two countries, already acute as a result of the speeches of the German Cabinet Minister, Gottfried Treviranus, demanding revision of the Polish-German frontier (see GERMANY under *History*). Germany on November 28 dispatched a note of protest to the Council of the League of Nations, charging that the German-speaking citizens of Polish Upper Silesia had been seriously hindered or prevented from exercising the franchise. Ten cases of outrages were cited in detail. Reports reaching Berlin indicated that four persons among the German-speaking minority were killed and large numbers beaten unconscious, while the homes of many others were wrecked. The Polish Minister of the Interior issued a communiqué November 26 placing the responsibility for the disturbances in upper Silesia upon the German minority. Germans were accused of the murder of a Polish policeman at Golasowice. The boundary dispute with Lithuania over the Vilna territory showed no evidence of approaching a solution (see LITHUANIA under *History*).

On Jan. 22, 1930, the American legation at Warsaw was raised to the rank of embassy and Poland concurrently appointed her former Minister to Washington, Tytus Filipowicz, as the new Ambassador.

OTHER EVENTS. A reign of terror in Eastern Galicia was reported during October. Sabotage and arson of Polish property and crops by an alleged Communist Ukrainian organization, intent upon uniting the 3,000,000 Ukrainian peasants of Polish Eastern Galicia with the Ukraine Soviet Socialist Republic, caused the Government to send a punitive military force into the region. The press reported the imprisonment of some 200,000 Ukrainians, including their representatives in the Sejm, and widespread excesses by the soldiery which were condemned in a pastoral letter of the Ukrainian Greek Orthodox Church.

Poland took a leading part in efforts to form an economic entente among the agricultural states of central Europe during the year. Two agrarian conferences were held in Warsaw, but no definite agreement was reported (see JUGOSLAVIA under *History*). A plebiscite held in Warsaw in December on the question of prohibiting the sale of intoxicants called attention to the fact that up to that time three towns and over 100 communes in Poland had voted in favor of similar proposals. Charles S. Dewey, American financial adviser in Poland, ended his three-year task there in November.

For recent works on Poland and its problems, consult Sir Robert Donald, *The Polish Corridor and the Consequences* (London, 1929); Rom Landau, *Pilsudski and Poland* (New York, 1929); and "The Reconstruction of Poland," *Foreign Policy Information Service Bulletin*, vol. vi, No. 7, June 11, 1930.

POLAR RESEARCH. Explorations in both the Arctic and Antarctic assumed increased importance in 1930 after conflicting claims to lands in both regions had been presented by spokesmen for five nations at the annual sessions of the Institute of Politics at Williamstown, Mass., in August. It was revealed for the first time that Norway, in a note to the United States State Department on Apr. 29, 1929, claimed the right of priority in the acquisition of the Antarctic territory in the region then being explored by Admiral Richard Evelyn Byrd, whenever the requirements of international law as to effective oc-

cupation were complied with. The United States had recognized neither Norway's nor Great Britain's claim to the territory in question, it was pointed out, while priority rights to other regions of the Antarctic continent were in dispute between the United States, Great Britain, Norway, France, and Argentina. Canada advanced a claim to all lands north of her as far as the Pole or any islands that might be discovered there in the future, a claim which spokesmen for the United States emphatically opposed. The Norwegian spokesman reiterated his country's view that it could not recognize Danish sovereignty over any parts of Greenland except those actually under Danish administration.

The immediate reasons for the discussion of sovereignty over the polar regions were the dispatch of British and German expeditions to Greenland to study the possibility of the establishment of air routes across the Greenland ice cap, the increasing international competition in the Antarctic whaling industry, and the project for the establishment under international auspices of a chain of weather stations in the Antarctic. In the 1930-31 season, approximately 100 Norwegian whalers, with 8000 men, were engaged in the whale hunting in the Antarctic. At the Williamstown discussion, it was proposed by Prof. Jesse S. Reeves of the University of Michigan that the polar regions be set aside as international property for disinterested scientific research.

ANTARCTIC. Complete reports of the accomplishments of the four expeditions in the Antarctic during the 1929-30 season were published during the year. Abnormal ice conditions retarded the *City of New York* on its way to return the Byrd Expedition to civilization, and it was Feb. 19, 1930, before the party sailed from the Bay of Whales. The two airplanes of the expedition were left behind at the camp for lack of room. The interval from January 1 to the departure of the expedition was marked by the completion of the work of the geological party, under Dr. Lawrence Gould, and the surveying and photographing by airplane of some 15,000 square miles of new territory in the vicinity of the Bay of Whales and Discovery Inlet. The discovery of what appeared to be a rock in one part of the bay and the general appearance of the central part of the barrier led Admiral Byrd to conclude that there was land underneath. On January 1 Dr. Gould announced by radio that he had discovered a "highly carbonaceous layer" in a sandstone formation 6000 feet up the side of Mount Nansen. Admiral Byrd's major geographical achievement was stated to have been his charting of the eastern portion of the Great Ross Ice Shelf and the adjacent coast. Upon his return to the United States in June, he was widely acclaimed and awarded numerous decorations, including a special gold medal of the National Geographic Society and the Navy Cross. Consult Byrd's book, *Little America* (New York, 1930).

Sir Hubert Wilkins concluded his air explorations of the other side of the Antarctic Continent, in the Graham Land region, early in the year and returned to the United States. There he obtained an obsolete submarine from the U. S. Navy and remodeled it in preparation for a projected submarine expedition to the Arctic in the summer of 1931. Dr. Isaiah Bowman, director of the American Geographical Society, told the National Academy of Sciences on September 18

that Sir Hubert's explorations in the Antarctic for two seasons were primarily in search of suitable bases for the establishment of meteorological observation posts from which weather reports could be radioed daily to Australia, South Africa, and Argentina.

The results of explorations by the British-Australian-New Zealand Antarctic Research Expedition under Sir Douglas Mawson and by the Norwegian expedition under Capt. Hjalmar Riiser-Larsen were set forth in articles by both explorers in the October, 1930, issue of the *Geographical Review*. By ship and airplane, Sir Douglas Mawson outlined the coast eastward from Enderby Land to the 67th meridian. Existence of land still farther to the east was indicated, he reported. An excellent whaling ground was discovered in the seas off the coast of Enderby Land, especially to the west thereof. The expedition, which sailed from Cape Town, Oct. 19, 1929, and completed its work in the Antarctic on Jan. 26, 1930, made some 750 deep-sea soundings and collected much hydrological, meteorological, and biological data. Corrections and extensions to charts of the Crozets, Kerguelen, and Heard Islands were also made. Riiser-Larsen, who also used airplanes extensively, mapped 370 nautical miles of coast west of Enderby Land between meridians 43° and 55° and 200 miles of new coastline from 8° 30' West to Coats Land. He discovered new whaling grounds also.

Sir Douglas Mawson sailed from New Zealand on the *Discovery* in November, 1930, to continue his Antarctic explorations. In December, the expedition made observations and soundings in the vicinity of Macquarie Island and the Bishop and Clerk Islets. Due to thick, misty weather Sir Douglas abandoned his search for Emerald Island, the reported discovery of which 100 years earlier had never been confirmed, and continued toward the Antarctic Continent.

ARCTIC. The outstanding event in Arctic exploration during the year was the discovery on White Island, also known as Giles Island, between Svalbard and Fridtjof Nansen Land (formerly Franz Josef Land), of the bodies of the Swedish explorer, Salomon August Andrée (q.v.) and his two companions, Knut Fraenkel and Nils Strindberg, who left Dane's Island, in the Svalbard Archipelago, on July 11, 1897, in an attempt to reach the North Pole by balloon. The discovery was made on August 6 by a Norwegian expedition, headed by Dr. Gunnar Horn, which stopped at White Island enroute to Fridtjof Nansen Land. The three bodies, well preserved by the ice through three decades, were removed to Sweden and cremated with state honors. Valuable records of the expedition, including Andrée's diary, boat, sledge, and camping equipment, were recovered. Andrée's diary, in which the last entry was made Sept. 5, 1897, was published in New York during the year under the title, *Andrée's Story*. Consult also George Putnam, *The Record of a Tragio Adventure* (New York, 1930).

On July 3, a British expedition sailed in Sir Ernest Shackleton's ship, the *Quest*, to survey the possibilities of an air route across the Arctic ice-cap of Greenland from Great Britain to Canada, with the Faroe Islands and Iceland as intermediate stations. Dogs for the sledge work of the expedition had previously been collected on the west coast of Greenland. The expedition was sent out under the auspices of the Royal Geographical Society and with Government coöperation. It con-

sisted of 14 members, headed by H. G. Watkins, and was equipped with airplanes, fast motor boats, and dog teams. The base camp was established on the southeastern coast and a station erected on the 8000-foot summit of the Greenland ice-cap, where two meteorologists remained throughout the winter.

The German Greenland Expedition, headed by Dr. Alfred Wegener, sailed from Holstenborg in April, 1930, for an 18-month study of the meteorological and geological conditions of Greenland and the possibilities of establishing a trans-arctic air route. The party, which included 17 members, made its base camp at Kamarujuk on the Bay of Umanak and several groups penetrated with motor and dog sledges to the centre of the island, where a weather observation post was established for the winter at an altitude of 10,000 feet. Dr. Wegener reported excellent success with his propeller sledges, having transported loads of 1000 to 1200 pounds 125 miles inland and attained a speed of 50 miles an hour on the return trips.

The Danish explorer, Dr. Lauge Koch, returned to Copenhagen Sept. 1, 1930, with a large collection of fossilized fish after a successful expedition to Greenland. His party mapped a considerable section of the coastline in the vicinity of Scoresby Sound previously unexplored. Traces were discovered of a warm period after the glacial period in Greenland's history and indications of coal veins and copper deposits were noted. In December, 1930, the Danish Committee for the Exploration of Greenland, headed by Premier Stauning, approved Dr. Koch's project for the erection of two head stations at King Oscar's Fiord and at Gael Hawkes Bay in East Greenland from which scientists could conduct thorough geologic, archaeological, zoölogic, and botanical investigations, as well as prospect for valuable minerals.

Extensive explorations by plane of the Arctic regions north of Canada were made under the auspices of the Canadian government during the summer and members of the Northwest Mounted Police added to the knowledge of this area by several notable trips by dog sledge. A two-plane party headed by Flight Lieutenant Mawdesley covered more than 20,000 miles of largely unexplored country in less than three months. Approximately 3000 photographs were taken, and much information collected concerning water courses, meteorological conditions, and the behavior of compasses around the North Magnetic Pole. The party noted few musk-oxen but great numbers of caribou. Other sources reported satisfactory progress of a herd of 3000 reindeer being driven from Alaska to the Mackenzie River district as a government aid to the Eskimos of that vicinity.

In a more spectacular flight to King William Land, Major L. T. Burwash and W. E. Gilbert in a Canadian government plane found the graves and relics of Sir John Franklin's expedition, the members of which perished 83 years previously in an effort to find the Northwest Passage. The numerous graves were arranged in orderly fashion, the evidence indicating that some of the men had succumbed to scurvy, while others had starved to death. The relics found were relatively unimportant. On his flight, Major Burwash photographed nearly 2000 miles of coastline, which had previously been roughly charted, and collected general information concerning the topography, geology, and mineral development of

the region between Coronation Gulf and Great Bear Lake. Capt. Robert A. Bartlett's Northeast Greenland Expedition found the ruins of two groups of Eskimo dwellings in July, which yielded interesting relics of the extinct tribes of that region. During his trip in the schooner *Morrissey*, Captain Bartlett collected marine specimens for the United States Coast and Geodetic Survey, the United States Fisheries, and the Smithsonian Institution.

A group of Soviet scientists, headed by Prof. Otto Schmidt, left Archangel in the icebreaker *Sedoff* in July and returned September 15, after having studied the possibilities of Fridtjof Nansen Land (formerly Franz Josef Land) and discovered two islands, named Kaminov and Wise Islands, in Lat. 79° 25' North and Long. 76° 10' East. The expedition planted the Soviet flag and left a party of four on Kaminov Island for the winter. The personnel of the Soviet radio station on Fridtjof Nansen Land was changed and studies were made of the interior of Nova Zembla. On Aldjir Island in the Nansen group the expedition found traces of the Baldwin-Ziegler Expedition under the American, Evelyn Briggs Baldwin, which wintered on the island in 1901.

The Soviet schooner *Sobby* sailed from Archangel August 3 in an effort to follow the northern coast of Siberia to Vladivostok. It was planned to land two groups of scientists and hunters to spend the winter on Taymir Peninsula and the Island of Laptiff, respectively, the former being charged with the establishment of a new whale fishery. The Soviet aviator, Chukhnovsky, spent the summer in exploratory flights covering the River Angar, the environs of the new port of Igarka at the mouth of the Yenisei, the unknown delta of the Pyasina River, and an extensive section of the Siberian northern coast. He reported immense schools of killer whales, and important fish and fur resources.

POLITICAL AND SOCIAL SCIENCE, THE AMERICAN ACADEMY OF. A national forum for the discussion of political and social questions, founded in Philadelphia, Dec. 14, 1889, and incorporated Feb. 14, 1891. The organization does not take sides upon controverted questions, but seeks to secure and present reliable information to assist the public in forming an intelligent and accurate opinion. In addition to monthly meetings during the winter, an annual meeting is held in the spring of each year at which six sessions, extending through two days, are devoted to the discussion of some general subject. The thirty-fourth annual meeting, which was held May 2-3, 1930, considered the general subject "Economic Tendencies Affecting the Peace of the World." Other meetings conducted during the year discussed the following subjects: "The Second Industrial Revolution and Its Significance"; "The Economic Basis of Reparations"; and "Security in Industry." The *Annals* is published bi-monthly as the official organ of the academy, each issue being devoted to a study of a particular topic of economic, political, or social importance. In 1930 the following volumes were issued: *The Anti-Trust Laws of the United States*; *Real Estate Problems*; *Colorado River Development and Related Problems*; *The Second Industrial Revolution and Its Significance*; *Prosperity Reserves of Public Works*; *Some Social Aspects of Mental Hygiene*; *Economics of World Peace*; *Postwar Progress in Child Welfare*; *Airport Problems of American Cities*; and *China*. These publications,

from time to time, have included special studies prepared by research fellows appointed by the academy. The officers in 1930 were: President, Dr. Ernest Minor Patterson; secretary, Dr. J. P. Lichtenberger; treasurer, Charles J. Rhoads; and vice-presidents, the Hon. Herbert Hoover, Dr. Carl Kelsey, and Dr. Charles E. Merriam. Headquarters, 3622 Locust Street, Philadelphia.

POLITICAL ECONOMY. Subjects in the field of applied economics are treated in this volume under the following heads: BANKS AND BANKING; BUSINESS REVIEW; FINANCIAL REVIEW; CHILD LABOR; COÖPERATION; LABOR ARBITRATION AND CONCILIATION; LABOR LEGISLATION; MATERNITY PROTECTION; MINIMUM WAGE; OLD AGE PENSIONS; STRIKES AND LOCKOUTS; UNEMPLOYMENT; WOMEN IN INDUSTRY; WORKMEN'S COMPENSATION. See also such articles as: CHILD WELFARE; LABOR, AMERICAN FEDERATION OF; STATISTICS; SOCIALISM; TRADE UNIONS; WELFARE WORK. See also the articles on AGRICULTURE and the various crops. Further discussions are to be found in articles on the several industries, minerals, public utilities, etc. Books on political science and economics for the general reader are to be found listed in the article LITERATURE, ENGLISH AND AMERICAN, under *Economics and Politics*.

POLITICAL SCIENCE, ACADEMY OF. An international institution for advancing the political sciences and promoting their application to public problems; founded in 1880 in New York City and incorporated in 1910. On Dec. 31, 1930, it had 7103 members, of whom nine were honorary members, 225 life members, 5635 individual members, and 1234 subscribing members, chiefly libraries and organizations. Two general meetings were held in 1930. The semi-annual meeting on April 11 in New York City dealt with the problem of public control of power. Three sessions were held, discussing the sub-topics of state regulation, immediate problems in public control, and the future of power supply and public control. The papers and addresses at this meeting were published in the *Proceedings*, vol. xiv, No. 1, under the title "Public Control of Power." At its fiftieth annual meeting, held on November 14, the academy discussed the Young Plan in Operation. There were three sessions devoted to the sub-topics of liquidating the War, America's interest in the settlement, and international collaboration. The papers and addresses of this meeting were published in the *Proceedings*, vol. xiv, No. 2. Four issues of the *Political Science Quarterly*, the official organ of the academy, were published during the year. The officers for 1930 were: Alanson B. Houghton, president; Albert Shaw, Paul M. Warburg, and R. C. McCrea, vice presidents; Parker T. Moon, secretary and editor of publications; George A. Plimpton, treasurer; and Ethel Warner, executive director and assistant treasurer. Headquarters are in Fayerweather Hall, Columbia University, New York City.

POLITICS, INSTITUTE OF. Formed for the discussion of foreign affairs, so as to promote a more sympathetic understanding of the problems and policies of other nations, these annual sessions were inaugurated by the trustees of Williams College in September, 1919. The first session of the institute was held in Williamstown, Mass., in the summer of 1921. Membership is open to men and women on the faculties of colleges and universities, to writers on foreign politics, to persons engaged in the direction of foreign

commerce or banking, to diplomatic and consular officials, to officers of the Army and Navy, to editors, foreign correspondents of the press, and, by invitation, to others who have had training and experience in the field of international law and politics.

The tenth session of the institute met July 31-Aug. 28, 1930, in Williamstown, Mass. Addresses were delivered by visitors of international reputation, including Prof. C. DeLisle Burns, who spoke on "Western Civilization and the World"; Lord Meston of Agra and Donottar, whose subject was "India and Nationalism"; and Admiral Sir Herbert Richmond, who took for his subject "Principles of Naval Disarmament." Lecture courses included: "France and the Disarmament Problem," by Dr. Paul Mantoux, Paris; "The Freedom of the Seas," by Lord Eustace Percy, London; "The Evolution of International Public Law in Europe since Grotius," by Dr. Walter Simons, Berlin.

The following is a list of round-table subjects with their respective leaders: "An Analysis of Western Civilization," Prof. C. DeLisle Burns; "Recent Economic Progress in Europe," Prof. Edwin F. Gay, Harvard University; "The Political Aspects of Aërial Navigation," Edward P. Warner, editor of *Aviation*; "The Far Eastern Situation," Prof. George H. Blakeslee, Clark University; "Limitation of Armaments," Admiral Arthur J. Hepburn, U. S. N.; "Pan American Problems," Prof. Jesse S. Reeves, University of Michigan. There were also special general conferences on "The Domestic and Foreign Problems of Russia," "The Arctic and the Antarctic," "Arbitration and Intervention in the Caribbean Area," and "India and Nationalism." At the last named Lord Meston of Agra and Dunottar presided.

The officers of administration of the institute in 1930 were: Harry Augustus Garfield, chairman; Walter Wallace McLaren, executive secretary; Williard Evans Hoyt, treasurer.

POLO. The major event of the 1930 polo season was the decisive victory of the United States team in capturing two straight matches from invading British players in the tenth international competition for the Winchester Cup at the Meadow Brook Club, Long Island, in September. Ninety thousand spectators witnessed the series, and in the second match were treated to a brand of polo rarely seen in the United States. The scores were 10-5 and 14-9. The United States team included Eric Pedley, Earle A. S. Hopping, Thomas Hitchcock Jr., and Winston F. C. Guest. The British team, from which illness eliminated several leading players, consisted of Gerald Balding, Lewis L. Lacey, C. T. I. Roark, and Humphrey Guinness.

With the aid of Roark of the British team, the Hurricanes won the American open championship at the close of the season. The national junior championship was captured by the United States Army team, the national intercollegiate title by Yale, and the Waterbury Memorial Cup, the most important handicap event, by the Roslyn team. The U. S. Army team visited Argentina at the close of the season in the United States, reaching the final in the Argentine open and defeating the Argentine Army in a special match. A team from Argentina visited the Pacific Coast and took the Coast championship home with them. Indoor polo enjoyed an unusually successful season in the United States, the Optimists capturing the national indoor open and Class A titles.

PONAPE. See CAROLINE ISLANDS.

PONDICHÉRY. See FRENCH INDIA.

POONA NEGOTIATIONS. See INDIA under *History*.

POPE PIUS XI. See ROMAN CATHOLIC CHURCH; ITALY under *History*.

POPULATION. See each country under AREA AND POPULATION; AGRICULTURE.

PORK. See LIVESTOCK.

PORTLAND CEMENT. See CEMENT.

PORTO-RICHE, pòrtò'rèsh', GEORGES DE. A French dramatist, died in Paris, Sept. 5, 1930. He was born in Bordeaux, May 20, 1849, and produced his first important play, *Un drame sous Philippe II*, at the Odéon in 1878. His fame was established in 1891 when *Amoureuse* was produced with Mme. Réjane, and he became recognized as the father of contemporary French drama in his ability to analyze the erotic emotions of men and women. In 1923 he was elected a member of the French Academy, and served for many years as director of the Bibliothèque Mazarine. His principal works, in addition to *Amoureuse*, are: *La chance de Françoise* (1889); *L'Infidèle* (1890); *Le passé* (1898); *Les Malefilières* (1904); *Le vieil homme* (1911); *Le Marchand d'estampes* (1917); and *Anatomie sentimentale* (1920).

PORTO RICO, pòrtò-rekò. An island possession of the United States in the West Indies; the most easterly and smallest but most densely populated of the Greater Antilles; lying 480 miles east of Cuba, 1380 miles southeast of New York. Capital, San Juan.

AREA AND POPULATION. The area of the island is 3425 square miles and the population, according to the census of 1930, 1,543,913 (1,299,809 in 1920). The population in 1920 was 73 per cent white and 27 per cent Negro and mulatto. The chief cities, with their populations in 1930, are San Juan, 114,585 (71,443 in 1920); Ponce, 53,417 (41,912); and Mayagüez, 36,956 (19,124). For the period 1925 to 1929, births averaged 56,802 annually and deaths, 33,566; the birth rate per 1000 inhabitants was 39.6 and the death rate was 23.3.

EDUCATION. Elementary education is free and compulsory between the ages of 8 and 14. The ratio of illiteracy is about 48 per cent. According to the Governor's annual report for the fiscal year 1929-30, 221,248 pupils were enrolled in government-supported schools and the average attendance was 193,396, out of a total of about 500,000 children of school age. The sum of \$4,012,164, or 41.8 per cent of the total insular revenues, was spent on education in 1929-30, in addition to \$1,296,885 expended by the municipalities. Carlos E. Chardon, Commissioner of Agriculture, was appointed Chancellor of the University of Porto Rico Oct. 22, 1930, succeeding Dr. Thomas E. Benner.

PRODUCTION. A preliminary census report for 1930 showed 52,113 farms in Porto Rico, as compared with 41,078 farms in 1920. Primarily dependent upon sugar production for its prosperity, the island's economy was extensively deranged by the collapse of sugar prices in 1929 and 1930, following the destructive hurricane of September, 1928. Tobacco, coffee, and citrus fruits are other major crops; cotton, cacao, beans, and various textile fibres are grown also. For the year ended June 30, 1930, sugar production totaled 886,109 short tons, as compared with the short crop of 586,760 tons in 1928-29, while the tobacco output increased to about 27,000,000 pounds from a total of 24,600,000 pounds in 1928-29.

Due to hurricane destruction in 1926 and 1928, coffee production fell off from 26,330,000 pounds in 1925-26 to 1,279,000 pounds in 1928-29 but recovered in 1929-30 to over 12,000,000 pounds. The fruit growing and canning industry is expanding rapidly. Fruit orchards recovered more quickly from the 1928 hurricane than coffee trees, and the 1929-30 harvest was estimated to be a little above average. About one-fifth of the forests of the island were destroyed by the hurricane. During 1929 the insular forest department distributed 1,029,000 seedlings and plantings in connection with a reforestation programme (779,000 in 1928). There is virtually no mining, although small deposits of gold, silver, and other metals exist.

The chief manufacturing industries are sugar refining, and the making of cigars, cigarettes, fine needlework, women's wear, and men's clothing. In an effort to raise the general standard of living through industrialization, a law was passed in 1930 exempting new industries from taxation for a period of not over ten years. In 1928-29, cigar production rose to 220,110,000 from 207,770,000 in 1927-28, while cigarette production fell to 304,407,000 from the 1927-28 figure of 390,200,000. Shipments of needlework products to the United States increased from \$9,549,000 in 1928 to \$14,293,000 in 1929, or nearly 50 per cent. This industry, centred at Mayagüez, employed about 50,000 laborers, chiefly female. Of 460,940 available workers in Porto Rico in 1929, 170,519, or 37 per cent, were unemployed, according to the chief of the insular Bureau of Labor. Unemployment is chronic due to the dense overpopulation of the island.

COMMERCE. The total trade with the United States and foreign countries for the year ended June 30, 1930, totaled \$183,568,487, or 2.6 per cent more than during the hurricane year of 1928-29, when the figure was \$178,810,510. About 92 per cent of the total trade was with continental United States, shipments to the United States comprising 95.4 per cent of the total exports and shipments from the United States representing 87 per cent of all imports. The balance of trade, which was unfavorable in 1928-29 for the first time since 1923-24, became favorable in 1929-30. Imports totaled \$83,921,829 (\$97,860,760 in 1928-29) and exports \$99,646,658 (\$81,722,870 in 1928-29). The values of the principal exports, with comparative figures for 1928-29 in parentheses, were: Sugar, \$53,670,038 (\$35,224,038); coffee, \$151,503 (\$456,831 in 1928-29 and \$2,596,872 in 1927-28); leaf tobacco, \$10,602,170 (\$11,220,264); cigars, \$3,408,721 (\$3,847,797); fruit, \$7,671,525 (\$2,850,722); coconuts, \$218,787 (\$249,665). The chief imports were rice, wheat flour, and other grain products, cotton manufactures, iron and steel, and meat products.

In the calendar year 1930, Porto Rican shipments to the United States were valued at \$99,880,061 (\$78,126,574 in 1929), according to preliminary returns. Imports from the United States totaled \$74,219,219 (\$75,979,914 in 1929). The favorable balance of trade with the United States was \$25,660,000 in 1930 (\$2,146,000 in 1929).

FINANCE. The budget estimates for the fiscal year ended June 30, 1930, balanced at \$10,499,000, as compared with the 1928-29 budget of \$10,968,000. A deficit of \$2,000,000 in the 1929-30 financial operations was threatened early in the year, but careful paring of expenses reduced

the final deficit to about \$1,126,929. Revenue receipts were \$9,614,246 and net disbursements against appropriations were \$11,048,635. The appropriation of \$1,500,000 by the United States Congress for hurricane relief relieved the insular Government of the necessity of certain expenditures. The budget for 1930-31 provided for expenditures of \$10,451,000 from an estimated revenue of \$10,500,000.

In his address at the opening of the Porto Rico Legislature on Feb. 10, 1930, Governor Roosevelt reported that the net insular bonded indebtedness was \$25,390,000 and the insular floating indebtedness about \$3,024,950. In addition, the municipalities had an aggregate bonded indebtedness of \$18,314,000. In accordance with the Governor's recommendations, the deficit for 1929-30 was met in part by a \$1,000,000 loan floated during the year, the remainder being paid off out of a \$4,000,000 bond issue placed on the market July 1, 1930. The balance of the latter loan was used to fund the floating insular debt.

COMMUNICATIONS. There were in 1929 about 335 miles of railway line, 1115 miles of surfaced highways, 1098 miles of telegraph wire, and 28,942 miles of telephone wire. The telegraph and telephone systems are Government owned and operated. An air-mail and passenger service is in operation from Porto Rico to the United States and to South American points. Vessels in the foreign trade entering Porto Rican ports in 1929 numbered 1149 of 1,454,383 net registered tons (excluding trade with the United States), of which 627 vessels of 589,337 tons were American; vessels clearing totaled 1175 of 1,581,838 net tons.

GOVERNMENT. The Constitution, as determined by the Jones Act passed by the United States Congress in 1917, vests executive power in a governor appointed by the President of the United States and legislative power in a legislature of two elective houses: a senate of 19 members and a house of representatives of 49 members. A resident commissioner, elected by the people for a term of four years, represents Porto Rico in the United States Congress. The six departmental heads form an executive council, presided over by the Governor. The Jones Act conferred United States citizenship upon the people of the island. Governor in 1930, Col. Theodore Roosevelt, son of President Roosevelt, appointed in 1929.

HISTORY. Under the energetic leadership of Governor Roosevelt, and with assistance from the United States, Porto Rico in 1930 attacked with new vigor the difficult problems of overpopulation, poverty, disease, and illiteracy, which had become increasingly acute following the disastrous hurricane of September, 1928. In his report for the fiscal year ended June 30, 1930, the Governor stated that some 35,000 people on the island were suffering from tuberculosis, about 200,000 from malaria, and about 600,000 from hookworm. The tuberculosis death rate was four and one-half times that of continental United States and the malaria rate, two and one-half times greater. A complementary report by a committee of the American Child Health Association, issued in July, told of widespread suffering and extreme poverty due to unemployment, low wages, disease, overpopulation, and the great prevalence of illegitimacy and illegal marriages.

A broad health programme was instituted with the aid of American welfare organizations

concentrated in the Porto Rico Child Health Committee. The infant mortality rate was cut from 179 to 133 per 1000, dysentery and other diseases were restricted, and the general mortality rate was reduced to 21.3 per 1000, Governor Roosevelt reported.

To reduce unemployment, the Government inaugurated a system for the purchase of land from large estates and its distribution in small holdings. An efficient rural and vocational school policy was adopted, including the teaching of farm methods by visual instruction, and plans were outlined for the production of more vegetables and for fostering produce-marketing coöperatives. Employment was stimulated by an appropriation by the United States Congress of \$2,000,000 for road work.

Economics played a large part in the deliberations of the insular Legislature which adjourned April 17, 1930. The most important measures enacted provided for the establishment of an insular Department of Commerce, the reorganization of the judiciary system, and a uniform negotiable instruments law.

A survey of the economic and social situation in Porto Rico was completed and published during the year under the auspices of the Brookings Institution of Washington, D. C. (see *Porto Rico and Its Problems*, by Victor S. Clark and associates). The investigators reported that the majority of the daily laboring population earned approximately 70 cents a day and were employed about four days out of seven, the income of the average rural family amounting to from \$250 to \$275 annually. The great majority of the rural population are tenants, living upon the plantations and farms of large landowners, by whom they are partially employed.

The political recommendations of the Brookings Institution report, constituting a minor feature, aroused a storm of protest in the Porto Rican press. In general these recommendations favored restriction of the island's autonomy and repeal of the provisions of the organic act limiting land holdings of corporations to 500 acres.

The response to the political recommendations of the report emphasized the existence of a Nationalist movement on the island. The Nationalist convention held in May, 1930, was attended by spokesmen of three leading political parties. Two of the parties had independence planks in their platforms, although in both cases a referendum vote, sponsored by Congress, was provided for. The Nationalist leader, Pedro Albizu Campos, contended that 60 per cent of the population favored the establishment of a republic, a figure declared grossly exaggerated by his opponents. The actual membership of his party was small. Its members pledged themselves not to coöperate with the Government by accepting appointive public offices. The debate on the island's future status, stimulated in the native press by the economic depression, revealed a wide diversity of opinion as to whether statehood, autonomy, or independence would prove most beneficial. Absentee landlordism, as practiced by American financial interests owning large sugar plantations in Porto Rico, was held chiefly responsible for the poverty of the Porto Rican masses by many of the island's intelligentsia, regardless of their attitude towards independence. Consult Thomas E. Benner, "American Difficulties in Porto Rico" in *Foreign Affairs* (July, 1930) and the Governor's *Thirtieth Annual Report*. See UNEMPLOYMENT,

PORTS AND HARBORS. WORLD'S LARGEST DRY DOCK. The largest dry dock in the world was planned for construction in Southampton, England, to replace the existing floating dry dock. According to the plans the new dock was to be 1200 ft. long, 135 ft. wide and was to have a depth of 45 ft. The largest dry dock in 1930 was the Commonwealth Dock of the U. S. Navy at Boston, Mass. This dock is 1200 ft. long and 120 ft. wide, whereas the largest in Great Britain is the Gladstone Dock at Liverpool, 1050 ft. long and 120 ft. wide.

NEW YORK PIERS. Plans actively were brought forward during the year greatly to extend the Hudson River pier facilities of Manhattan Island. It was proposed to secure permission from the U. S. War Department to extend the pier-head line about 100 ft. into the Hudson and to replace existing piers in the mid-city section with new works of 1000 ft. in length.

AIRPORTS. The advent of commercial aviation had already resulted in numerous air-port developments and in some novel hangar constructions. Among those recently constructed the following may be noted:

St. Paul, Minn. By buying a comparatively inexpensive piece of waste land and filling and improving it, this city secured an excellent air port within one mile of the Post Office. The port covers about 300 acres on the Mississippi River and was to include a hydroplane basin. The plans adopted were particularly interesting because they allowed for a progressive development to meet future traffic needs and also permitted a progressive use of the port as construction continued. This was accomplished primarily by adopting a unique runway plan consisting of a series of intersecting triangles.

Seville, Spain. This city apparently was selected as the European port or terminus for transatlantic airship routes from both North and South America. A huge hangar for lighter-than-air craft was built there and a duplicate was to be erected at Buenos Aires. In plan of construction the Seville hangar was almost identical with the remarkable structure designed by M. Freyssinet and built several years previously at Orly, France, near Paris. Some 950 ft. long, 400 ft. wide, and 150 ft. high, this new structure was essentially a huge half section of corrugated concrete pipe. Inner and outer arches or ribs of reinforced concrete were joined by reinforced concrete walls only 4 inches thick, yet the structure arched over the great 400-ft. span and gave a clear and unobstructed view of the interior.

PORTUGAL. A republic of Europe, situated west of Spain in the Iberian Peninsula; the westernmost of all the states of Europe. Capital, Lisbon.

AREA AND POPULATION. The area of continental Portugal is 34,254 square miles; population, according to the census of 1920, 5,621,977, as compared with 5,574,578 in 1911. The Azores, with an area of 922 square miles, had a population of 232,012 in 1920; and Madeira, with an area of 314 square miles, a population of 179,002. In December, 1928, the estimated population was 5,920,000 in Portugal, 240,000 in the Azores, and 185,000 in Madeira. As Madeira and the Azores are considered integral parts of the republic, the total area was 35,490 square miles and the total population, 6,345,000 in 1928 (6,032,991 in 1920). Births in 1928 numbered 211,314; deaths, 124,088; marriages, 45,347. As

a colonial power, Portugal ranks third in the world. Her colonial possessions in Africa and Asia had an estimated area of 936,264 square miles, with a population of 8,737,853, of which 927,292 square miles with a population of 7,736,700 were in Africa. Lisbon, the capital, had a population at a special census in 1925 of 529,524 and Oporto, 215,625.

EDUCATION. At the census of 1920, 47 per cent of the males and 61.5 per cent of the females over the age of six were illiterate. Primary education is compulsory. Public elementary schools in 1927-28 numbered 7489, with 321,232 pupils; secondary schools, 33, with 15,096 pupils. The three universities, with the enrollments in 1927-28, were: Lisbon, 2249; Coimbra, 1621; and Oporto, 1137.

PRODUCTION. Agriculture is the predominant industry. The Ministry of Agriculture estimated that 60 per cent of the total area is cultivated, 20.4 per cent productive but uncultivated, and 15.7 per cent, or 3,502,000 acres, suitable for cultivation but not tilled. Cereals, pulse, other crops, and pasture occupy 37.4 per cent of the entire area, 6.2 per cent is under fruit trees, 5.4 per cent under vineyards, 26 per cent under forest, and 25 per cent is waste. Production of the chief cereal crops in 1929, with totals for 1928 in parentheses, was as follows (in quintals of 220.46 pounds): Wheat, 3,024,000 (2,053,648); rye, 1,345,000 (1,007,000); barley, 438,000 (311,000); oats, 876,000 (733,000). The maize crop in 1928 totaled 3,635,000 quintals; rice and potatoes, 202,013 metric tons; wine, 99,542,784 gallons; olive oil, 6,302,252 gallons. The sardine fisheries rank second among the industries of the country. Production of the sea fisheries in 1928 was valued at 245,000,000 escudos (1 escudo exchanged at \$0.0447 in 1929). Cork is an important export commodity.

Due to the lack of fuel and cheap transport, Portugal's considerable mineral wealth remains largely undeveloped. The mineral production in 1928 included: Coal, 201,000 tons; copper ore, 243,000 tons; super-phosphates of lime, 143,000 tons; lignite, 27,000 tons. In 1930, low mineral prices virtually closed down mining operations. Textile production is the principal manufacturing industry and employed about 45,000 operatives. Commerce and industry were generally depressed during 1930, but a good agricultural crop improved internal market prospects.

COMMERCE. According to revised figures issued by the General Board of Statistics, imports for consumption declined slightly in 1929 to 2,545,670,000 escudos (about \$113,791,000) from 2,682,800,000 escudos in 1928. Exports showed a slight increase to 1,080,520,000 escudos (about \$48,299,000) from 1,028,200,000 escudos in the previous year. The adverse balance of trade stood at 1,465,150,000 escudos (about \$65,492,361) in 1929 and 1,654,600,000 escudos in 1928. Wines, cork, and canned fish (especially sardines) were the chief exports, and wheat, codfish, and manufactured articles were the principal imports. Great Britain retained her leading position in the Portuguese trade in 1929, but increased imports from Germany and the United States reduced Britain's lead. Great Britain furnished 26.85 per cent of the total imports in 1929 (30.67 per cent in 1928) and took 23.37 per cent of all Portuguese exports. Germany furnished 15 per cent of the imports (13 per cent in 1928) and purchased 11 per cent of the

exports. The United States supplied 13 per cent (11 per cent in 1928) and took 7.22 per cent. France furnished 9.3 per cent and took 11.29 per cent.

FINANCE. Budget estimates for the fiscal year ended June 30, 1930, placed revenues at 2,033,433,000 escudos and expenditures at 2,024,854,000 escudos. Actual returns, according to an official announcement of Oct. 15, 1930, showed a surplus of 90,000,000 escudos (about \$4,000,000). For the fiscal year 1928-29, actual revenues amounted to 2,326,000,000 escudos and actual expenditures to 2,049,000,000 escudos, the surplus being about 277,000,000 escudos. This compared with a deficit of 195,000,000 escudos in 1927-28 and an accumulated deficit from 1919 to 1928 of some \$191,000,000. The floating debt was reduced from 2,196,000,000 escudos on April 30, 1928, to 1,170,000,000 escudos on the same date of 1930. The total public debt on Jan. 1, 1929, stood at 10,489,300,000 escudos, of which 4,326,200,000 escudos was internal (2,051,000,000 escudos comprising the floating debt) and 6,163,100,000 escudos external debt.

Portuguese finances in 1930 were reported in better shape than at any time since the revolution of 1910. An internal loan of about \$4,500,000 for the improvement of Portuguese ports was oversubscribed.

COMMUNICATIONS. Railway lines in operation in 1928 totaled 2103 miles, of which about 894 miles were state-owned line leased to the principal private operator. Highways extended about 9315 miles, most of which were in urgent need of repair. In 1930, a Franco-Portuguese aviation company obtained a 30-year concession for the exploitation of commercial aviation within Portugal and a monopoly of air routes between Portugal and her colonies. From May 19, 1928, to September, 1930, Portugal established telephone connections with 14 European countries. Vessels entering the ports in 1928 totaled 9549 of 26,131,562 tons; vessels clearing, 9467 of 26,116,202 tons.

GOVERNMENT. According to the Constitution of 1911, executive power is vested in the President, elected by Parliament for four years but ineligible for reelection, who acts through a responsible ministry; and legislative power in the Parliament of two chambers, the Upper House having 71 members elected by the municipal councils and the Lower House, 164 members elected for three years by direct suffrage. Acting President in 1930, Gen. Antonio Oscar de Fragoso Carmona (elected March 25, 1928). The Cabinet, as constituted Jan. 20, 1930, included: Prime Minister, Gen. Domingos de Oliveira; Interior, Dr. Antonio Lopes Matheus; Commerce and Communications, Dr. Antunes Guimaraes; Foreign Affairs, Commander Fernando Augusto Branco; Marine, Commander Magalhaes Correia; Justice, Dr. Lopes de Fonseca; War, Col. Joao Namorado de Aguiar; Agriculture, Lieut. Col. Linhares de Lima; Finance and (acting) Colonies, Dr. Antonio de Oliveira Salazar; Education, Dr. Gustavo Ramos. Parliament had not been convened (1930) since the establishment of the military dictatorship on June 6, 1926.

HISTORY

INTERNAL UNREST. The military dictatorship of President Carmona remained supreme

throughout 1930 by effectively crushing a number of monarchist and republican revolutionary conspiracies. An elaborate and efficient secret police system, with ramifications throughout the Provinces, and a rigid censorship of the press enabled the military chiefs to nip successive plots in the bud and to deport the ringleaders. As economic depression and unemployment became more acute during 1930, the restiveness of the population under military rule and high taxation evidenced itself in the increasing tension, which the dictator's promises of a return to constitutionalism failed to relieve. The Carmona régime, however, continued its excellent work of rehabilitating the national finances and improving the long-neglected highways and public works. A new Cabinet was formed Jan. 21, 1930, by Gen. Domingos de Oliveira (see above under *Government*), after a previous effort by Col. Passos Souza had failed. General de Oliveira announced that there would be no change in the policies of the dictatorship. His Cabinet was composed mainly of clericals and moderate republicans.

During July the Government frustrated two revolutionary conspiracies, the first headed by the monarchist leader, Col. Joao Almeida, and the second hatched by the Democrats in collaboration with a section of the army, Colonel Almeida and over 300 soldiers and civilians were arrested and on July 20 the Government deported to the Azores 27 soldiers and civilians accused of participating in the conspiracies. A third conspiracy was reported to have been blocked on October 6 by the timely concentration of government forces in key positions in Lisbon and the arrest of republican ringleaders.

An official note issued July 24, 1930, announced that steps were being taken to form "a civilian organization destined to guarantee the transition of the Government from the dictatorship to constitutional normalcy, which will assure the continuance of the work begun by the dictatorship." Subsequently (on July 31) the principles of a new party, the *Uniao Nacional* (National Union), were formulated at a meeting of the Cabinet and some 750 civil governors and chairmen of city councils called to Lisbon for that purpose. The Governors were delegated to organize the party in their respective districts. The new organization apparently was to be modeled on that of the Italian Fascist party, and members of the proposed Parliament were to be elected from its ranks. The Government's plans for a return to constitutionalism, as outlined by the Minister of Finance, called for a parliament with limited legislative powers, responsible to the President, who would appoint and dismiss Cabinet Ministers. No concrete steps toward the partial abandonment of the dictatorship were reported by the end of the year.

The movement for the restoration of the monarchy in Portugal was strengthened during the year by union of the followers of Dom Manoel II, who was deposed as King of Portugal by the republican revolution of 1910, and of Prince Nuno Duarte, 23-year-old pretender to the throne, in support of the candidacy of the latter. Engrossed in literary activities, Dom Manoel showed little desire to leave the seclusion of his London palace and to return to Portugal even as King. Prince Duarte, on the other hand, was active in the monarchist movement. He was reported to have entered Portugal

in secret a number of times, despite the ban against his presence, and to have presided at royalist meetings.

THE COLONIES. Charges that slavery or forced labor were practiced in Portuguese Africa were investigated during the year by Dr. Oliveira Santos, former colonial governor, whose report was forwarded to the League of Nations and to the governments of all English-speaking countries. It was said to contain documentary evidence refuting the charges. Criticism of Portuguese colonial administration was believed responsible for the resignation of Col. Bento Roma. Governor-General of Angola (see ANGOLA). A demand for complete autonomy under Portuguese sovereignty for the colonies of Angola, St. Thomas, Cape Verde, Guinea, and Mozambique was issued in a manifesto of the National African party on August 12.

FOREIGN AFFAIRS. The traditional friendly and intimate relations between Portugal and Great Britain were somewhat strained during the year due to the Government's alleged discrimination against foreign shipping, the cancellation by the Government of an English firm's contract in Portugal, the alleged ill-treatment of an English ship's officer in Angola, and other unpleasant incidents. These developments were accompanied by further steps in the direction of a rapprochement with Spain. The Government was officially informed on August 6 that the arbitration court at Lausanne had awarded Portugal 48,000,000 gold marks (about \$11,520,000) from Germany for damages to Portuguese African colonies during the World War.

PORTUGUESE EAST AFRICA, or **MOZAMBIQUE.** A colony of Portugal, occupying the east coast of Africa between Tanganyika Territory and the Union of South Africa. Area, 293,436 square miles; total population (1927), 3,514,612, including 35,570 Europeans and Asiatics and 3,479,042 natives. The colony is divided into the State-administered province of Mozambique (area, 194,953 square miles; population, 3,225,289) and the territory of Manica and Sofala administered from Beira by the Mozambique Company under royal charter (area, 98,483 square miles; population, 289,323). Lourenço Marques (population 37,307) is capital of the province, and a leading port. Other ports are Mozambique, Beira, and Porto Amelia. The chief products are sugar, maize, cotton, and minerals. For 1928, imports into the province totaled 13,308,200 escudos gold; exports, 11,877,039 escudos gold. Imports and exports of the chartered colony in 1927 were 5,418,176 and 2,511,805 escudos gold, respectively. Revenue and expenditure of the province for 1928-29 were estimated at 322,483,961 escudos (1 escudo exchanged for approximately \$0.05 in 1927 and \$0.044 in 1928). In the chartered colony for 1928, receipts totaled about 64,758,535 escudos and expenditures about 44,570,427 escudos. In 1927 there were 440 miles of railway. Governor in 1930, Lieutenant-Commander Carlos de Almeida Pereira. See **PORTUGAL** under *History*.

PORTUGUESE GUINEA, g'i'nê. A colony of Portugal on the west coast of Africa, entirely surrounded on the land side by French territory. It includes the archipelago of Bijagoz, together with the island of Bolama on which is situated the capital, Bolama. Area, estimated at 13,940 square miles; population (1928), 343,961. The principal port is Bissau. The chief products are

wax, rubber, ivory, hides, and oil seeds. The imports in 1928 were valued at 5,319,294 escudos; exports at 2,903,195 escudos (1 escudo exchanged at about \$0.044). For 1929-30 the estimated Government receipts were 23,484,500 escudos and the estimated expenditures, 23,367,864 escudos. See **PORTUGAL** under *History*.

PORTUGUESE WEST AFRICA. See **ANGOLA**.

POST, MELVILLE DAVISSON. An American lawyer and author, died in Clarksburg, W. Va., June 23, 1930. He was born in Harrison Co., W. Va., Apr. 19, 1871, and was graduated from West Virginia University with the A.B. degree in 1891 and the LL.B. degree in 1892. On being admitted to the bar he formed a partnership with Col. John T. McGraw, Democratic National Committeeman. In 1892 he was a presidential elector, voting for Grover Cleveland and serving as secretary of the Electoral College. In 1898 he was chairman of the Democratic Congressional Committee for West Virginia. He also acted during 1914-15 as chairman of the advisory committee of the National Economic League on the question of efficiency in the administration of justice. In addition to his legal and political activities he was well known as a mystery and detective story writer. His books include: *The Strange Schemes of Randolph Mason* (1896); *The Man of Last Resort* (1897); *Dwellers in the Hills* (1901); *The Corrector of Destinies* (1909); *The Gilded Chair* (1910); *The Nameless Thing* (1912); *Uncle Abner* (1918); *The Mystery at the Blue Villa* (1919); *The Sleuth of St. James's Square* (1920); *The Mountain School Teacher* (1922); *Monsieur Jonquelle* (1923); *Walker of the Secret Service* (1925); *The Man Hunters* (1926); and *The Revolt of the Birds* (1927).

POST OFFICE. See **UNITED STATES**.

POTASH. The potash industry throughout the world was generally prosperous during 1930, with improvements taking place in the product and the treatment of by-products as well as in the organization and operation of plants, including facilities for loading and transportation. In Germany there was an estimated reduction of about 10 per cent in German potash exports, declining from the value of 6,013,000 marks in 1929 to 5,284,000 marks in 1930. The reason for the decline was the decrease in the fertilizer imported by Poland, declining from 8,370,000 marks to 1,840,000 marks in 1930. Czechoslovakia's imports declined by over 2,000,000 marks, but Holland, the United States, Denmark, Belgium, and Norway increased their takings. It will be recalled that potash producers in France and Germany act together in a combine.

In the United States the American potash industry in 1930 was estimated to have produced somewhat more than 100,000 tons of potash salts, equivalent to about 59,000 tons of actual potash, comparing with 107,820 tons of potassium salts, equivalent to 61,590 tons of potash (K₂O) in 1929. Substantial plant enlargements were under construction in 1930, which were estimated to increase the output of American operators by about 50 per cent. New enterprises were reported in the Texas and New Mexico fields, and the prices from American plants followed the level of the German-French combine fixed in 1929.

Imports of potash fertilizers in 1930 included muriate of potash, 273,211 tons valued at \$9,928,102, as against 230,966 tons valued at \$8,224,661 in 1929; manure salts, 361,688 tons valued at

\$5,047,089 in 1930 as against 390,828 tons valued at \$5,113,085 in 1929; crude sulphate of potash, 86,257 tons valued at \$3,947,479 in 1930, as against 79,510 tons valued at \$3,647,839 in 1929. See FERTILIZERS; GEOLOGY; CHEMISTRY, INDUSTRIAL.

POTASSIUM. See FERTILIZERS; CHEMISTRY, INDUSTRIAL.

POTATOES. The 1930 potato production of 27 countries reporting to the International Institute of Agriculture, Rome, was estimated at 4,527,051,000 bushels, a decrease of 5.6 per cent from the yield in 1929 but an increase of 8.1 per cent above the annual average of the five years 1924-28. The potato area of those countries was 25,807,000 acres and only 0.8 per cent below the area of 1929 and 2.8 per cent above the average for the five-year period. The European crop, usually about 90 per cent of the world's yield, was reported as smaller than the record crop of 1929 but larger than the harvests in 1926, 1927, and 1928. A number of European countries reported yields in 1930 well above the average for the five years 1924-28. The leading producing countries, not including the United States, reported yields as follows: Germany, 1,627,885,000 bushels; Poland, 1,063,713,000 bushels; Czechoslovakia, 300,491,000 bushels; Spain, 154,153,000 bushels; Belgium, 101,097,000 bushels; England and Wales, 102,331,000 bushels; the Netherlands, 94,716,000 bushels; and Canada, 81,933,000 bushels.

The production of Germany represented an increase of 11 per cent over the yield of 1929 and was the largest crop since the war. Potatoes are largely fed to livestock in Germany and their use in view of the shortage of feed grains was encouraged by the Government this year. The Polish crop was more than 100,000,000 bushels below the 1929 yield. Czechoslovakia in 1930 produced the smallest crop since 1926 and England and Wales since 1916. France, not included in these estimates, during the past six years produced from 400,000,000 to 600,000,000 bushels but the 1930 crop suffered from wet weather and was injured to some extent by rot. The 1930 acreage of the Soviet Republics was reported as 13,171,000 acres compared with 14,683,000 acres harvested in 1929 and producing 1,758,157,000 bushels.

The potato crop of the United States in 1930 was estimated by the Department of Agriculture at 361,090,000 bushels produced on 3,394,000 acres, the rate per acre being 106.4 bushels. In 1929 the yield was 359,048,000 bushels, the area 3,338,000 acres, and the average acre-yield 107.6 bushels. The average farm price on Dec. 1, 1930, was only 90.4 cents per bushel compared with \$1.309 the year before. Computed at this rate, the value of the 1930 crop was \$326,457,000 and of the 1929 crop \$469,837,000. All States reported potato production and the leading ones and their yields were as follows: Maine, 46,120,000 bushels; New York, 29,116,000 bushels; Idaho, 25,038,000 bushels; Pennsylvania, 23,166,000 bushels; Minnesota, 21,350,000 bushels; Wisconsin, 18,056,000 bushels; Michigan, 15,254,000 bushels; Colorado, 15,050,000 bushels; and Virginia, 14,583,000 bushels. The average yield per acre ranged from 50 bushels in Delaware to 240 bushels in Maine. Only five States reported an average yield per acre of 200 bushels or more and 16 States between 100 and 200 bushels. The highest acreage, 322,000 acres, was reported for Minnesota. For the fiscal year ended June 30, 1930, the United States ex-

ported 2,386,000 bushels of potatoes valued at \$3,228,000 and the imports for the year were 360,361,000 pounds with a value of \$7,029,000.

During the year the Federal Farm Board approved plans for the development of central marketing programmes for potatoes as presented by coöperative associations handling the product. The Interstate Early Potato Committee organized in 1928 was continued for another three years to study and make recommendations on acreage stabilization, credit facilities, substitute crops and enterprises, and market coördination. See HORTICULTURE.

POULTRY. See LIVESTOCK.

POULTRY DISEASES. See VETERINARY MEDICINE.

POWER DEVELOPMENT. See POWER PLANTS, STEAM TURBINES; WATER POWER.

POWER PLANTS. The number of public utility power plants in the United States, of over 100 kilowatts capacity, was 2863 private and 1010 municipal with a total rated capacity of 33,860,000 kilowatts. Of this nearly 73 per cent were steam, over 35 per cent hydro and 2 per cent internal combustion engines. New capacity added during 1930 was approximately 2,000,000 kilowatts.

The total output of all central stations during 1930, according to the U. S. Geological Survey, was 96 million kilowatt hours. Of this 18.7 per cent was consumed in transmission losses and company use, about 15 per cent was sold for domestic use, 21 per cent went to small retail customers, 52 per cent was used by large manufacturing plants and the remainder was taken up by railways and municipal lighting.

Thirty-nine million tons of coal, 8,646,000 barrels of fuel oil, and 121 billion cubic feet of natural gas were burned in public utility power plants during 1930, and the average fuel consumption, reduced to coal equivalent, was 1.63 pounds per kilowatt hour. This represents just one-half the corresponding figure for 1919; or expressed differently, the average efficiency of steam power plants had just doubled in 11 years.

The total capacity of private industrial power plants in the United States, according to the Census returns, was over 19,000,000 horse-power capacity of which 16,931,000 horse power was steam, 1,598,000 horse power water power and 1,170,000 horse power internal combustion engines. No figures were available as to the fuel consumption.

In public utility stations the trend toward large high-pressure units continued, there being in service or nearing completion at the end of 1930 in the United States over a dozen plants operating at 1200 to 1400 pounds steam pressure. Several were also in service in Europe. Taking advantage of recent advances in metallurgy the trend also covered higher steam temperatures, several of the new stations being designed to operate at 825° to 850° F. In Europe the St. Denis Station of the Société de Électricité de Paris was putting in three 50,000 kilowatt steam turbines to operate at 840° to 920° F. The urge toward reduced unit investment costs had led to greater concentrations of power in single units, simplification of layout, and in one case an outdoor plant without a building.

The year saw new records established in power-plant efficiency. Powerton Station in Illinois for one month operated at 12,455 B.t.u. per kilowatt hour and averaged 12,610 B.t.u. for a period of

six months. The new 1200-pound Gilbert Station at Holland, N. J., operated at a minimum figure of 11,866 B.t.u. per kilowatt hour and the Long Beach Station at Long Beach, Calif., which burned natural gas and oil averaged 12,850 B.t.u. per kilowatt hour for a year. These economies were exceeded by the mercury boiler and turbine operating on a binary cycle at the Hartford Electric Light Company, Hartford, Conn., which operated for ten months on an average of 10,310 B.t.u. per kilowatt, and included several days at 9800 B.t.u. See **BOILERS**.

Another interesting development of 1930 was the completion of the first floating power plant designed solely to produce power for outside use. The steamship *Jacona*, with a generating capacity to 20,000 kw., was placed in service by the New England Public Service Company of Augusta, Me. In its first application it was tied to a dock at Bucksport, Me., where a large tidewater paper mill was in the course of construction. This mill would require 20,000 horse power, which was to be supplied by the *Jacona* until the Wyman Dam plant at Bingham was completed. None of the power of this ship was available for propulsion. It was to be towed from port to port as the need arose.

Among large industrial establishments many new plants were installed to operate at 400 and 600 pounds steam pressure, some at 800 pounds and several at 1200 pounds or greater. Notable among these was the new installation at the Ford Motor Company in Detroit which consisted of a 110,000 kilowatt vertical turbine and boilers to operate at 1200 pounds. The Dow Chemical Company at Midland, Mich., was installing a 1200-pound unit and the 1800-pound Philip Carey installation near Cincinnati, Ohio, was about to go in service. A number of high-pressure industrial plants, mostly of smaller size, were in operation in Europe.

Interconnection between utility and industrial power plants, embodying the interchange of power and the supply of steam for process, was gaining favor. In some cases this idea had been exemplified by the building of high-pressure power plants by the utility to supply power and exhaust steam to large industrials and feed the excess power into the utility system. In other cases there was a direct exchange of surplus power as needed between the industrial power plant and the utility establishment.

PRAIRIE PROVINCES. The name applied to the three Canadian Provinces of Manitoba, Saskatchewan, and Alberta. See **CANADA** and articles on respective Provinces.

PRATT INSTITUTE. A nonsectarian educational institution in Brooklyn, N. Y.; founded in 1887 and composed of four schools: Fine and applied arts, household science and arts, science and technology, and library science. The 1930 autumn enrollment was 5094, distributed as follows: Arts, 1848; household science, 920; science and technology, 2301; library school, 25. There were 181 members on the faculty and 12 special lecturers. The library contained 143,000 volumes. President, Frederic B. Pratt, A.M., LL.D.

PRAYER BOOK, BOOK OF COMMON PRAYER. See **ENGLAND, CHURCH OF**; **PROTESTANT EPISCOPAL CHURCH**.

PREGNANCY, DIAGNOSIS OF. See **SURGERY, PROGRESS OF**.

PREHISTORIC MAN. See **ARCHÆOLOGY**.

PRESBYTERIAN CHURCH. The Presbyterian Church, with the Reformed churches, rests

on features of the Reformation brought forward by Zwingli and Calvin. It consists of bodies in the United States, the British Isles, and elsewhere, following the doctrinal and ecclesiastical system developed in Holland and France and more fully in Scotland under John Knox. The distinctly Presbyterian bodies of the United States are derived for the most part from bodies in Great Britain, but are in many respects similar to the Reformed churches in the United States, sprung from parent bodies in other parts of Europe, and particularly in Holland. The following organizations in the United States bear the Presbyterian name: The Presbyterian Church in the United States of America; Presbyterian Church in the United States (South); United Presbyterian Church of North America; Cumberland Presbyterian Church; Cumberland Presbyterian Church, Colored; Reformed Presbyterian Church; Reformed Presbyterian Church, General Synod; Associate Synod of North America, also known as the Associate Presbyterian Church; and the Associate Reformed Presbyterian Synod. The Presbyterian churches of the United States have general affiliations with the Alliance of Reformed Churches throughout the World Holding the Presbyterian System and also with the General Council of the Presbyterian and Reformed Churches in America, a similar organization of purely American scope.

PRESBYTERIAN CHURCH IN THE UNITED STATES OF AMERICA. This is the largest body of the denomination and is represented by churches in every State of the Union and by official mission stations in Alaska, Cuba, Porto Rico, and foreign lands. In 1930 the churches in the United States were organized into 46 synods and 293 presbyteries. Statistics for the year ending Mar. 31, 1930, showed a total communicant membership of 1,984,108. The Sunday-school enrollment totaled 1,596,030. As a result of the movement on foot to dissolve churches having a nominal existence and to combine churches where possible, the number was decreased by 34, giving a total of 9327, including 52 churches organized during the year, as against 92 which were dissolved. The number of ministers in 1930 was 9987. Contributions during the year amounted to \$63,048,063. Of the total income, \$49,296,831 was used for congregational expenses, while \$13,313,475 was devoted to benevolences, including \$4,114,784 given to the board of national missions, \$3,565,968 to the board of foreign missions, \$881,723 to the board of Christian education, and \$360,689 to the board of pensions for current needs.

The 1930 meeting of the general assembly of the Presbyterian Church in the United States of America was held in Cincinnati, O., May 29-June 4. The Rev. Hugh Thomson Kerr, D.D., LL.D., of Pittsburgh, was elected moderator for 1930-31. The assembly approved progress already made in negotiations for union with the Methodist and Protestant Episcopal (q.v.) communions, and voted for definite steps for organic union with the United Presbyterian and the Dutch Reformed denominations. At a meeting in Pittsburgh, Pa., on Nov. 13, 1930, the basis for the latter plan of union was determined by representatives of the Presbyterian Church in the United States of America, the Presbyterian Church in the United States (South), the United Presbyterian Church of North America, the Reformed Church in America, and the Reformed Church in the United States. See articles on **REFORMED CHURCHES**.

The assembly also took steps to strengthen the Presbyterian ministry educationally, to instruct the ruling eldership of the church in its duties, and to place the denominational colleges on a more secure footing for the promotion of Christian education. It gave women members equal rights with men for ordination as ruling elders, and continued its special commission on marriage, divorce, and remarriage to promote higher ideals in marriage relationships and to bring to the assembly in 1931 a more complete report based on further study and research. The denomination maintains 52 colleges and 13 theological seminaries. Its official organ is the *Presbyterian Magazine* (monthly). Privately-owned Presbyterian periodicals are the *Presbyterian Advance*, the *Presbyterian Banner*, and the *Presbyterian* (all weekly). The chief permanent officer is the stated clerk, who in 1930 was the Rev. Lewis Seymour Mudge, D.D., LL.D., 514 Witherspoon Building, Philadelphia.

PRESBYTERIAN CHURCH IN THE UNITED STATES (SOUTH). This division of the Presbyterian denomination covers the territory commonly known as the Southern States. It was composed in 1930 of 17 Synods and 92 Presbyteries, with 3564 organized churches, 2409 ministers and 457,855 members. The ruling elders numbered 15,238 and deacons 17,790. Contributions for the year were: Current expenses, \$9,737,577, a gift of \$21.28 per capita; and benevolences, \$4,570,258, a gift of \$9.99 per capita. In 1930 the church was supporting 427 missionaries in Africa, Brazil, China, Japan, Korea, and Mexico; these missionaries were assisted by 3452 native workers. In the six countries there were 50,979 church members and 81,115 Sunday-school members. The church maintains four theological seminaries, one training school for lay workers (white) one training school for lay workers (colored), 18 colleges, 13 junior colleges, 12 secondary schools, 19 mountain schools, two Mexican mission schools, and 15 orphans' homes and schools. The church publishes the *Presbyterian Survey*, which is the medium of communication of all departments with the membership of the church. Privately owned papers of the denomination are the *Christian Observer*, *Presbyterian Standard*, and *Presbyterian of the South*.

The General Assembly of the Presbyterian Church in the United States met in Charlottesville, Va., May 22, 1930. This assembly had before it the reports of two *ad interim* committees on organic union. After a full consideration of all the papers, reports, and recommendations, the assembly adopted the following on the matter of organic union with all Presbyterian Churches in the United States:

Without in any sense committing our assembly to organic union, but being unwilling to close the door to further discussion of this important question, we direct the moderator to appoint a committee consisting of one member from each synod, with the moderator as chairman in addition, in order that it may continue conferences with representatives of the Churches holding the Presbyterian and Reformed System with the view of placing before the assembly of 1931 any information they may secure or plans evolved concerning union with such churches.

The moderator, the Rev. T. W. Currie, D.D., was made chairman of this *ad interim* committee. The assembly also continued its *ad interim* committee on union with the Associate Reformed Presbyterian Church. A meeting of the assembly was to be held at the School of the Ozarks, Hollister, Mo.,

May 28, 1931. The offices of the general assembly are located at 729 Kirby Bldg., Dallas, Texas. The Rev. J. D. Leslie, D.D., was stated clerk, and the Rev. E. C. Scott assistant stated clerk in 1930.

PRESBYTERIAN CHURCH OF NORTH AMERICA, UNITED. A branch of the Presbyterian Church formed by the union of the Associate and the Associate Reformed churches, effected in Pittsburgh in 1858. It represents the earlier covenanter and secession movements of the denomination in Scotland, from which it inherited whatever was distinctive in their views and usages. In organization and government it is in general accord with other Presbyterian bodies.

The general assembly convened in Des Moines, Iowa, May 28, 1930. On that date there were in the United States 11 synods, 57 presbyteries, 886 congregations, 920 ministers, 5093 ruling elders, and a church membership of 172,126. The total membership, including missionary fields, was 240,551. The Sabbath-school enrollment was 202,232, while the young people's societies numbered 1118 with a membership of 31,542. Contributions during 1930 totaled \$6,346,108, and missionary contributions \$2,227,253.

Among the chief important matters before the Des Moines assembly were: The enactment of the pension plan for ministers; and the approval of the report of the committee on Presbyterian unity, which contained the following:

(a) That we approve organic union with other Presbyterian and Reformed Churches on the basis of the existing standards of the uniting churches.

(b) That our representatives be instructed to cooperate with committees of other Presbyterian and Reformed Churches to prepare a complete plan to make this organic union effective, to be submitted for adoption to the properly constituted authorities of these churches.

The denomination supported 447 men and women in four foreign mission fields and 365 men and women in homeland missions. It carried on medical work in 28 foreign hospitals and dispensaries; conducted educational work in 448 schools at home and abroad; maintained nine colleges and four theological seminaries at home and abroad; and reached 38,899 young men and women in its schools and colleges, from which more than 6000 were graduated. The official organ of the church is the *United Presbyterian*, a church-owned, yet independent, weekly, published in Pittsburgh. The moderator of the general assembly in 1930 was the Rev. Thos. C. Atchison, D.D., of Lawrence, Mass., and the stated clerk was the Rev. D. F. McGill, D. D., LL.D., of Bellevue, Pa.

PRESIDENTS OF COLLEGES. See UNIVERSITIES AND COLLEGES.

PRICES. See BUSINESS REVIEW.

PRIMITIVE METHODIST CHURCH. See METHODISTS.

PRIMO DE RIVERA Y ORBANEJA, GEN. MIGUEL, MARQUIS DE ESTELLA. A Spanish soldier and former dictator and premier of Spain, died in Paris, Mar. 16, 1930. He was born in Cadiz, Jan. 8, 1870. During the Spanish-American War, he served in Cuba and in the Philippines. He was in Morocco during 1909-13 and was military governor of Cadiz in 1915-17. In 1922 he became military governor of Barcelona. The following year, in September, General Primo de Rivera overthrew the Spanish Government and became dictator of Spain. At this time, Spain was in a state of unrest because of labor union strikes and

dissatisfaction with the conduct of the campaign against the Moors in the Spanish protectorate in Morocco. Once begun by General Primo de Rivera, the revolution met with little opposition. King Alfonso invited Primo de Rivera to take charge of the government and by royal decree dissolved parliament, Sept. 14, 1923. The people of Spain, too, welcomed the Dictator. As president of the military directorate, Primo de Rivera met with severe criticism, but he succeeded in establishing a strong government. In his own story of his dictatorship, written after his resignation, he listed among his achievements a share in completing successfully the Spanish campaign in Morocco in 1926, the restoration of order in Spain itself, the issuing of a new penal code, strengthening of naval bases, and reforms in education. In 1925 the military directorate was abolished and a civil form of government restored, in which Primo de Rivera was premier. Though no longer a military ruler, Premier Primo de Rivera retained his power as dictator of Spain. In spite of a temperate use of this power, both the King and the people began to tire of the rule of one man. This feeling manifested itself positively early in 1929 in the revolutionary movement along the southern and eastern coasts, conducted by officers of the Artillery Corps who were aided by a few naval officers and by José Sanchez Guerra, a former Conservative premier of Spain. In March of 1929, the students of Madrid conducted a protest strike to show their disapproval of certain government measures, with the result that, on the failure of the strike, the University of Madrid and, later, other universities were closed for a time by the Premier. With each further evidence of revolt, there was a corresponding tightening of the reins of the dictatorship. Realizing that the end of his rule was near, General Primo de Rivera resigned the premiership of Spain, Jan. 28, 1930, and went into voluntary exile in Paris. See *SPAIN* under *History*.

PRINCE EDWARD ISLAND. An island in the Gulf of St. Lawrence, constituting one of the Maritime Provinces of Canada. The smallest of the nine Provinces, it has an area of 2184 square miles and a population estimated on June 1, 1930, at 85,800 (88,651 in 1921). Capital, Charlottetown, with 12,347 inhabitants. In 1928, births totaled 1806; deaths, 952; marriages, 466; public-school enrollment, 17,214. The percentage of illiteracy is approximately half that of Canada and the United States. About 90 per cent of the population are engaged in farming and 94.2 per cent of the farmers own their own farms.

Agriculture, stock raising, fishing, and silver-fox breeding are the chief industries. In 1929, field crops from 545,763 acres were valued at \$16,940,400, and the fisheries output totaled \$1,366,428, a 14 per cent increase over 1928. The value of fur-bearing animals on farms in 1928 was estimated at \$4,500,000. In the same year the gross value of output of 277 industrial establishments, employing 2035 persons, was \$4,445,160. Exports to other countries (1928-29) amounted to \$956,045 and imports for consumption to \$1,808,713. For the fiscal year ended Dec. 31, 1929, ordinary revenues totaled \$1,083,571 and expenditures were \$1,033,315. The bonded indebtedness in 1928 was \$2,185,000. There were 276 miles of railway line; daily steamship communication was maintained with the mainland.

Government is administered by a lieutenant-governor and a legislative assembly of 30 mem-

bers, elected for four years. In the Dominion general election of July 28, 1930, the Province returned 3 Conservatives and 1 Liberal to the House of Commons at Ottawa. The Legislature elected in July, 1927, included 24 Liberals and 6 Conservatives. Prince Edward Island was the last Canadian Province to retain prohibition, a plebiscite held July 18, 1929, giving a majority of 3438 in favor of continuing the existing temperance law. Lieutenant-Governor in 1930, Frank R. Heartz; Premier and Attorney-General, A. C. Saunders. See *CANADA*.

PRINCETON UNIVERSITY. A nonsectarian institution of higher learning for men in Princeton, N. J., founded in 1746. The total enrollment in the autumn of 1930 was 2527, of whom 2277 were undergraduates and 250 were graduate students and fellows. The faculty numbered 336; there were also 31 assistants and 36 administrative officers. In addition to several promotions and reappointments, André Maurois of Paris was appointed visiting lecturer in French Literature; C. W. E. Miller of Johns Hopkins, visiting professor of Greek; Wilhelm Kroll of Breslau, visiting professor of classical philology; Paul Laumonier of Bordeaux, visiting professor of modern languages; L. F. Moody, professor of hydraulic engineering; and DeWitt C. Poole, chairman of the advisory board of the new school of public and international affairs.

Losses by death included Professor-emeritus T. W. Hunt, of the department of English who had served under five administrations at Princeton, and Prof. Fred Neher of the department of chemistry. Retirements included Prof. George B. McClellan of the department of economics, formerly mayor of New York City, and Prof. W. B. Scott of the department of geology. Prof. Karl Compton of the department of physics resigned to become president of the Massachusetts Institute of Technology.

The endowment in 1930 was \$23,211,911; the total income, \$2,739,793; and the total expenditure, \$2,739,635. Bequests during 1930 included one of \$500,000 from Thomas D. Jones, of the class of 1876, for salaries. A gift of \$189,000 was received from the Textile Alliance, Inc., for research in pure science; and one of \$300,000 from John D. Rockefeller, Jr., for the endowment of the industrial relations section of the department of economics. Contributions amounting to \$14,500 were received for financing for five years the Benjamin Strong collection on foreign public finance. New buildings completed in 1930 were the T. N. McCarter Theatre, Dickinson Hall, the Rothschild Memorial Arch, Walker Hall, and the Class of 1903 Hall. The last two are dormitories bringing the total number of dormitories up to 24, housing 1900 students on the campus.

A school of public and international affairs was organized in 1930 to train men to enter public life or public administration, or to engage in international business, or to enter journalism, the law, or the consular and diplomatic service. The degree of bachelor of science was discontinued, and the degree of bachelor of arts was hereafter to be given to all graduating students, whether majoring in science or in the humanities, with the exception of students in the school of engineering who would continue to receive the degree of bachelor of science in engineering.

In place of the Philadelphian Society, founded over a century ago, an experimental organization called the Student-Faculty Association was

formed, through which undergraduates and members of the faculty would work together informally in social, religious, and campus activities. The approved activities of the Philadelphian Society, however, were maintained, such as the Princeton summer camp for city boys, the work at the New Jersey State Home for Boys, the Grenfell Club for work in the Grenfell Mission, Labrador, and the school of public affairs at Yenching University, Peking. A significant step in the development of the library was the founding of an organization known as the Friends of the Princeton Library, forming a coherent group which, as opportunity arose, was to be watchful for the interests of the library. The library in 1930 contained 646,000 volumes, exclusive of pamphlets, broadsides, and manuscripts. President, John Grier Hibben, Ph.D., Litt.D., LL.D.

PRINT SALES. See ART SALES.

PRISONS. See CRIME.

PRIZE FIGHTING. See BOXING.

PROBERITE. See MINERALOGY.

PRODUCE. See AGRICULTURE; HORTICULTURE.

PROHIBITION. On January 13 the National Commission on Law Enforcement and Observance appointed in May, 1929, delivered to President Hoover its preliminary report on Prohibition. The report declared that while the commission was not yet in a position to deliver a final statement, it had reached certain conclusions. Concerning observance the report said: "It is impossible wholly to set off observance of the Prohibition act from the large question of the views and habits of the American people with respect to private judgment as to statutes and regulations affecting their conduct." The report went to say that the violations of law could not be studied without giving weight to the attitude of the American people, and the Commission enumerated those factors which in American history lay behind present-day opposition to the Prohibition laws, as follows: the attitude of the pioneer toward such legislation; the Puritan objection to offensive administration; the conception of natural rights that has always been a part of the American tradition; the right of revolution that has been part of the American heritage; and finally "the many historical examples of large-scale public disregard of laws in our past." As to enforcement, the report said: "There are not reliable figures to show the size of the problem. But the reported arrests for the last fiscal year of upward of 80,000 persons from every part of Continental United States indicate a staggering number of what might be called focal points of infection." The report went on to point out the great size of the American frontier and the length of water coasts which had to be watched. It said: "Thus there are about 18,700 miles of main line of the Continental United States at every point of which infection is possible. . . . To deal with an enforcement problem of this size and spread, the Federal government can draw only on the portion of the personnel of three Federal services whose staffs aggregate about 23,000. Approximately one-tenth of this number is in the investigative section of the prohibition unit. Of the remaining 20,000 only a small proportion of the personnel is available for actual preventive and investigative work. The remainder is engaged in work far different from prohibition."

The report also pointed out that there was a variety of administrative difficulties that stood

in the way of enforcement of the law. To remove these difficulties and to facilitate governmental activity the report recommended the following: (1) The transfer of investigation and the preparation of cases to the Department of Justice. (2) The codification of Federal legislation applicable to enforcement of prohibition. (3) Provisions for making padlock injunctions more effective. (4) Provisions for relieving congestion in the Federal courts.

The report did not favor a great enlargement of the number of Federal judges and also, too, went on record as opposing the creation of a new kind of Federal courts. It devoted considerable attention to outlining ways and means of dealing with minor violations of the Volstead Act largely with the end in view of clearing away the congestion in the Federal courts because of liquor cases. One suggestion of interest made by the Commission was that Congress enact specific and lighter penalties for "casual and slight violations" to permit United States commissioners to dispose of such cases without necessity of resorting to the courts.

President Hoover in submitting the Commission's report to Congress accompanied it with a message in which he called for the enactment of legislation to provide the administrative and judicial reforms recommended by the Commission. The Presidential message outlined the following specific recommendations: (1) Reorganization of the Federal court structure so as to give relief from congestion. (2) Concentration of responsibility in detection and prosecution of prohibition violations. (3) Consolidations of the various agencies engaged in prevention of smuggling of liquor, narcotics, other merchandise, and aliens over the frontiers. (4) Provision of adequate court and prosecuting officials. (5) Expansion of Federal prisons and reorganization of parole and other practices. (6) Specific legislation for the District of Columbia. The President in closing his message said:

I believe that the administrative changes made above will contribute to cure many abuses. Beyond these immediate questions are others which reach deeply into the whole question of the growth of crime and the enforcement of the laws. The causes of crime, the character of criminal laws, the benefits and liabilities that flow from them, the abuses which arise in them, the method by which enforcement and judicial personnel is secured, the judicial procedure, the respective responsibility of the Federal and State governments to these problems, all require furthestmost consideration and investigation, which will require time and earnest research as to the facts and forces in action before sound opinions can be arrived at upon them.

By December the Law Enforcement Commission was not yet prepared to deliver its final report.

A statement from the Department of Justice division concerned with Prohibition enforcement showed a steady enlargement of the number of dry law offenders coming into the Federal courts. For the fiscal year ending June 30, this statement said there were 206 more Prohibition cases instituted than in the preceding fiscal year. Too, there was a total of 27,709 jail and prison sentences imposed, which was an increase of 5107 over the preceding year. There were 4286 more cases pending at the close of the year than at the close of 1929. A total of 52,347 cases was terminated, with 73 per cent of convictions. Of the several cases arising under the Prohibition act the Department of Justice declared that 8801 places were padlocked for periods ranging from

three months to a year, representing an increase of 2498 over 1929. Padlock proceedings were begun in 11,882 cases, an increase of 1056 over 1929. Only 16 per cent of the cases terminated were dismissals, the others resulting in judgments in favor of the Government. The largest number of seizures of foreign vessels during any one year since 1927 was also reported. There were seized by custom officials and the coast guard a total of 29 foreign craft of which 12 were forfeited.

ADMINISTRATION. The first act growing out of the presidential recommendations, as based on the law enforcement Commission's report, was the transfer of the Prohibition machinery from the Department of the Treasury to the Department of Justice. This was done by the so-called Williamson Act, making provision for the transfer as of July 1. The following is a summary of the new duties imposed upon the Attorney-General's office by this Act: (1) Investigation of violations of the national Prohibition law and of the internal revenue laws "for the purpose of enforcing penal provisions thereof." (2) Apprehension and prosecution of offenders of these laws. (3) Making all seizures and the enforcement of all forfeitures under these laws. (4) The determination of liability for internal taxes and penalties "if a violation of the national prohibition law is involved." (5) In conjunction with the Secretary of the Treasury, laying down regulations relating to industrial alcohol permits. In May, complying with the mandate of this Act, the Prohibition Bureau was transferred from the Department of the Treasury to the Department of Justice. Towards the end of June Attorney General Mitchell appointed Col. Amos W. W. Woodcock as the first director of the Bureau of Prohibition of the Department of Justice. Colonel Woodcock had been formerly United States Attorney at Baltimore in a State which has no enforcement law of its own and here out of 11,000 liquor violation cases since 1922 he succeeded in attaining 8000 convictions. Dr. James M. Durant, head of the old Prohibition Bureau in the Department of the Treasury, remained on as head of a new Bureau of Industrial Alcohol in the same Department. Attorney General Mitchell indicated that it was the intention of his department to cooperate particularly with those States possessing enforcement statutes of their own with a view towards outlining clearly the rôles the States were to play in the enforcement process. It was declared by the two departments concerned that both would work in complete harmony in each of the 12 prohibition districts.

In the summer Prohibition Administrator Woodcock indicated the general lines of his enforcement policy in the following statement:

Our objective is against the sale, the commercial manufacture, and the commercial transportation of intoxicating liquor. We will not have our agencies following the course of least resistance and wasting their time upon pitiful, picayunish non-commercial cases. I think the Prohibition laws can be successfully enforced against commercial operations. We propose to make these our objectives and not to dissipate our energies in other fields. I shall insist that a steady pressure be maintained against these commercial violations. We will exert a steady unrelenting pressure against the outlaw liquor traffic until it is driven from the land, or our last drop of energy expended.

The Woodcock programme included the following specific measures: (1) A promise to see that the Prohibition law would be enforced "fairly,

honestly, earnestly, and lawfully." (2) Organization of agents on a civil service basis. (3) A district administrator, deputy administrators and a United States attorney in each district. (4) A force of 200 special agents directly responsible to Mr. Woodcock himself for the purpose of investigating the larger and more far-reaching conspiracies. (5) A system of daily reports from all districts. (6) A training school for investigators. (7) Request for appropriations to allow of the addition of 500 men to the present staff of 2700. (8) The creation of a division of research to discover facts about the prohibition enforcement as distinguished from propaganda. (9) An attempt to encourage State and local officials to "assume their proper share of enforcing Prohibition policies." (10) Suggestions to the judges throughout the country that they confer to overcome the lack of uniformity in sentences for prohibition violations in order to promote respect for the law.

CONGRESSIONAL HEARINGS. In March the House Judiciary Committee conducted a series of hearings relating to Prohibition that attracted prominent wets and drys from the whole country. More than two score witnesses were called by the wets and as many by the drys, each side being allowed seven days for the presentation of its case. For the drys appeared the following persons, among others: Horace D. Taft, educator; Josephus Daniels, Secretary of the Navy under President Wilson; E. C. Drury, former Prime Minister of Ontario, Canada; Commander Evangeline Booth, of the Salvation Army; Mrs. Ella A. Boole, President of the National Women's Christian Temperance Union; Mrs. Thomas A. Edison; Mrs. Henry Ford; Mrs. Henry W. Peabody; Samuel Crowther, magazine writer; Dr. Daniel A. Poling, General Director of the J. C. Penney Foundation. The drys presented the following arguments among others:

That the rate of decrease in commitments of all crimes was 37.7 per cent. That American youth was drinking less to-day than ever before. That American women are determined that the benefits of Prohibition shall be continued. That the old-time saloon has been driven out forever. That enforced abstinence has saved more than 100,000 lives in nine years from Bright's Disease and other alcoholic disorders. That American workmen are saving or constructively spending from \$2,000,000,000 to \$6,000,000,000 annually that was formerly being expended in saloons. That Prohibition is so important a reform that 100 years will not be too long to experiment with it. That Prohibition is the law of the land and should be observed by all law-abiding citizens. That beer and wine would be only the opening wedge for the return of the saloon. That the restoration of the legal sale of liquor, even under State control and with moderate restrictions, would lead to the violation of all restrictions.

Among the leading spokesmen for the wet side were: Col. Grayson M. P. Murphy, New York banker; W. W. Atterbury, president of the Pennsylvania Railroad; Pierre S. Du Pont; Walter W. Liggett, a magazine writer; former Senator William Cabell Bruce, of Maryland; William H. Stayton, chairman of the Board of the Association Against the Prohibition Amendment; Channing Pollock, playwright; Owen Johnson, author; Frederick R. Coudert, Sr., New York lawyer; Nicholas Murray Butler, President of Columbia University; the Reverend Dr. John A. Ryan, of the Catholic University of America; Henry H. Curran, president of the Association Against the Prohibition Amendment. The arguments that the advocates of prohibition repeal presented may be summarized as follows:

That Prohibition has caused a steady increase in crime during the last 10 years. That American youth is drinking more to-day than ever before. That American women are convinced of the failure of Prohibition. That in place of the old-time saloon there now exists the uncontrolled speakeasy. That the insurance statistics for 19,000,000 policy holders show an increase of 600 per cent in deaths from alcoholism in the last 10 years. That the economic status of the American workmen has not been changed by prohibition. That the kitchen has now become the saloon. That the Eighteenth Amendment is contrary to the spirit of the Constitution. That the last 10 years have shown that it is impossible to enforce Prohibition.

PROHIBITION ENFORCEMENT. During the fiscal year 1929-30 the Bureau of Prohibition of the Treasury Department reported that prohibition agents had made 68,173 arrests, had seized 8633 automobiles, and 64 boats. As a result of the activities of these agents prohibition cases against 72,673 were terminated in the Federal Courts and these resulted in 54,085 convictions of which number 22,405 were given jail sentences. The fines imposed amounted to \$6,678,733. The Bureau during the year devoted a considerable part of its energies to working with formulas for completely denatured alcohol. According to the annual report of the Secretary of the Treasury:

Substantial and important results were obtained in eliminating working formulas from certain lines of industry, thus reducing diversion and assisting the legitimate industry to secure denatured alcohol to be adapted to its needs. . . . There are at present only two completely denatured alcohol formulas authorized and the reports received from the field offices indicate that practically no completely denatured alcohol is being diverted for illegal purposes. . . . After considerable research during the past year a petroleum distillate known as calothetate was required as a denaturant for ethyl acetate. This denaturant, in conjunction with restrictive measures relating to ethyl acetate, has practically eliminated the diversion of this product for illegal purposes.

The Bureau also reported that considerable success was being met with in the handling of the problem of industrial alcohol. Each industrial alcohol plant was being allotted a fixed quota of the total alcohol to be produced with the proviso that only 40 per cent of the full quota could be produced during the first six months of the calendar year. Thus, overproduction of alcohol was being checked and unstable conditions in the industry eradicated.

The Attorney General's office in its report for the fiscal year 1930 declared that the liquor smuggling business as conducted on the high seas apparently had witnessed a considerable revival during the year. This was indicated by the number of foreign vessels seized while engaged in this illegal occupation. Thus, in 1930, 29 vessels were seized as compared with 17 in 1929, 22 in 1928, 31 in 1927, 33 in 1926 and 35 in 1925. The Canadian government dealt a severe blow to border traffic when it amended its export act in May, 1930, and outlawed the direct clearance of liquor from Canada to the United States. According to the Attorney General: "The natural result of this restrictive legislation was to drive some additional professional smugglers to the high seas where their activities would be more likely to succeed."

During the fiscal year 1929 the American Government made one additional convention to its already large list of treaties which allowed American officers to board, search and seize suspected foreign liquor ships on the high seas in close proximity to the American shores. The new treaty was with the Government of Japan and was proclaimed on Jan. 15, 1930. The addition of Japan

to the roll raised the total of these international Prohibition agreements in effect to 14.

REFERENDUM PLAN. Towards the end of the year, there was considerable discussion among dry groups as to the desirability of sponsoring a national referendum for the purpose of eliciting public opinion on the question of Prohibition repeal. However, before the year was over it was ascertained that most of the organizations interested in prohibition had gone on record as opposed to holding such a referendum. The Methodist Board of Temperance, Prohibition and Public Morals on December 9 unanimously passed a resolution submitted by its general secretary, Dr. Clarence True Wilson, against a referendum on the Eighteenth Amendment.

JUDGE CLARK'S DECISION. On December 16 the whole Prohibition question again became an excited subject for debate when Judge William Clark, sitting in the New Jersey Federal District Court, handed down a decision in which he found that the adoption of the Eighteenth Amendment had been invalid and that, therefore, the Amendment was void. Judge Clark's opinion was based on the argument that the ratification of the Amendment by the State legislatures was not in conformity with the method prescribed by the amending Article of the Constitution (Article V), affecting the transference of power from the individual States to the United States. According to Judge Clark, amendments of this type require the approval of constitutional conventions duly elected for this purpose by the peoples of the separate States. It was immediately announced that the decision would be directly appealed to the Supreme Court and that a final ruling from the highest tribunal might be expected in the spring of 1931. The Federal Prohibition authorities declared that Judge Clark's decision would have no effect on the enforcement of the law in New Jersey in view of the fact that other Federal judges in New Jersey were not bound by the decision. See UNITED STATES under *Judiciary*.

SUPREME COURT. In the spring, the U. S. Supreme Court handed down a series of important decisions affecting Prohibition enforcement. One of these decided that the buyer of bootleg liquor was not a criminal under the Eighteenth Amendment and the Volstead Act. Another decision handed down in the same term found that kegs, bottles, corks, and all the other materials entering into prohibited liquor making could be lawfully seized as contraband. This decision was given by a unanimous court with Mr. Justice Holmes delivering the opinion. Justice Holmes' opinion for the court concluded with the following statement:

As the purpose of the Prohibition act was to suppress the entire traffic, the act should be liberally construed to the end of this suppression, and the court so directs. The decisions under the revenue acts have little weight as against legislation under the afloat of the Eighteenth Amendment. We are of the opinion that the word was used in this looser way and that if the empty containers and the other objects seized were offered for sale in such a mode as purposely to attract purchasers who wanted them for the unlawful manufacture, as we interpret the word, they were designed for that manufacture and could be seized.

LITERARY DIGEST POLL. In May the *Literary Digest* (New York) completed a poll of nearly 5,000,000 Americans on the Prohibition question. It will be recalled that in 1922 this same magazine conducted a similar inquiry among a large group of Americans. The results of the 1930 poll showed

the following: (1) That 30.5 per cent of the voters favored the continuance and strict enforcement of the Eighteenth Amendment and the Volstead Act. (2) That 29.1 per cent favored modification of the Volstead Act to permit the sale of light wines and beer. (3) That 40.4 per cent favored repeal of the Eighteenth Amendment altogether. In other words, the total of those who expressed themselves as wishing to see either repeal of the Eighteenth Amendment or modification of the Volstead Act to allow of the sale of light wines and beer was 69.5 per cent. It is true that a series of charges was made against the poll that might throw its findings into question if regarded from an absolute basis. It was said that the pool reached more urban dwellers than rural dwellers; it was not in position to check the votes of repeaters; that friends of the Prohibition law ignored the polls and that, therefore, the vote would favor the friends of repeal.

However, it is possible to make a comparison of this poll with that of 1922 which, too, was under the same limitations. In the two polls it was found that the industrial States in the East and the North were opposed to the Prohibition law. Too, that in the dry sections the sentiment for the continuance of the law was at the best only holding its own; whereas in those sections op-

posed to the law the wet sentiment had made great gains over the eight years. In Kansas, for example, the percentage of those favoring enforcement was 58.3 in 1922 as against 57.7 in 1930. In Oklahoma the percentage in favor of enforcement was 50.4 in 1922 and 50.9 in 1930. In New York City, however, the percentage in favor of either modification or repeal was 70.5 in 1922 and had grown to 80.9 in 1930. In Illinois the percentage advocating either modification or repeal was 62.6 in 1922 and 75.5 in 1930. In Massachusetts the figure had grown from 62.1 in 1922 to 71.8 in 1930. In the country as a whole in 1922 the proportion favoring modification or repeal was 60.8 per cent and by 1930 this proportion had increased to 69.5 per cent.

The accompanying table shows the final report of the *Literary Digest* Prohibition poll.

REPEAL. Among the outstanding advocates of repeal were Dwight W. Morrow, canvassing for the election of the United State Senatorship from New Jersey, and Franklin Roosevelt, seeking reelection as Governor of New York State. Mr. Morrow was particularly outspoken in his statement that Prohibition enforcement had fallen down as a governmental policy. Mr. Morrow agreed that Prohibition was succeeding in States where there was official and popular cooperation but that enforcement had failed in those States where the people and their officials were refusing their cooperation with the Federal agents. In these States, said Mr. Morrow: "There exists resentment against the attempt to impose a control which the prevailing conscience of the people does not accept." Mr. Morrow was opposed to the saloon and declared that an amendment to the Volstead Act would not accomplish anything. He declared himself, therefore, as in favor of the repeal of the Eighteenth Amendment and the substitution for it of an amendment which would restore to the States the power to determine their policy toward the liquor traffic. Mr. Morrow's statement was made on May 15 with the result that he went before the Republican primaries of New Jersey as an outspoken wet. He had no difficulty in obtaining the nomination from his dry rival, Congressman Franklin Fort. Mr. Morrow's statement was given wide attention in the public press and his success as former Ambassador to Mexico and his availability as presidential timber made politicians in the Republican party carefully scrutinize the reaction that his remarks brought. The *New York World*, for instance, declared:

Spoken by Mr. Morrow himself, with all the prestige of his reputation as a wise and reasonable man, a man of character, of principle and of distinguished service to his country, the speech may very well become the first decisive move in the direction of a real solution of a most difficult and challenging problem before this country.

It was commonly said that Mr. Morrow had taken his place as the outstanding leader of the wet wing of the Republican party. Governor Roosevelt's declaration for repeal of the Eighteenth Amendment was no less plain-spoken. The line taken by Governor Roosevelt's recommendation was almost similar to Mr. Morrow's proposal. Thus, the Governor wrote in an open letter to United States Senator Wagner:

The force and effect of the Eighteenth Amendment can be eliminated, of course, only by a new constitutional amendment. This would supersede and abrogate the Eighteenth Amendment and substitute therefor a new constitutional provision. That is clear. The fundamental

FINAL REPORT OF THE LITERARY DIGEST
PROHIBITION POLL—1930

| State | For enforce- ment | For modifi- cation | For repeal | Total |
|---------------------------------|-------------------------|--------------------------|---------------|---------|
| Alabama | 17,187 | 9,291 | 9,581 | 36,059 |
| Arizona | 5,112 | 4,845 | 4,735 | 14,692 |
| Arkansas | 14,272 | 6,109 | 6,962 | 27,343 |
| California | 86,302 | 95,832 | 107,868 | 290,002 |
| Colorado | 25,753 | 18,678 | 15,484 | 59,915 |
| Connecticut | 19,664 | 33,915 | 54,514 | 108,093 |
| Delaware | 3,374 | 1,958 | 4,653 | 9,985 |
| District of Co- lumbia | 4,477 | 5,282 | 7,972 | 17,731 |
| Florida | 15,921 | 13,746 | 21,036 | 50,703 |
| Georgia | 14,290 | 10,080 | 11,566 | 35,936 |
| Idaho | 9,722 | 5,441 | 9,879 | 25,042 |
| Illinois | 62,446 | 75,051 | 117,547 | 255,044 |
| Indiana | 51,494 | 89,949 | 42,359 | 183,802 |
| Iowa | 38,624 | 26,523 | 27,014 | 92,161 |
| Kansas | 42,301 | 17,148 | 13,891 | 73,340 |
| Kentucky | 23,477 | 17,479 | 27,392 | 68,348 |
| Louisiana | 8,487 | 9,765 | 19,266 | 37,518 |
| Maine | 13,237 | 8,109 | 11,685 | 33,031 |
| Maryland | 13,583 | 13,060 | 25,404 | 52,047 |
| Massachusetts .. | 57,876 | 51,862 | 96,133 | 205,371 |
| Michigan | 63,600 | 72,995 | 98,499 | 235,094 |
| Minnesota | 41,917 | 42,017 | 55,867 | 139,801 |
| Mississippi | 11,058 | 5,528 | 6,243 | 22,829 |
| Missouri | 45,011 | 34,609 | 62,867 | 142,487 |
| Montana | 10,069 | 8,748 | 17,341 | 36,158 |
| Nebraska | 22,481 | 15,758 | 14,735 | 52,974 |
| Nevada | 1,145 | 1,519 | 3,820 | 6,284 |
| New Hampshire .. | 7,773 | 6,630 | 6,574 | 20,977 |
| New Jersey | 47,747 | 75,673 | 125,469 | 248,889 |
| New Mexico | 2,768 | 2,338 | 8,036 | 8,142 |
| New York | 109,586 | 182,220 | 289,674 | 579,480 |
| North Carolina .. | 30,283 | 15,685 | 13,806 | 59,774 |
| North Dakota | 9,842 | 10,024 | 12,701 | 32,567 |
| Ohio | 94,381 | 98,853 | 106,159 | 299,493 |
| Oklahoma | 29,912 | 14,129 | 13,714 | 56,755 |
| Oregon | 20,665 | 18,842 | 16,586 | 56,093 |
| Pennsylvania | 147,557 | 136,233 | 243,063 | 526,853 |
| Rhode Island | 4,492 | 5,894 | 10,390 | 20,776 |
| South Carolina .. | 10,590 | 6,691 | 8,058 | 25,339 |
| South Dakota | 9,155 | 7,501 | 6,680 | 23,336 |
| Tennessee | 24,495 | 11,425 | 12,710 | 48,630 |
| Texas | 58,824 | 37,565 | 86,673 | 183,062 |
| Utah | 9,599 | 8,526 | 8,728 | 26,851 |
| Vermont | 5,711 | 4,519 | 5,210 | 15,440 |
| Virginia | 23,781 | 17,389 | 26,604 | 67,774 |
| Washington | 28,059 | 29,032 | 27,724 | 84,815 |
| West Virginia | 18,057 | 15,494 | 13,957 | 47,508 |
| Wisconsin | 24,305 | 31,313 | 49,205 | 104,823 |
| Wyoming | 3,778 | 3,180 | 6,168 | 13,126 |
| State unknown .. | 20,858 | 15,261 | 12,052 | 48,171 |

Total ... 1,464,098 1,399,814 1,943,052 4,806,964

of a new amendment must be the restoration of real control over intoxicants to the several States. The sale of intoxicants through States agencies should be made lawful in any State of the Union where the people of that State desire it, and conversely the people of any State should have the right to prohibit the sale of intoxicants if they so wish within its own borders.

It was interesting to observe that a number of prominent spokesmen for the dry cause in Congress failed to obtain the renomination of their parties in the primaries precedent to the election. Representative Grant M. Hudson, of Michigan, was defeated for the Republican nomination by a wet. Louis C. Cramton, also of Michigan and a Republican member of the house since 1913, failed in the primaries also. In Washington Representative John F. Miller lost the Republican nomination to a wet. The wets, too, were pleased to report that Senator Burton K. Wheeler, of Montana, formerly a dry, had been converted to the wet cause.

In the gubernatorial election in New York State the outstanding issue was the wet-dry struggle. The Democratic party platform declared unequivocally for the repeal of the Eighteenth Amendment and the Volstead Act and advocated the restoration to each sovereign State "of the fundamental right to determine for itself whether alcoholic beverages may be manufactured, sold or transported within its borders." On the other hand, the Republican party platform, on which Charles A. Tuttle, former United States Attorney for New York ran, was less straightforward. It declared that as long as the Prohibition law remained on the statute books it should be obeyed. The platform pointed out that the abolition of the saloon could be placed at the door of national Prohibition. But, said the platform:

The evil in national Prohibition lies largely in the compulsion sought to be placed upon the States which do not desire the Prohibition system. We favor the restoration to each State of the authority to deal with the liquor problem in accordance with the wishes of its citizens. To this end we favor the repeal of the Eighteenth Amendment provided that simultaneously and as a part of the new amendment a prohibition is adopted outlawing and forbidding everywhere in the United States the saloon system and its equivalent, the private traffic in intoxicating beverages for private profit, and further, guaranteeing Federal coöperation and assistance to States which have Prohibition in whole or in part.

STATISTICS. According to Dr. Frederick L. Hoffman, statistician of the Prudential Life Insurance Company, the mortality of alcoholism in the United States registration area had risen 300 per cent since 1920, the first year of Prohibition. Dr. Hoffman's figures show that there was a death rate of 4.0 per 100,000 population for 1928 as against 1.0 for 1920. Deaths from cirrhosis of the liver for 1928 reached 7.5 per 100,000 population as compared with 7.1 in 1920. New York State led 17 important States with an alcoholic death rate of 7.5 for 1928 or 3.5 per 100,000 more than the average for the country. Massachusetts came next with 6.0 per 100,000 population. Dr. Hoffman contrasted the American mortality rate with those of other countries. The rate for England and Wales in 1928 was 0.3; for Scotland, 1.0; for the Irish Free State, 0.5; for Northern Ireland, 0.6; for Italy, 2.4; for Australia, 1.7; for Spain, 1.9; for Denmark, 1.4; for New Zealand, 1.11; for Canada, 2.3; for Holland, 0.23. In 1929 in New York City Dr. Hoffman found that the death rate from alcoholism for the 5 boroughs was 11.2 per 100,000 and the average for 9 years ending 1929 was 8.2. The following

table presents figures for deaths from alcoholism and cirrhosis of the liver in the United States registration area for the period 1910-1928:

| | Deaths | | Rate per 100,000 | |
|--------------|------------|------------------------|------------------|------------------------|
| | Alcoholism | Cirrhosis of the liver | Alcoholism | Cirrhosis of the liver |
| 1910 | 2,909 | 7,455 | 5.4 | 18.9 |
| 1911 | 2,875 | 8,310 | 4.9 | 14.0 |
| 1912 | 3,183 | 8,176 | 5.3 | 18.5 |
| 1913 | 3,744 | 8,497 | 5.9 | 18.4 |
| 1914 | 3,257 | 8,526 | 4.9 | 13.0 |
| 1910-14 | 15,968 | 40,964 | | |
| 1915 | 2,945 | 8,439 | 4.4 | 12.6 |
| 1916 | 4,161 | 8,799 | 5.8 | 12.3 |
| 1917 | 3,907 | 8,567 | 5.2 | 11.4 |
| 1918 | 2,190 | 7,794 | 2.7 | 9.6 |
| 1919 | 1,867 | 6,704 | 1.6 | 7.9 |
| 1920-24 | 11,281 | 34,187 | | |
| 1920 | 900 | 6,241 | 1.0 | 7.1 |
| 1921 | 1,611 | 6,598 | 1.8 | 7.4 |
| 1922 | 2,467 | 6,977 | 2.6 | 7.5 |
| 1923 | 3,148 | 7,027 | 3.2 | 7.2 |
| 1924 | 3,155 | 7,344 | 3.2 | 7.4 |
| 1920-24 | 11,281 | 34,187 | | |
| 1925 | 3,694 | 7,549 | 3.6 | 7.3 |
| 1926 | 4,109 | 7,591 | 3.9 | 7.2 |
| 1927 | 4,372 | 8,008 | 4.0 | 7.5 |
| 1928 | 4,627 | 8,630 | 4.0 | 7.5 |
| 1910-28 | 58,621 | 147,322 | | |

According to an elaborate series of estimates compiled by the Association Against the Prohibition Amendment, the United States was spending annually \$2,848,000,000 for 1,110,000,000 gallons of beer, wine, and spirits. The Association also estimated that the country was losing annually because of Prohibition (that is to say, from losses on excise taxes and because of the cost of Prohibition enforcement) a total of \$1,867,839,670. The Association made its estimates on the basis of bootleg prices in 30 communities, with estimated reductions for homemade brews, and reached its figure on the basis of the production of such materials as hops, grapes, corn sugar, cane and beet sugar, molasses, corn meal, grain mash, and alcohol, first deducting the amounts used in legitimate industry. The Association made its estimates on the basis of an expenditure of \$11 per gallon for alcoholic spirits; \$2.30 per gallon for wine, and 50¢ per gallon for beer. The Association's report says:

We believe that \$2,500,000,000, exclusive of revenue, is a generous estimate of what we would have been spending to-day if there were no Prohibition. We can find no basis for the sweeping claim that we should now be spending from \$3,000,000,000 to \$7,000,000,000 for drink if there were no Prohibition.

The Prohibition Bureau through its director, Colonel Woodcock, disagreed with these estimates and presented as its own the declaration that "the possible production of illicit liquor of all classes in the United States for the fiscal year ending June 30, 1930 was 876,320,718 gallons or approximately 7 gallons to each person in the United States." The Bureau pointed out that in 1914, which was the last year of normal full production of legal liquor, there was an actual legitimate withdrawal of 2,256,272,765 gallons. In other words, according to the bureau, Americans to-day were consuming only about 40 per cent of the alcohol withdrawn in 1914.

THE ASSOCIATION AGAINST THE PROHIBITION AMENDMENT. In addition to the report cited above this organization kept up a steady stream of agitation looking towards repeal of the Eight-

eenth Amendment. During the year there were printed by the Association the following pamphlets: *The Last Outposts of Prohibition in Canada*; *The Bratt System of Liquor Control in Sweden*; *Finland's Prohibition and Echo of Volsteadism*; and *England's Solution of the Liquor Problem*.

Concerning England the report had this to say: There was a rapid and steady decline of intoxication over a period of years and that convictions for intoxication declined from 188,877 in 1913 to 65,166 in 1927 and 55,642 in 1928. Also, the annual drink bill has declined from \$2,285,000,000 in 1920 to \$1,402,000,000 in 1928. The consumption of spirits has declined from 31,660,000 gallons in 1914 to 12,881,000 gallons in 1927. Beer has gone down from 34,130,000 barrels in 1913 to 20,819,000 barrels in 1927. Wine has risen from 10,630,000 gallons in 1913 to 16,628,000 in 1927. The number of public houses has been reduced from 99,478 in 1905 to 78,803 in 1928. The following factors have contributed towards the growth of temperance in England: The high price of liquor, reduced hours of sale, great growth of recreational facilities, outdoor sports, and popular education. The report goes on to say:

A noteworthy feature of the English liquor system is that it has accomplished such impressive results without resorting to harsh or unjust measures. Licenses have been, and are being, extinguished, not through confiscation, but with compensation to the owners of redundant houses. The people have not suffered from arbitrary legislation. The licensing justices, with a comprehensive law for guidance, have been enabled to use their own common sense, and have not been bound by rule of thumb. On the whole the system has set in motion a progressing social reform without coercion of the public or undue pressure.

The debate over the success of Canada's drink plan apparently continued in the Dominion. Ernest C. Drury, former premier of Ontario, pointed out that the Canadian system of liquor control was "a dismal failure." According to Sir Henry L. Drayton, Chairman of the Ontario Liquor Control Board, Canada had achieved "true temperance." According to Mr. Drury, effective control in Canada was impossible. Women and children were being exposed to drinking because the home was taking the place of the saloon, and crime and drunkenness were on the increase. Mr. Drury declared that liquor law infractions jumped from 7472 in 1918 to 15,263 in 1928. In Ontario under province control the sales of liquor were tremendous and were on the increase. In the year 1928, \$48,995,000 worth of liquor was sold in a province of approximately 3,000,000 population. Arrests for drunkenness increased from 11,370 in 1923 to 15,931 in 1928. The figures for jail commitments were 8036 in 1924 and in 1928, which was the first full year of government control, they were 23,786. Sir Henry L. Drayton declared that the government sale system in Ontario was an effective move toward temperance. Prohibition in the province, he declared, had proved a failure in place of the programme of moral suasion there was substituted a programme of legislative force which could not work. Under government control, he declared, the total consumption of liquor in the whole dominion in 1928 was 2,500,000 bottles less than it had been in 1916 and this despite the fact that Canada had gained more than 1,750,000 in population.

PROHIBITION'S FUTURE. During 1930, 10 years after the adoption of Prohibition in the United States, many American newspapers devoted their

columns to a review of the success of the experiment. Many commentators agreed with Frank Kent, of the *Baltimore Sun*, that "the relative strength of the wets and drys is approximately what it was 10 years ago." *The New York Times* tried to draw up a balance of what had happened since the Volstead Act became law. The following items it placed to the credit of Prohibition: In some parts of the country there was an economic gain and, undoubtedly, drinking among workingmen had decreased. Money spent for liquor had gone into savings or an improved standard of living. Particularly noticeable was the abolition of the old-style saloon. Said *The New York Times* on this point: "That source of social demoralization and political corruption has been got rid of—or at least driven into subterranean hiding—by national prohibition. This must stand high in any listing of the benefits brought by it." On the other side of the ledger the *Times* presented the following: Prohibitionists in 1920 did not count on the possibilities of smuggled liquor. They also were not aware of the possibilities of an immense production of alcohol for beverage purposes in the home. They could not foretell the size of official corruption which was to take place particularly in the hands of the police and in the agents of the Federal government. The Prohibitionists of 1920 counted too much on the educative forces that were to wean the growing generation from the drink habit. Said the *Times*:

It was confidently expected that millions of youthful Americans would soon be coming forward into citizenship that had never tasted liquor. Older people might still proceed in their sinful ways but the rising generation would soon outnumber and supersede them. What really took place, however, may be inferred from the admissions made at the National Convention of the Anti-Saloon League. There it was recognized frankly that millions of boys and girls under prohibition had fallen into drinking habits before unknown in people of their age . . .

ELECTION RETURNS. The election returns in November indicated that the wets had made sizable gains in both the Senate and the House. Political commentators estimated that the wet bloc in the House won an additional 43 seats, making a total of 134. In the Senate five anti-prohibition votes were added. These were Dwight W. Morrow, from New Jersey; J. Hamilton Lewis, from Illinois; R. H. Bulkley, from Ohio; Marcus A. Coolidge, from Massachusetts; and J. H. Metcalf, from Rhode Island. In the Senate, the wets were put at 18 and the drys at 78. Three referenda were held, viz: in Illinois, in Rhode Island, and in Massachusetts. In Illinois, for the third time, this State voted decisively in favor of the repeal of the Eighteenth Amendment, the majority being 300,000. Here three propositions were submitted to the electorate, for repeal of the Eighteenth Amendment, for modification of the Volstead Act, and for repeal of the State enforcement act. All were carried, the heaviest vote and the heaviest majority being recorded on the first question.

In Rhode Island there was a vote of almost 4 to 1 in favor of repeal of the Eighteenth Amendment, 172,215 voting wet and 48,845 dry. In Massachusetts the electorate voted to repeal the State enforcement act by a vote of 641,967 to 367,165. In the lower House of Congress the elections indicated that Connecticut had elected a complete wet slate, counting the majority floor leader, John Q. Tilson. It was apparent, too, that

Illinois had increased its wet membership in the House by 5, that New York had increased its wet representation in the House by 4, Louisiana by 1, Ohio by 4, Maryland by 2, Michigan by 2, New Jersey by 2, Pennsylvania by 7, Rhode Island by 1, Wisconsin by 2. See FINLAND, PANAMA, and SWITZERLAND under History.

PROTESTANT EPISCOPAL CHURCH. A religious denomination representing the Anglican communion in the United States, of which the Church of England is the parent church, and which was brought to America by the Jamestown colonists in 1607. The first American service from its Book of Common Prayer, however, was held in the year 1579, on the first Sunday after Trinity, on the Pacific coast near the present site of San Francisco, when the Rev. Francis Fletcher, chaplain of the fleet under command of Sir Francis Drake, conducted service, preached a sermon, and celebrated Holy Communion. The Virginia colony was permanently established with regular ministrations of the church in 1607, and, despite the absence of a colonial episcopate, the church, under English clergymen, maintained a firm foothold for 170 years. In 1785 the first American bishop was consecrated in Scotland, and three years later two more were consecrated. The church completed its organization at a convention in Philadelphia in October, 1789, at which the constitution and name were adopted and the Book of Common Prayer was set forth.

In 1930 the total number of communicants was 1,287,431, an increase of 20,415 over the preceding year. There were also 6304 clergy, an increase of 14 over the preceding year, and the 15 theological seminaries of the church reported an increase of 46 in the number of candidates for the ministry. The total contributions to all causes within the church amounted to \$45,944,896, a decrease of \$60,595 over the preceding year. There were more than 5000 church (Sunday) schools under the direction of 58,548 teachers, with an enrollment of 483,413 pupils.

Operating on a balanced budget, the church in 1929 reported total expenditures amounting to \$3,684,260. Of this sum, the total expenditure for missions, domestic and foreign, was \$2,799,121, divided in practically even amounts between the two fields. The foreign-mission field included Japan, China, Liberia, Mexico, the Philippines, Alaska, Hawaii, Brazil, the Canal Zone, Cuba, Porto Rico, Haiti, the Dominican Republic, the Virgin Islands, and Palestine; in addition, there were establishments in 10 important European centres. Domestic missionary activities included work among the foreign born, Indians, Negroes, mountaineers, mill workers, in addition to a wide range of social service. American missionaries abroad numbered, men and women, respectively, 173 and 213; native staff abroad, 962 and 723; American missionaries in the United States, 524 and 140; native staff in the United States, 117 and 18, making a total of 2870 persons. During the year, 71 new missionaries were appointed. The church also maintains five colleges.

The national council is assisted in its work by a group of cooperating agencies, including: the Woman's Auxiliary; the Brotherhood of St. Andrew; the Daughters of the King; the Guild of St. Barnabas (for nurses); the Girls' Friendly Society in the United States (for girls and young women); the Young People's Fellowship (for young men and women); the Church Mission of Help; the Seamen's Church Institute; and the

American Church Institute for Negroes. Official periodicals are the *Spirit of Missions*, *Church at Work*, *Findings in Religious Education*, and *Bulletins* of the national council, together with material dealing particularly with each department of the council. Several independently owned publications make an important contribution to the life of the church: *The Living Church*, *The Churchman*, *The Witness*, *The Southern Churchman*, weeklies; *American Church Monthly* and *The Chronicle*, monthlies. In addition, there are 80 monthly diocesan publications in the home field and a score of others in the mission field.

On account of the special meeting of the House of Bishops on Mar. 26, 1930, in Chicago, occasioned by the death of the Presiding Bishop, the Rt. Rev. Charles Palmerston Anderson, D.D., Bishop of Chicago (q.v.), the usual annual meeting of the House of Bishops scheduled for the autumn of 1930 was not held. On the call of the Senior Bishop of the Church, the Rt. Rev. William Andrew Leonard, D.D., Bishop of Ohio, the House of Bishops met late in March in St. James's Cathedral, Chicago, and elected as Presiding Bishop the Rt. Rev. James DeWolf Perry, D.D., Bishop of Rhode Island. Bishop Perry was to serve as Presiding Bishop until the meeting of the General Convention in September, 1931.

The year 1930 was marked by the death of eight bishops, besides that of the Presiding Bishop: the Rt. Rev. William Andrew Leonard, D.D., Bishop of Ohio, and, at the time of his death, Senior Bishop of the Church, who was succeeded by his coadjutor, the Rt. Rev. Warren Lincoln Rogers, D.D.; the Rt. Rev. Arthur C. A. Hall, D.D., the venerable Bishop of Vermont and an outstanding theologian, who was succeeded by his coadjutor, the Rt. Rev. Samuel Babcock Booth, D.D.; the Rt. Rev. Sidney Catlin Partridge, D.D., Bishop of West Missouri, and for many years a missionary in the Orient where from 1900 to 1911 he was the first Missionary Bishop of Kyoto, Japan; the Rt. Rev. James H. Darlington, D.D., Bishop of Harrisburg; the Rt. Rev. Beverley D. Tucker, D.D., Bishop of Southern Virginia, who was succeeded by his coadjutor, the Rt. Rev. Arthur C. Thomson, D.D.; the Rt. Rev. Herbert Shipman, D.D., junior Suffragan Bishop of New York; the Rt. Rev. Charles Lewis Slattery, D.D., Bishop of Massachusetts; and the Rt. Rev. Sheldon M. Griswold, D.D., Bishop of Chicago, who was succeeded by his coadjutor, the Rt. Rev. George Craig Stewart, D.D.

New members of the House of Bishops consecrated during 1930 included: The Rt. Rev. Hayward S. Ablewhite, D.D., Bishop of Marquette, who succeeded the Rt. Rev. Robert LeRoy Harris, D.D., resigned; the Rt. Rev. Cameron J. Davis, D.D., Bishop Coadjutor of Western New York; the Rt. Rev. Charles K. Gilbert, D.D., Suffragan Bishop of New York, who succeeded the late Bishop Shipman; the Rt. Rev. Robert B. Gooden, D.D., Suffragan Bishop of Los Angeles; the Rt. Rev. Frederick D. Goodwin, D.D., Bishop Coadjutor of Virginia; the Rt. Rev. Henry W. Hobson, D.D., Bishop Coadjutor of Southern Ohio; the Rt. Rev. Benjamin T. Kemmerer, D.D., Bishop Coadjutor of Duluth; the Rt. Rev. S. Harrington Littell, S.T.D., Missionary Bishop of Honolulu; the Rt. Rev. William Scarlett, LL.D., Bishop Coadjutor of Missouri; the Rt. Rev. Elmer N. Schmuck, D.D., Missionary Bishop of Wyoming; the Rt. Rev. Henry K. Sherrill, D.D., Bishop of Massachusetts; the Rt. Rev. Robert Nelson Spen-

cer, D.D., Bishop of West Missouri; the Rt. Rev. George Craig Stewart, D.D., Bishop of Chicago; and the Rt. Rev. Harwood Sturtevant, D.D., Bishop Coadjutor of Fond du Lac. The year 1930 also saw the translation of the Rt. Rev. James Craik Morris, D.D., Bishop of the Panama Canal Zone, to the Diocese of Louisiana in succession to the Rt. Rev. Davis Sessums, D.D., who died on Christmas Eve, 1929.

In June, 1930, official representatives of the Protestant Episcopal Church, the Methodist Episcopal Church, and the Presbyterian Church in the United States of America met in Atlantic City to discuss questions of Christian morality looking toward organic unity. The Protestant Episcopal Church was represented by the Bishops of California and of Newark, and several representative priests and laymen. Commenting upon the results of the conference, the Bishop of California, the Rt. Rev. Edward L. Parsons, D.D., said:

There was even greater cordiality and interest in the purpose of this conference than I believe was anticipated; and it disclosed also a rather unexpected unanimity in the approach of these various communions, so far as their official representatives are concerned, to the questions brought up for discussion. On the whole I think we made sufficient progress to warrant us in feeling that none of the problems which we discussed interposes an obstacle in the way of approaches that may be made toward organic unity.

The Lambeth Conference was attended by 60 American bishops. See ENGLAND, CHURCH OF. The headquarters of the national council are in the Church Missions House, 281 Fourth Avenue, New York City.

PROTONS. See PHYSICS.

PROTOZOA. See ZOÖLOGY.

PRUSSIA, *prüsh'ä*. A constituent republic of the German Republic. Formerly a kingdom of the German Empire, it was proclaimed a republic Nov. 13, 1918. Capital, Berlin. Area, Apr. 1, 1925, 113,038 square miles, as compared with 135,134 square miles before the World War; population, according to the census of 1925, 38,120,178 as compared with 40,165,219 in 1910. The movement of population in 1928 was: Births, 749,499; deaths, 473,964; marriages, 362,017. The chief cities, with their populations in 1925, are Berlin, 4,024,165; Cologne, 700,222; Breslau, 599,770; Frankfurt-on-Main, 540,115; Essen, 470,524; Dortmund, 455,556; Düsseldorf, 432,633; and Hanover, 425,274. Public elementary schools in 1926 enrolled 4,169,481 pupils and the private elementary schools, 13,925.

The chief crops, with their yield in metric tons in 1928, were: Wheat, 2,344,023; rye, 6,439,326; summer barley, 1,864,223; oats, 4,923,400; potatoes, 28,532,590; hay, 9,699,731. In the same year the vineyards yielded 8,889,031 gallons of wine. Livestock on Dec. 1, 1928, included 10,350,000 cattle, 2,386,100 sheep, 13,804,600 swine, and 2,552,300 horses. The value in Reichsmarks (1 Reichsmark equalled about \$0.238) of the chief minerals produced in 1928 were: Coal, 2,122,540,073; lignite, 373,893,835; iron ore, 48,629,820; and salt, 10,799,796. Railways in the republic Jan. 1, 1928, totaled 20,869 miles. Government receipts and expenditures for 1929-30 were estimated to balance at 4,201,608,350 Reichsmarks; the public debt on Apr. 1, 1929, was 381,575,995 Reichsmarks. Legislative power rests with the Diet and State Council and executive power with the Ministry, which is appointed by the Prime

Minister elected by the Diet. Prime Minister in 1930, Otto Braun (Socialist).

HISTORY. Effective June 1, 1930, the State of Prussia increased the urban real estate tax 100 per cent in order to cover a deficit of 115,000,000 marks in its budget for the fiscal year 1930-31. The increase was put into force through an emergency decree as the Diet failed to obtain a quorum to enact the necessary legislation. The extremist trend shown in the national elections for the Reichstag of Sept. 14, 1930, induced stubborn efforts on the part of Communists and Fascists to oust Herr Braun's Social Democratic administration, which was supported by the Centrists and Democrats. Premier Braun's response was the appointment on October 22 of Carl Severing as Minister of the Interior to succeed Professor Heinrich Waentig. One of the ablest German Socialist administrators, Herr Severing had organized the crack Prussian police force and was formerly Reich's Minister of Interior in the Müller Cabinet. A firmer policy toward the Right and Left radicals on the part of the State Government was indicated by his appointment. See GERMANY.

PSYCHIATRY. See PSYCHOLOGY; CRIME.

PSYCHICAL RESEARCH. The year was very typical of psychical research: a little useful and permanent work was done, amid much controversy and recrimination, most of it of a deplorably personal kind. The useful work was as usual in the mental phenomena (clairvoyance, telepathy); the disputations as usual in the field of the physical phenomena.

The most important event of the year was undoubtedly the Fourth International Congress for Psychical Research held in Athens in May under the presidency of Prof. Hans Driesch (Leipzig), the biologist and philosopher. Papers were read at the Congress, in addition to its President, by Professors Oesterreich (Tübingen), K. C. Schneider (Vienna), Th. Wereide (Oslo), Mikuska (Czechoslovakia), by Dr. A. Tanagra (who organized the Congress), Baron von Winterstein, Countess Wassilko Serecki, by the representatives of the Society for Psychical Research, Sir Oliver Lodge, W. H. Salter, and Theodore Besterman, and by others. The *Transactions* of the Congress were published in December under the editorship of the last named. The usual differences of opinion were vigorously stressed at the Congress. Unfortunately the discussions were largely devoted to arguments of a theoretical nature, bearing on the explanation and interpretation of the facts. The merits of the facts themselves were not inquired into by anybody but Mr. Salter and Mr. Besterman, with the support of Professor Driesch. Their criticisms, however, were badly received and very little hesitation was shown by the delegates to the Congress in accepting as proven practically all the phenomena, physical and mental, studied by psychical research.

Nevertheless, the marked difference between the evidential standard attained by the mental and the physical phenomena respectively remains as striking as ever. This difference was given very forcible expression in the presidential address delivered by Dr. Walter Franklin Prince to the Society for Psychical Research, which was published both in the Society's *Proceedings* and as a *Bulletin* of the Boston Society for Psychic Research. The election of Dr. Prince, who was Research Officer of the latter Society, as President of the S. P. R., marks the cordial relations that

have always existed between serious students of psychical research in England and America. Under the title of "The Aetiology of a 'Psychical' Legend" Dr. Prince contributed to the *Journal* of the S. P. R. a valuable analysis of the apocryphal legend that Lincoln emancipated the slaves under spirit influence, through a "child" medium. Dr. Prince's investigation shows that the mediumistic message was couched in the most general terms and was not delivered until after Lincoln had given unmistakable indications of his intention. Incidentally the "child" was a grown woman, and the legend is full of other inaccuracies.

One of the more sensational events of the year was the resignation of Sir Arthur Conan Doyle (q.v.), the creator of "Sherlock Holmes," and the so-called apostle of spiritualism, from the Society for Psychical Research. He issued circulars to all the members of the Society to follow his lead (about one-half of 1 per cent accepted his advice), and gave as the cause of his withdrawal a review written in the Society's *Journal* by Mr. Besterman of the Millesimo sittings (see below). About this review Sir Arthur expressed himself very positively, but after his death later in the year there was published in an American paper a letter from him, of a date earlier than the printing of the review in question, in which Doyle announced his intention of attempting to split the S. P. R. as soon as he could find a suitable opportunity.

The phenomena of Millesimo made no progress during the year. Signor Bozzano and others continued their fervid polemics in favor of the genuineness of these phenomena, but without success. It appeared that the Marquess Centurione Scotti, who was the medium responsible for the very remarkable Millesimo phenomena, had abandoned his mediumship.

Another well-known mediumship received a severe blow during the year, that of Mrs. Crandon (Margery) of Boston. Members of the S. P. R. were entitled, on suitable application, to the use of the séance-room at the S. P. R. for their own investigations. Such an application was made on behalf of Margery, who accordingly in the last weeks of 1929 gave a small number of demonstration sittings to a number of people selected by Dr. Crandon (no critics of the Margery mediumship were invited). It is a condition however of the loan of the séance-room that the Society's Honorary Research Officer should be present. As a result of this Margery was for the first time discovered in apparent fraud in such a way that the facts could not be escaped by the most ingenious dialectic. At the end of the year the report of these sittings, which was to appear in the *Proceedings* of the S. P. R., had not been published, so that detailed comment best may be reserved. But, in brief, the facts are as follows.

The phenomenon produced by the Margery mediumship which had been most emphasized by its supporters was that of the thumb-prints supposed to be produced at the sittings by Margery's dead brother Walter. The procedure was as follows. The medium was controlled in such a way as supposedly to make it impossible for her to touch the articles required for the production of the thumb-prints. This was achieved by strapping Margery's wrists and ankles with surgical tape to the arms and legs of the armchair in which she was seated. In front of Margery (but *en hypothesis* out of her reach) was placed a plain wooden table made to Dr. Crandon's specifications. On the

table were placed two basins. A handkerchief or similar object was placed with one end in each basin. One basin contained cold water. The sitting was then ready to begin. At the command of the voice of Walter, which was supposed to be produced in a supernormal manner, and, usually, in a dim red light, hot water was poured into the second basin and in it a piece of Kerr dental wax was placed. Complete darkness was then asked for and under those circumstances Walter produced his (occasionally some other) thumb-print on the wax. The piece of wax so impressed was then pulled back into the cold water by means of the handkerchief, and left to harden. In due course the lights were turned on and the impression on the wax, which was now again perfectly hard, was examined.

It will be easily understood that the vital point in the whole procedure is, under the particular conditions described, that the medium should not have access to the table, and *a fortiori* to the basin and to the piece of wax in it. The sitters are of course supposed to control each other. It is to be noted also that it is only possible to make an impression on the wax while the wax is soft, that is, so long as it is in hot water or immediately after. In other words, under the procedure described, it is impossible for the medium to make an impression on the wax with her own finger if the control of her is adequate. For she is strapped to her chair at the beginning of the sitting, when the piece of wax has not yet been softened, and she remains strapped to her chair until the end of the sitting, when the piece of wax has long since hardened again. (The possibility of the fraudulent introduction of pieces of wax can be ruled out in the incident to be referred to, as the piece was marked during the sitting.)

Now comes the crucial observation. At one of the sittings in the S. P. R. séance-room, a piece of wax marked by the Honorary Research Officer (Dr. Woolley) was found on examination after the sitting to have on it the normal fingerprint of Margery. This proves conclusively that at a time when the medium was supposed to have no kind of access to the piece of wax used in the experiment, she not only theoretically had such access, but evidence exists that she in fact touched the piece with her hand. It is impossible here to go into the question of the manner in which such access was obtained. It is enough to say that experiments were made, reproducing the conditions of the Margery sittings, and the possibility of access has been established.

BIBLIOGRAPHY. Publications during the year of value were few. The Society for Psychical Research established an F. W. H. Myers Memorial lecture, of which the first was delivered by Sir Oliver Lodge, on *Conviction of Survival*. Dr. Prince's *Pseudo-Prophecies and Pseudo-Sciences* is a valuable piece of historical analysis. Mr. Carrington's *The Story of Psychic Science* is useful but uneven. Under the title of *Okkultismus und Biologie* are collected essays by the late Dr. Gruber. *The Science of Life* by H. G. Wells, Julian Huxley, and G. P. Wells forms a notable exception to works on biology, in that it contains a full discussion of the phenomena of psychical research. Mr. Price's report on *Rudi Schneider* would be valuable if it were possible to accept it at its face value. Miss Dallas's *Comrades on the Homeward Way* is a sincere restatement of the spiritualistic position. Mr. Besterman published *Some Modern Mediums*.

PSYCHO-ANALYSIS. See **PSYCHOLOGY.**

PSYCHOLOGY. NOTES AND NEWS. The American Psychological Association held its thirty-eighth annual meeting at the University of Iowa, Iowa City, Iowa, on December 29, 30, and 31. The event of principal interest was the dedication of the new psychological laboratory at that institution. The laboratory was installed in a portion of the former university hospital, which contained more than 300 private rooms, offices, etc. The space was shared with the departments of philosophy, speech, and child welfare. These departments were given a library in common. Sixty or more rooms were made available for graduate work in psychology. Very little reconstruction was necessary, as the private rooms and small wards made excellent research rooms. Special dedication exercises were held at which short addresses were made by five eminent psychologists.

At the business meeting the election of Prof. Walter S. Hunter, of Clark University, as the president for the year 1931 was announced. The members voted to suspend for one year the by-laws of the association which call for a meeting in December and to meet on September 10, 11, and 12 in Toronto. The result of this experiment would determine whether or not the time of meeting should be permanently changed from December to September.

Thirteen sessions were held for the presentation of 65 scientific papers, one session being devoted to reports from 10 graduate students. There were four round-table discussions on Methodology and Procedure, in the case of Behavior Problems of Children, Personality, Emotions, and the Pre-school Child. Of the regular meetings, one each was devoted to General Problems, Educational Psychology, Mental Tests, Child Psychology, Aesthetics, Abnormal Psychology, College Personnel, and Clinical Psychology; and two to Experimental and two to Animal Psychology. Professor H. S. Langfeld, retiring president of the Association, delivered the presidential address on "A Response Interpretation of Consciousness."

The first International Congress of Mental Hygiene was held in Washington, D. C., on May 5 to 10. Representatives from 53 countries were present, the total enrollment being more than 4000. Forty-five major problems were offered for discussion at 51 sessions, in which there were more than 300 speakers. All printed communications appeared in English, French, and German, although reports were made in seven different languages. The topics covered a wide range from a general consideration of the whole hygiene movement to specialized problems of adolescence, pre-school children, marital relationships, delinquency, etc. One of the most interesting aspects of the congress was a report of mental hygiene activities in 48 different countries by representatives of those countries. This made possible for the first time a world view of the mental hygiene movement. The action of the congress of greatest permanent significance was the establishment of the International Committee for Mental Hygiene, for the international development and coordination of mental hygiene activities, and for the holding of international congresses in the future.

The publication of the "Proceedings of the Ninth International Congress of Psychology" (1930), held at Yale University in September, 1929, af-

forded an interesting study of recent psychological activities and interests both in America and in foreign countries. (See *Psychological Bulletin*, 1930, vol. 27, pp. 658-663.) The largest proportion of the 442 papers, of which abstracts were published, were in the field of Tests and Measurements. Applied Psychology included the largest number of foreign contributions. All but two of the papers on Animal Psychology were American. These were Russian studies of the conditioned reflex. Both in America and Europe objective methods of investigation exceeded the introspective by nine to one. In America the experimental studies just about equaled in number the discussions of theory and methodology, while in the foreign papers the latter exceeded the former two to one. Also in America interest in gross behavior was four times as frequent as interest in the facts of consciousness, while in all foreign countries the latter was twice as frequent as the former. Among the Americans behaviorism or objectivism was the dominant systematic point of view, while among the foreign psychologists no such dominant interest appeared.

The Psychological Corporation (headquarters, New York City) announced its sponsorship of a nation-wide experimental study of English usage. Special attention was being directed to the elimination of all unnecessary and obsolete rules which create confusion in the study of the language. Special tests covering 100 different phases of usage for the fifth grade and above had been prepared and were made available in October. Schools throughout the country were invited to engage in the study.

The seventh International Conference of Industrial Psychology was announced to be held in Moscow in 1931, with Dr. I. Spielrein, of the Institute for the Protection of Labor, as president.

Mental Hygiene (July, 1930) reported that Soviet Russia had established a Mental Hygiene Commission under the People's Commissariat of Public Health of the Union of Soviet Socialist Republics. Its work was to be carried on in connection with the Moscow State Neuropsychiatric Dispensary. An attempt was to be made to develop a powerful mental hygiene movement in connection with their efforts to build a socially new man. A series of booklets was to be issued under the name *Mental Hygiene*, which would eventually grow into a magazine.

Announcement was made of the establishment of an Institute for Industrial Psychology at Geneva, under the auspices of the Commission romande de Rationalization. The institute contained three divisions, namely, vocational guidance, psychotechnics, and medicine.

The first number of the journal of orthopsychiatry, *A Journal of Human Behavior*, appeared in October. It was under the editorship of Lawson G. Lowrey, and intended to be published quarterly. The journal was to be devoted entirely to problems of human behavior.

Professor F. C. Bartlett was appointed full professor of experimental psychology in Cambridge University. This was the first professorship in psychology to be established in either Oxford or Cambridge, and was an event which every psychologist, wherever he may be, regarded with pride.

It was announced that the first International Congress of Religious Psychology would be held in Vienna, Austria, from May 26 to May 31, 1931.

The establishment of a lectureship in honor of William James at Harvard University was announced as a gift of the late Edgar Pierce. The first incumbent of the lectureship was John Dewey. There were no restrictions upon the topics to be covered in the lectureship, other than that they should fall within the fields of philosophy and psychology.

A new journal of psychology was launched in Poland, known as *Kwartalnik Psychologiczny* (Quarterly Journal of Psychology) under the editorship of Stefan Blackowski, of Poznan. Success of the publication was guaranteed through a government fund known as the "Fund for National Culture." Its pages were to be open to contributions from foreign psychologists. Of the five original articles in the first number two were Polish. One of the most important features was the series of abstracts of articles from foreign publications. The editors announced also a section on book reviews and short notes. Original articles were to be followed by abstracts in French and German.

Dr. James McKeen Cattell, distinguished American psychologist, was awarded a gold medal by the Society of Arts and Sciences for his contributions to science. This was one of the two awards made each year by the society for outstanding achievements in science.

The fourth International Congress for Individual Psychology was held in Berlin, September 25-28. It was opened with an address by Dr. Alfred Adler.

The National Institute of Industrial Psychology (England) announced the formation of a Scottish Division of the Institute with headquarters at Glasgow.

Dr. Carney Landis, formerly associate professor of psychology at Wesleyan University, Middletown, Conn., was appointed research associate in psychology at the New York State Psychiatric Institute and Hospital, Medical Centre, New York City. This appointment of a psychologist on the staff of such an institution indicated the growing recognition of the contribution which the psychologist could make toward the understanding of mental abnormalities.

Dr. K. S. Lashley, professor of psychology at the University of Chicago, was elected to membership in the National Academy of Sciences.

One of the unique events of the year was the appearance of the first volume of a *History of Psychology in Autobiography* (edited by Carl Murchison, Clark University Press). It contained the personal and professional histories of 15 psychologists, seven from America and the other eight from foreign countries. Succeeding volumes were promised in the near future. The intimate glimpses of the early development and training of these men of science proved of great interest and value to students of psychology.

GENERAL AND THEORETICAL PSYCHOLOGY. A comprehensive survey of the field of general and theoretical psychology was presented in the *Psychologies of 1930* (Clark University Press). This was the second of a series of five-year surveys of the fields of theoretical psychology, the first of which appeared in 1925. In general the case for the various "schools" of psychology was presented by a champion of the school, for instance, the Configuration Psychologies by Koehler, Koffka, and Sander, and Hormic Psychology by McDougall. Exceptions to this rule occurred in the case of Associationism, Functionalism, and

Act Psychology, which received a historical treatment. The most striking changes made in the second volume were the introduction of a section on the Russian Psychologies, contributed by I. P. Pavlov, A. L. Schniermann, and K. N. Kornilov; the introduction of a section on Factor Psychology, contributed by Charles Spearman; and the introduction of a section on Analytical Psychologies, containing three reports by P. Janet, J. C. Flugel, and Alfred Adler. All these additions increase the value of the book, from which no important theoretical development was excluded. A general section included a series of topics that did not fall within the limits of any other group. John Dewey contributed a section on "Conduct and Experience"; T. L. Kelley on "The Inheritance of Mental Traits"; C. Spearman on "Normality"; and L. T. Troland on "Motivation." Although the various schools were actively at work and showed no signs of consolidation there was at the same time a feeling of mutual interest and coöperation, rather than futile antagonism. The great body of psychologists remained a compact group in spite of evident internal difference.

Of considerable historical interest was the posthumous publication of *Systematic Psychology: Prolegomena*, by E. B. Titchener (New York, 1929), edited by one of his colleagues. Professor Titchener had planned a Systematic Psychology which was to be his crowning achievement. Begun in 1917, the project was cut short by his death. The book dealt chiefly with his views concerning science in general and the relation of the science of psychology to it. Somewhat less than half of it consisted of reprints of portions of his system, taken from the scientific journals. Although it was unfortunate, indeed, that one so eminently qualified to systematize the science could not have lived long enough to complete it, psychologists were grateful for the publication of this fragment.

MENTAL TESTS. Emphasis continued to fall in 1930 upon the so-called non-intelligence tests, such as tests of mechanical ability, character traits, interests, and other factors in personality. The report of one of the investigations of the Committee on Scientific Problems of Human Migration, of the National Research Council, appeared under the title *Minnesota Mechanical Ability Tests* (The University of Minnesota Press). This was a volume of 586 pages dealing with the construction, standardization, and administration of tests for mechanical ability. The problem was undertaken by the above committee because such a large proportion of the working population of the United States was engaged in some form of mechanical work, and because such a large part of this group, presenting particularly difficult employment problems, was represented by immigrant groups.

In addition to the presentation of the tests themselves, the book contained a section on the nature of mechanical ability, its distribution, and the effects of environmental influences upon its manifestations. In appendices were to be found a manual of directions for giving and scoring the tests, an exposition of statistical methods used in the research, many pages of raw data, and an extensive bibliography. The book gave promise of serving as a model for the construction, standardization, and use of aptitude tests. Particular attention was directed to the process of validation of the tests, perhaps the most vital aspect of

test construction. The validation technique there devised was one of the outstanding contributions of the work.

The status of character measurement was indicated in the final report of the Character Education Inquiry which appeared in *Studies in the Organization of Character* (Macmillan, New York), by Hugh Hartshorne and Mark A. May. This was the third volume of *Studies in the Nature of Character*, sponsored by the Institute of Social and Religious Research. The two earlier volumes were *Studies in Deceit* and *Studies in Service and Self Control*. The book presented a careful study of social intelligence and social attitude, tests for measuring them, the factors that influenced them, and their changes with age, physical and emotional condition, etc. There was also a discussion of the organization of character, and a series of conclusions drawn from the whole character inquiry. Of these, two were of general interest, namely: that "prevailing ways of teaching ideals and standards probably do little good and may do harm when the ideals set before the pupils contradict the practical demands of the very situations in which the ideals are taught"; and that "contradictory demands made upon the child by the varied situations in which he is responsible to adults not only prevent the organization of a consistent character, but actually compel inconsistency at the price of peace and self-respect." A thorough reconsideration and reorganization of methods of character training was therefore called for.

The investigators supported the conclusions of earlier workers in this field, in that they found so-called character traits highly specific. That is to say, they did not discover such a trait as trustworthiness, but a collection of specific behavior attitudes which could be subsumed under that name. Each of these would require a separate test. At best one would have to administer a series of tests to get a sampling of such behavior attitudes, in order to make an estimate of trustworthiness.

A third trend in the field of tests was indicated in the "Neurotic Inventory" by L. L. Thurstone and T. G. Thurstone (*Journal of Social Psychology*, 1930, vol. 1, pp. 3-30). The inventory was a further refinement of earlier tests intended to evaluate the personality and particularly to disclose any tendencies toward instability. It was on the basis of similar earlier tests that individuals were classified into introvert type and extrovert type, into ascendant type and submissive type, etc. The technique elaborated by these investigators was receiving a widespread trial, particularly in the United States, in the hope of a better understanding of personality problems, particularly in the realm of education.

Stanford University continued to be the centre for the measurement of interest. Progress was made in the number of occupations for which interests could be detected, in the reliability of the tests, and in the knowledge of the stability of the interests measured. A research committee of the National Vocational Guidance Association took a census of the status of interest measurement and outlined a series of about 50 problems requiring investigation (see *Personnel Journal*, 1930, vol. 9, pp. 126-183). Among these were: the dependence of interest upon training and environmental factors; the relation between interest and achievement; the development of objective tests of interest; improving the inventory

type of test, by checking against personal histories; developing norms, etc.

In Russia an attempt was being made to develop a system of vocational tests upon the conditioned reflex theory, in which an important factor would be the speed with which conditioned responses could be formed. The significance of such speed differences as a vocational index had not been determined.

SOCIAL PSYCHOLOGY. The year 1930 marked the appearance of the first three volumes of the monumental work *Encyclopædia of the Social Sciences*, edited by E. R. A. Seligman (New York), which when completed was to consist of 15 volumes. This work was the outcome of a recognition of the interdependence among the various disciplines comprised within the name social science, such as economics, sociology, law, anthropology, penology, psychology, education, ethics, etc. The encyclopædia was intended to be both a dictionary and a handbook. The arrangement was alphabetical, with some articles as long as 20,000 words. It was distinctly international in its scope, and gave promise of becoming an authoritative source of information and a record of progress for the scholar as well as an interesting assemblage of facts and principles for the intelligent layman.

The first number of the *Journal of Social Psychology*, devoted to political, racial, and differential psychology, appeared in February, 1930. This was a quarterly journal edited by John Dewey and Carl Murchison (published by the Clark University Press). The journal was intended to be international in its atmosphere. It had an international editorial board with representatives from England, Germany, France, Italy, and Russia. Each article printed in English in the journal was followed by abstracts in French and German. There were 23 main articles in the first volume. Of these one came from Germany, one from Russia, and one from Japan; the remaining 20 were from American authors.

One of the studies of most social significance during the year was reported in the third volume of *Genetic Studies of Genius*, entitled "The Promise of Youth" (Stanford University Press). In 1921-22 approximately 1500 children whose intelligence was at least 40 per cent above the average (I.Q. above 140) were selected for intensive study. A great variety of measurements was made, including physical, motor, intellectual, social, economic, etc. These children came to be known as potential geniuses. As a group they were consistently far above the average in all respects. The study reported in "The Promise of Youth" was a follow-up of these children after a lapse of about six years. The most important conclusion was that for the group as a whole the picture did not greatly change. What was true of the children at the earlier date was likewise true at the later date. When individual cases were studied, however, striking changes were noted, sometimes in the direction of increased, and sometimes of decreased intelligence. The investigators concluded, after taking many disturbing factors into account, that there occur "genuine changes in intellectual growth that cannot be accounted for on the basis of general health, educational opportunity, or other environmental influences." It was further concluded that I.Q. of boys tends to remain constant, and that of girls to decrease. On the other hand, study of

school grades showed that girls maintained a superiority in school marks. For some reason, "girls make a far better showing per unit of intelligence than boys do in the matter of class marks." All of the above findings promised fruitful application in the realm of social psychology. (For character studies having a social implication, see *Mental Tests*.)

EDUCATIONAL PSYCHOLOGY. The most important developments in the field of educational psychology came from the laboratories dealing with the problems of the very young child, particularly the Institutes at the Universities of Minnesota and California, and Columbia, Yale, and George Washington in America, and the laboratory of Karl and Charlotte Buehler in Vienna. Studies revealed the great significance of the first few years of life in the development of personality, and the rapid changes that occur even from week to week in the realm of motor control, and the formation of habits. The need for the creation of correct habits of food-taking, elimination and rest in the first few months of life was emphasized. It was demonstrated in several of these laboratories that it was possible to establish standards of normality, and to measure changes due to growth during the first year. The results of the Vienna studies were presented in *The First Year of Life*, by C. Buehler (New York). A different approach to the mental life of the child was made by Piaget in his study of the development of language, reasoning ability, conceptions of cause and effect, etc. Results were obtained by questioning groups of children. (See *The Child's Conception of Physical Causality*, J. Piaget [New York]; also *The Child's Conception of the World*, by the same author.) A good survey of the mental development of the child was presented in *Child Psychology* by M. W. Curti (New York). It was limited to the normal child, and treated the periods of infancy, early and middle childhood, and adolescence.

Numerous special problems of the school child received intensive study, such as disabilities in the various special school subjects, special methods of teaching, etc. For an introduction to one of these fields, see W. S. Gray, "Summary of Reading Investigations" (*Elementary School Journal*, 1930, vol. 30, pp. 450-467 and 496-509).

For tests and measurements which comprised a large proportion of the activities in educational psychology, see *Mental Tests*.

ABNORMAL PSYCHOLOGY. The work in the field of abnormal psychology continued to fall within the intermediate zone between what is normal and what is abnormal. Slight deviations from normality have rightly been the objects of psychological interest. Personality and its aberrations engaged the majority of investigators. The discussion of methods of measurement (see *Mental Tests*) vied with theoretical discussions of personality traits. Feelings of inferiority, fears, personality changes during adolescence, the introverted and extroverted personality types as affected by sex and age were objects of study. The personality of the college student engaged the attention of a number of investigators, doubtless because of the importance of this factor in academic success. Earlier theories of the basis of personality were applied to the solution of particular problems, as in the relation between physique and criminal behavior, and in the use of the chemical theory of temperament to explain

introversion and extroversion. Specimens of such studies were to be found in the *Journal of Abnormal and Social Psychology*, for 1930.

Interest in psychoanalytic work did not wane appreciably. The most interesting document that appeared during the year was *The Structure and Meaning of Psychoanalysis as related to Personality and Behavior*, by W. Healy, A. F. Bronner and A. M. Bowers (New York). They attempted the difficult but important task of a systematic presentation of the psychology of Freud, together with the modifications which his system has undergone at the hands of his students and others. The construction of this volume facilitated the separation of the original from the modifications by printing on the left hand pages the "orthodox theories and fact-findings of psychoanalysis, and on the right hand pages, "accessions and modifications of theory and practice." The authors were forced into a sympathetic attitude toward Freudian psychology as a result of their contacts with behavior problems at the Judge Baker Foundation (Boston).

Systematic treatments of the field of Abnormal Psychology were not lacking. In *Psychology, Normal and Abnormal* (New York), J. W. Bridges attempted to provide a much needed textbook of psychology for the medical student. In the belief that normal psychological processes can be most easily understood from their exaggerations in the abnormal, he offered the student his normal and abnormal psychology within the limits of a single volume.

A more theoretical and systematic work on the subject was *Abnormal Psychology: Its Concepts and Theories*, by H. L. Hollingworth (New York). The book was unique in that it was written strictly from the psychological point of view, concerned itself with an exposition of the theories that had been evolved to explain abnormalities, and reduced the presentation of case studies to a minimum. The author throughout the book introduced his own conception of reintegration as a means of interpreting and simplifying the whole structure of mental abnormality.

ANIMAL PSYCHOLOGY. Research in animal psychology showed three main trends during 1930. Of most general interest was the investigation of heredity as a determiner of behavior. E. C. Tolman ("The Inheritance of Maze Learning Ability in White Rats," paper presented at meeting of American Psychological Association) tested a large group of unselected white rats for maze learning ability. He then selected the bright rats and the dull rats as the ancestors of a bright and dull strain, respectively. When carried through five generations an increasing divergence of ability occurred between the two groups, which the investigator attributed to the factor of selection. On the other hand, William McDougall ("Second Report on a Lamarckian Experiment," *British Journal of Psychology*, 1930, vol. 20, pp. 201-218) carried a strain of rats through 23 generations, training each generation to escape from a maze in a certain fashion. The rats of succeeding generations displayed increasing facility, which was attributed to the transmission of acquired characteristics rather than selection. "If continuance of the experiment, combining training with strongly averse selection, should result in steadily increasing facility, the reality of Lamarckian transmission will have been demonstrated."

The problem of the nature of the learning proc-

ess and the function of "insight" versus "trial and error" learning occupied the attention of experimenters. For example, F. T. Perkins and R. H. Wheeler ("Configurational Learning in the Goldfish," *Comparative Psychology Monographs*, 1930, vol. 7, No. 1) found that goldfish manifested real insight in solving simple problems, and that their behavior could not be explained through chance reactions. Similar results had been obtained earlier in experiments on the white rat.

The third line of investigation had to do with the problems of localization within the nervous system of such functions as perception of form and brightness, and learning and reasoning reactions. The work of Lashley was most significant in this field. Although his findings were apparently clearly established for such lower animal forms as he investigated, the possibility of extending his conclusions to the human being met with some doubt. For a survey of the work of Lashley, see *Brain Mechanisms and Intelligence*, (University of Chicago Press, 1921); also "Basic Neural Mechanisms in Behavior," *Psychological Review*, 1930, vol. 37, pp. 1-24.

The new psychological laboratory opened at Columbia in 1930 included an unusually well-equipped animal laboratory. Facilities were provided for the study of various problems in many animal species, from the simplest forms up to higher monkeys. Research in perception, learning, and motivation was in progress.

The status of research on the conditioned reflex mechanism and the interpretations built upon it was reported by I. P. Pavlov in "A Brief Outline of the Higher Nervous Activity" (*Psychologies of 1930*, Clark University Press, 1930, pp. 207-229).

PUBLIC AFFAIRS, INSTITUTE OF. An organization inaugurated in 1927 at the University of Virginia for the purpose of advancing the popular understanding of public questions and stimulating in the public mind a more vital interest in public matters, particularly the domestic problems of the United States. The attendance at the 1930 session, held from August 3 to 16, consisted of 340 registered members and 338 registered visitors from 24 States, the District of Columbia, Panama, Mexico, China, and Guatemala. Membership in the institute is open to men and women who have taken part in public life and to those who are interested in any phase of public affairs.

The programme of the 1930 session was planned in accordance with the announced purpose of the institute to limit its discussions primarily to a study of governmental problems of national, State, and local concern and to certain economic and social conditions underlying them. It consisted of eight round tables, dealing with the following subjects: "Administration of Public Business"; "Business and Government"; "Consumers Credit in America and Its Relation to Present and Future Prosperity"; "The Country Church and World Affairs"; "The Economic and Industrial Development of the South"; "National Country Life Questions"; "Our Latin-American Relations"; "Reorganization of State Government."

Speakers and topics at the evening sessions were as follows: "Addresses of Welcome," Dr. Edwin A. Alderman and the Hon. John Garland Pollard; "The Role of the Social Sciences in an Advancing Civilization," the Hon. Frank O. Lowden; "Government as Umpire Only," Julius H.

Barnes; "The Federal Farm Board—Its First Year," Carl Williams; "The American Policy in Nicaragua," Dr. Charles C. Batchelder; "The New Régime in Colombia," Prof. J. Fred Rippey; "Jeffersonian Ideas of Religious Freedom," Dr. Walter Maier; "Is Democracy a Failure?" Will Durant; "Holding Companies and Regulation," Martin J. Insull; "Basic Requirements of an Effective Democracy," Norman Thomas; "Country Church and World Democracy," Dr. Arthur W. Hewitt; "Law Enforcement as Related to the Eighteenth Amendment," Mrs. D. Leigh Colvin; "Commercial Aviation," Edward S. Evans; "Religion and Public Affairs," Bishop Francis J. McConnell; "The Gospel According to Christ's Enemies," Dr. J. Stuart Holden. The invited speakers, in addition to those who gave evening addresses, numbered 96.

The 1931 session of the institute was to be held from June 28 to July 11. The officers of administration were: Dr. Edwin Anderson Alderman, president of the University of Virginia; Dr. Charles Gilmore Maphis, dean of the summer quarter and director of the institute; Eleanor McKenney Gibson, secretary of the institute; and an advisory board composed of 25 prominent educators and recognized leaders in public affairs, selected from all sections of the United States and from the two leading political parties. Headquarters are at the University of Virginia, Charlottesville, Va.

PUBLIC FINANCE, UNITED STATES. The outstanding feature of Federal finance during the year 1930 was furnished by the aftermath of the panic. The large income-tax receipts of the preceding few years had been the outgrowth both of very active business, and also of great profits made on the stock exchange. During the year 1930, revenues tended to fall off fairly steadily, due to the shrinkage of this large business volume and the fact that stock-exchange operations pretty generally yielded a loss rather than a profit. By mid-year, it was plain that the measure which had hastily been passed at the end of 1929, just after the panic, making a cut in income taxes to the extent of about \$160,000,000 was unwise, and that it would be necessary to restore the old rates, if not to raise them. Two new and great causes of expenditures, moreover, made their appearance during the year—one the continuous draft by the Farm Board on the \$500,000,000 which Congress had set aside for it, the other the necessity of making appropriations to furnish relief for persons in drought-stricken regions who required aid to provide seed for the planting of 1931 as well as in some cases food and clothing to meet immediate emergency requirements.

Total ordinary receipts for the year indeed were rather larger than the preceding year, amounting to \$4,177,941,702, but it should be remembered that this was for the fiscal year ending June 30 so that it did not actually represent the conditions for the calendar year. Of the total amount so indicated, customs furnished about \$587,000,000, or a slight falling off as compared with the preceding year while income taxes were nearly \$80,000,000 higher, and internal revenue about \$20,000,000. These returns reflected the profitable transactions that had occurred in 1929 before the stock market collapsed. As compared with expenditures, incomes were about the same, there being a surplus of slightly under \$184,000,000 as compared with a surplus of slightly more

than that figure the preceding year. The changes which had occurred tended to "even themselves out," so far as net results went, in spite of the minor reductions caused by the falling off in the first two income-tax installments of the calendar year 1930, due to the reduction in rates which had already been made. There was no change in the payment of debt installments by foreign governments, while the policy of collecting back taxes, and keeping such collections as nearly up to date as possible was well maintained.

for the year was but little changed, increased revenue offsetting increased expenditure. Up to the middle of the year, this persistence of a surplus was taken by many to show that the Government could still further reduce its tax levels, inasmuch as the cut of December 1929 apparently left the net revenue in about the same position as it had been a year earlier. Such expectation was doomed to disappointment later in the year. The surplus thus actually earned was as usual applied to the retirement of public debt (in the

ORDINARY RECEIPTS, FISCAL YEARS 1920 TO 1929

[On basis of daily Treasury statements (unrevised)]

| Year ending June 30— | Customs | Income and profits taxes | Miscellaneous internal revenue | Miscellaneous revenues, including Panama Canal Proceeds from foreign obligations | All other | Total |
|-------------------------|---------------|-----------------------------|-----------------------------------|--|---------------|-----------------|
| 1920 | \$322,902,650 | \$3,944,949,288 | \$1,460,082,287 | \$ 74,296,622 | \$892,334,542 | \$6,694,565,389 |
| 1921 | 308,564,391 | 3,206,046,158 | 1,390,379,823 | 114,821,206 | 605,121,383 | 5,624,932,961 |
| 1922 | 356,443,387 | 2,068,128,193 | 1,145,125,064 | 75,222,068 | 464,185,439 | 4,109,104,151 |
| 1923 | 561,928,867 | 1,678,607,428 | 945,865,333 | 232,989,156 | 587,744,697 | 4,007,135,481 |
| 1924 | 545,637,504 | 1,842,144,418 | 953,012,618 | 221,774,675 | 449,475,487 | 4,012,044,702 |
| 1925 | 547,561,226 | 1,760,537,823 | 828,638,068 | 183,637,677 | 459,773,890 | 3,780,148,684 |
| 1926 | 579,430,093 | 1,982,040,088 | 855,599,289 | 194,237,957 | 351,448,263 | 3,962,755,690 |
| 1927 | 605,499,983 | 2,224,992,800 | 644,421,542 | 206,089,173 | 448,990,943 | 4,129,394,441 |
| 1928 | 569,000,000 | 2,173,400,000 | 621,000,000 | 205,900,000 | 468,900,000 | 4,042,300,000 |
| 1929 | 600,810,838 | 2,331,274,428 | 608,135,036 | 199,131,566 | 293,836,505 | 4,030,250,225 |
| 1930 | 589,000,903 | 2,410,986,977 | 628,308,035 | 303,870,694 | 247,725,091 | 4,177,941,702 |

The high level of customs duties was in some measure due to the importation of goods in large quantities with the intention of anticipating the new tariff which was adopted by Congress in the late spring. The material increase in rates of duty on many articles therein provided led to considerable anticipation of later needs for imported goods. After the tariff had been adopted, there was a corresponding tendency to decline in the volume of customs receipts.

FEDERAL EXPENDITURES. Total expenditures were larger than the year before, amounting to \$3,994,000,000 an increase of about \$146,000,000. This as already explained had been due to Farm Board appropriations some of which had become effective during the fiscal year ending June 30. Drought appropriations did not make their appearance until the session of Congress had opened in December, 1930. The tendency of Federal outlays in general, apart from these extra or unusual requirements, continued to be toward stabilization, as in former years, although the new pension policy in Congress aroused alarm in many minds, due to the apparent probability of heavy drafts upon the Treasury. The measure providing for these drafts, of course, showed only the beginning of their influence during the period here under discussion.

THE SURPLUS. As already noted, the surplus

ORDINARY RECEIPTS, EXPENDITURES CHARGEABLE AGAINST ORDINARY RECEIPTS, AND SURPLUS 1920 TO 1930

[On basis of daily Treasury statements (unrevised)]

| Fiscal year | Total ordinary receipts | Expenditures chargeable against ordinary receipts | Surplus |
|-------------|----------------------------|--|---------------|
| 1920 .. | \$6,694,565,388 | \$6,482,090,191 | \$212,475,197 |
| 1921 .. | 5,624,932,960 | 5,538,209,189 | 86,723,771 |
| 1922 .. | 4,109,104,150 | 3,795,802,499 | 313,801,651 |
| 1923 .. | 4,007,135,480 | 3,697,478,020 | 309,657,460 |
| 1924 .. | 4,012,044,701 | 3,506,877,715 | 505,366,986 |
| 1925 .. | 3,780,148,684 | 3,529,648,446 | 250,505,238 |
| 1926 .. | 3,962,755,690 | 3,584,987,873 | 377,767,817 |
| 1927 .. | 4,129,394,441 | 3,498,584,519 | 635,809,922 |
| 1928 .. | 4,042,348,156 | 3,643,519,875 | 398,828,281 |
| 1929 .. | 4,030,250,225 | 3,848,463,190 | 184,787,035 |
| 1930 .. | 4,177,941,702 | 3,994,152,487 | 183,789,215 |

amount of about \$183,000,000) while the balance was carried to the general fund. However the total surplus measured as a percentage of incomes was less than 5 per cent.

PUBLIC DEBT SITUATION. Public debt issues for the year amounted to \$3,722,970,170 while retirements were \$4,468,859,619. The gross debt at the end of the year was \$16,185,308,299 as compared with \$16,931,197,747 at the opening or a curtailment of \$745,889,448. This reduction as usual was chiefly drawn from sinking fund payments, a small balance, however, being taken as already explained from the surplus. The preliminary statement of the public debt of the United States Dec. 31, 1930, as made upon the basis of the daily Treasury statement, is shown on page 662.

Financially speaking the year was without any very striking features except for the steady reduction of rates of interest. The high rates which had prevailed in the open market during the preceding year and which had resulted in the establishment of correspondingly high rates for public and other borrowings had given way just at the close of 1929 to much lower figures. During the year 1930 Federal reserve discount rates were reduced in New York to a figure at the close of the year of only 2 per cent with the result that corresponding cuts occurred in the amount which the government found it necessary to pay for its accommodation. Other than this reduction of interest, the financing programme of the Government was little more than a repetition of former years. The following statement made by the Secretary of the Treasury in his annual report to Congress in December furnishes a brief review of actual transactions:

In the course of the year six regular issues of Treasury certificates of indebtedness, in the aggregate amount of about \$2,100,000,000, matured on quarterly tax-payment dates. There was the customary concentration in the Treasury's receipts around these dates. As is usual under such circumstances, the Treasury's requirements on a given quarterly tax-payment date were determined on the basis of the estimated excess, over current receipts, of maturing Treasury obligations and of ordinary expenditures for the subsequent quarter. Until the mid-December financing in 1929, it had been the practice to

provide for the full quarterly requirements, so determined, through an issue of certificates of indebtedness, the proceeds of which were left on deposit with the purchasing banks until required by the Treasury to meet its current expenditures. This procedure was followed in providing for requirements for the quarter beginning September 15, 1929, but thereafter certificates were not invariably issued to meet the total estimated requirements between quarterly tax-payment dates. Instead they were issued in somewhat smaller amounts and were supplemented by subsequent sales of Treasury bills for cash. Four regular issues of Treasury certificates of indebtedness, in the aggregate amount of \$1,814,062,000, and four supplementary issues of Treasury bills, in the aggregate amount of \$312,024,000, were made during the fiscal year.

TREASURY FINANCE. The year 1930 brought no serious change in general Treasury finance. None of the long-term issues already outstanding matured and there was consequently no necessity for the undertaking of any large operations although plans were understood to be in the making for

the retirement of the issues whose recall might take place under the loan contracts from and after the year 1932. These plans still had to be developed in full. On the whole the year was thus a comparatively quiet period of transition in which Treasury offerings of short-term certificates were well received because of the doubt felt concerning almost all other securities, while the cost of Treasury financing was largely reduced by reason of the continuous shrinkage in interest rates. One noteworthy development during the year which came as a result of the alteration in money market conditions already referred to was the pronounced advance in Government bond quotations. According to the Secretary of the Treasury:

The decline in money rates in this country in the autumn of 1929 had resulted in an outward movement of about \$100,000,000 of gold before the end of the year. Beginning in January, however, there was a net inflow of gold, reflecting chiefly imports from South America

PUBLIC DEBT DEC. 31, 1930

| | | |
|--|--------------------|----------------------------|
| Bonds: | | |
| 2 per cent consols of 1930 | \$ 599,724,050.00 | |
| 2 per cent Panama's of 1916-36 | 48,954,180.00 | |
| 2 per cent Panama's of 1918-38 | 25,947,400.00 | |
| 3 per cent Panama's of 1961 | 49,800,000.00 | |
| 8 per cent conversion bonds | 28,894,500.00 | |
| 2½ per cent postal savings bonds | 20,491,620.00 | |
| | | \$773,811,750.00 |
| First Liberty Loan of 1932-47— | | |
| 3½ per cent bonds | \$1,392,246,350.00 | |
| 4 per cent bonds | 5,003,950.00 | |
| 4½ per cent bonds | 546,287,050.00 | |
| | | 1,938,537,350.00 |
| 4½ per cent fourth Liberty Loan of 1933-38 | 6,268,232,550.00 | |
| | | 8,201,769,900.00 |
| 4½ per cent Treasury Bonds of 1947-52 | 758,984,300.00 | |
| 4 per cent Treasury Bonds of 1944-54 | 1,036,834,500.00 | |
| 3½ per cent Treasury Bonds of 1946-56 | 489,087,100.00 | |
| 3 per cent Treasury Bonds of 1943-47 | 493,037,750.00 | |
| 8 per cent Treasury Bonds of 1940-43 | 359,042,950.00 | |
| | | 3,136,986,600.00 |
| Total Bonds | | \$12,112,568,250.00 |
| Treasury notes: | | |
| 3½ per cent Series A, 1930-32, maturing Mar. 15, 1932 | \$ 625,546,350.00 | |
| 3½ per cent Series B, 1930-32, maturing Sept. 15, 1932 | 483,826,200.00 | |
| 3½ per cent Series C, 1930-32, maturing Dec. 15, 1932 | 451,720,450.00 | |
| | \$1,561,093,000.00 | |
| 4 per cent Adjusted service—Series 1931 to 1935 | 619,600,000.00 | |
| 4 per cent Civil service—Series 1931 to 1935 | 159,800,000.00 | |
| 4 per cent Foreign service—Series 1933 and 1935 | 1,288,000.00 | |
| | | 2,341,781,000.00 |
| Treasury certificates: | | |
| 3½ per cent Series TD-1930, maturing Dec. 15, 1930 | \$ 429,378,000.00 | |
| 2½ per cent Series TJ-1931, maturing June 15, 1931 | 159,941,000.00 | |
| 2½ per cent Series TS-1931, maturing Sept. 15, 1931 | 334,211,000.00 | |
| 1½ per cent Series TD-1931, maturing Dec. 15, 1931 | 268,381,000.00 | |
| | | 1,191,906,000.00 |
| Treasury Bills (Maturity Value): | | |
| Maturing Feb. 15, 1931 | | 127,455,000.00 |
| Total interest-bearing debt | | \$15,773,710,250.00 |
| MATURED DEBT ON WHICH INTEREST HAS CEASED | | |
| Old debt matured—issued prior to Apr. 1, 1917 | \$ 1,647,140.26 | |
| Second Liberty loan bonds of 1927-42 | 4,624,100.00 | |
| Third Liberty loan bonds of 1928 | 7,804,700.00 | |
| 3½ per cent Victory notes of 1922-28 | 20,750.00 | |
| 4½ per cent Victory notes of 1922-23 | 1,319,350.00 | |
| Treasury notes | 867,700.00 | |
| Certificates of indebtedness | 5,162,900.00 | |
| Treasury bills | 13,000.00 | |
| Treasury savings certificates | 1,335,750.00 | |
| | | 22,295,390.26 |
| DEBT BEARING NO INTEREST | | |
| United States notes | \$ 346,681,016.00 | |
| Less gold reserve | 156,039,088.03 | |
| | \$ 190,641,927.97 | |
| Deposits for retirement of national bank and Federal Reserve bank notes | | |
| Old demand notes and fractional currency | 88,970,642.00 | |
| Thrifty and Treasury savings stamps, unclassified sales, &c. | 2,043,049.31 | |
| | 3,425,827.53 | |
| | | 230,081,446.81 |
| Total gross debt | | \$16,028,087,087.07 |

and the Orient, and by the end of June the country's stock of gold was higher by \$200,000,000 than a year earlier. In July and August gold moved outward again, chiefly to France and Canada, but these gold exports did not result in firmer conditions in the money market, since their effect was counterbalanced in July by a decline in the domestic demand for currency and in August by open market purchases of securities by the reserve

banks. In the autumn member bank indebtedness at the reserve banks, at a level below \$200,000,000, showed a decrease of about \$800,000,000 from the year before.

Reflecting decline in the demand for credit in the security market and also in the demand by trade and industry, together with an inflow of gold from abroad and the easy money policy of the Federal reserve system, money rates in the summer and early autumn of 1930

EXPENDITURES CHARGEABLE AGAINST ORDINARY RECEIPTS

| Ordinary (checks and warrants paid, etc.) | 1930 | 1931 | 1932 |
|---|-----------------------------|---------------------------|-------------------------|
| General expenditures: | | | |
| Legislative establishment | \$ 19,986,820.64 | \$ 30,554,100.00 | \$ 28,733,700.00 |
| Executive proper | 690,263.00 | 417,200.00 | 468,700.00 |
| State Department | 14,170,408.87 | 16,488,100.00 | 16,460,100.00 |
| Treasury Department | 193,114,012.63 ^a | 263,249,700.00 | 240,152,300.00 |
| War Department | 453,524,973.41 ^b | 477,074,600.00 | 452,851,100.00 |
| Department of Justice | 32,483,080.31 ^c | 45,946,700.00 | 51,311,500.00 |
| Post Office Department | 58,198.91 | 75,000.00 | 75,000.00 |
| Navy Department | 374,165,638.55 | 374,627,500.00 | 375,555,000.00 |
| Interior Department | 290,027,905.76 ^d | 77,815,500.00 | 87,195,600.00 |
| Department of Agriculture | 177,580,581.10 | 203,814,900.00 | 229,162,900.00 |
| Department of Commerce | 54,299,106.12 | 61,430,200.00 | 54,825,400.00 |
| Department of Labor | 10,654,405.63 | 11,899,800.00 | 13,408,500.00 |
| Veterans' Administration | 446,955,630.33 ^e | 748,242,600.00 | 789,623,100.00 |
| Other independent offices and commissions | 49,495,746.47 | 53,861,900.00 | 60,049,600.00 |
| District of Columbia | 45,079,613.67 | 46,859,900.00 | 46,750,000.00 |
| Total | \$2,162,286,385.40 | \$2,412,357,700.00 | \$2,446,622,500.00 |
| Add unclassified items | 422,550.04 | | |
| Total | \$2,162,708,935.44 | \$2,412,357,700.00 | \$2,446,622,500.00 |
| Interest on public debt | 659,347,613.07 ^f | 603,000,000.00 | 581,000,000.00 |
| Refunds of receipts: | | | |
| Customs | 24,091,809.24 | 20,265,500.00 | 20,815,500.00 |
| Internal revenue | 135,852,182.70 | 98,511,000.00 | 96,531,500.00 |
| Postal deficiency | 91,714,450.89 | 111,202,200.00 | 114,041,000.00 |
| Panama Canal | 11,328,541.69 | 11,697,300.00 | 11,905,700.00 |
| Operations in special accounts: | | | |
| Railroads | 4,795,787.55 ^g | 1,460,000.00 ^h | |
| War Finance Corporation | 58,838.54 ⁱ | 50,000.00 ^j | |
| Shipping Board | 31,695,159.06 | 47,585,000.00 | 76,450,000.00 |
| Agricultural marketing loan fund (net) | 149,958,273.55 | 100,000,000.00 | 75,000,000.00 |
| Alien property funds | 968,985.50 | 500,000.00 ^k | 500,000.00 ^l |
| Adjusted service certificate fund | 112,312,726.75 ^m | 112,000,000.00 | 112,000,000.00 |
| Civil service retirement and disability fund | 20,433,867.39 ⁿ | 20,850,000.00 | 20,850,000.00 |
| Investment of trust funds: | | | |
| Government life insurance fund | 43,469,104.81 | 35,621,200.00 | 27,888,100.00 |
| District of Columbia teachers' retirement fund | 516,706.13 | 640,000.00 | 690,000.00 |
| Foreign Service retirement fund | 313,282.13 ^o | 216,000.00 | 215,000.00 |
| General railroad contingent fund | 2,411,871.58 | 2,500,000.00 | 2,500,000.00 |
| Total ordinary expenditures | \$3,440,268,883.84 | \$3,574,435,900.00 | \$3,586,009,300.00 |
| Public debt retirements chargeable against ordinary receipts: | | | |
| Sinking fund | 388,368,950.00 | 391,660,000.00 | 409,410,600.00 |
| Purchases from foreign repayments | 51,135,000.00 | 48,246,000.00 | 57,749,300.00 |
| Received from foreign governments under debt settlements | 109,790,850.00 | | |
| Received from estate taxes | 73,100.00 | | |
| Purchases from franchise tax receipts (Federal reserve banks and Federal intermediate credit banks) | 4,455,000.00 | 400,000.00 | 1,150,000.00 |
| Forfeitures, gifts, etc. | 60,703.25 | 200,000.00 | 200,000.00 |
| Total | \$ 553,883,603.25 | \$ 440,506,000.00 | \$ 468,509,900.00 |
| Total expenditures chargeable against ordinary receipts | \$3,994,152,487.09 | \$4,014,941,900.00 | \$4,054,519,200.00 |
| Excess of ordinary receipts over total expenditures chargeable against ordinary receipts (see note) .. | \$ 183,789,214.90 | | \$ 31,600,727.00 |
| Excess of expenditures chargeable against ordinary receipts over ordinary receipts (see note) | | \$ 180,076,657.00 | |

NOTE.—If trust fund receipts and expenditures are excluded on the basis of figures used in the Budget, the surplus for the fiscal year 1930 would be \$186,480,561.44; for 1931 the estimated deficit, \$178,995,657; and for 1932 the estimated surplus, \$30,685,281.

^a See note ^c.

^b See note ^c.

^c Since July 1, 1930, figures opposite the caption "Department of Justice" include expenditures on account of the Bureau of Prohibition. Prior to that date such payments were included under the caption "Treasury Department."

^d See note ^c.

^e Prior to Aug. 1, 1930, figures opposite the caption "Veterans' Administration" represent payments made for account of the Veterans' Bureau only. After that date they include payments for account of the Veterans' Bureau and also those of the character formerly made by the Bureau of Pensions and for account of the National Homes for Disabled Volunteer Soldiers previously included under Interior Department and War Department, respectively.

^f Includes \$523,090.98 accrued discount on war-savings securities of matured series.

^g Excess credits, deduct.

^h The difference between amounts of above charges and amounts appropriated are due to working balances required for use in making authorized payments from the fund. Receipts on account of this fund are credited against expenditures.

ⁱ Includes \$216,000 on account of appropriation from the general fund and \$97,282.13 on account of salary deductions and earnings. Beginning with the fiscal year 1931 this item will represent only the amount appropriated from the general fund, the receipt from deductions and earnings being used as credits against (deductions from) expenditures.

were at the lowest levels of the postwar period. At the end of September the open market rate on 90-day bankers' acceptances was 1½ per cent and on prime commercial paper 3 per cent, compared with 5½ per cent and 6½ per cent, respectively, a year earlier, and 2 per cent and 3-¾ per cent at the low point in the middle of 1924. Open market rates on time loans secured by stocks and bonds as collateral were quoted at 2½-2¾ per cent, compared to 9-9¾ a year before, and an average of 2.6 per cent for the last week of July, 1924. Rates charged customers were on the average about 1½ per cent below the high point reached in October, 1929, and at the lowest level since 1921.

BUDGET ESTIMATES. Budget estimates for the years 1930-32 are presented on page 663. From them it will be perceived that substantial increases were expected each year in general appropriations while incomes from customs were expected to run about the same with internal revenue losing rather more than about 7 per cent in 1931 and again increasing in 1932. The effect of the situation, according to estimates, was calculated as a deficit of some \$180,000,000 in 1931, while a small surplus of \$32,000,000 was expected to be restored in 1932. Apparently "the end of the surplus" so often and so erroneously predicted was about to be reached, the surplus itself being restorable only through larger tax rates than hitherto. Nevertheless at the close of the year, it was still believed that a restoration of the rates, which had been cut at the end of 1929, to their preceding level would suffice to put the Treasury back upon an even basis although probably with nothing to spare. No movement for the relief of overburdened taxpayers in the higher "brackets" was proposed or initiated.

LEGISLATION, NEW AND PROPOSED. Except as to the tariff, to which reference has already been made and which had probably effected a change of 1125 items, generally upward, no actual legislation of importance was adopted with reference to revenue matters during the course of the year. The studies of the Appropriations Committee during the late autumn and early winter were directed to the question how far a restoration of old income tax rates would be necessary, but no definite action had been taken up to the close of the year. After the opening of the new Congress in December, when it appeared likely that an extra session might be necessary in the spring, discussion of tariff matters was revived and there appeared to be a possibility of revising some of the more extreme rates of duty enacted in the measure of 1930. Reviewing the legislative situation at the opening of the session Mr. Mellon made only minor recommendations for legislation or renewed those than of former years.

See FRANCE and other countries under *Finance*.

PUBLIC LANDS. See LANDS, PUBLIC.

PUBLIC ROADS, UNITED STATES BUREAU OF. See AGRICULTURE, U. S. DEPARTMENT OF; ROADS AND PAVEMENTS.

PUBLIC SCHOOLS. See EDUCATION IN THE UNITED STATES.

PUBLIC UTILITIES. See POWER PLANTS; MUNICIPAL OWNERSHIP; FINANCIAL REVIEW.

PUBLISHING. See LITERATURE, ENGLISH AND AMERICAN.

PUEBLO STUDIES. See ANTHROPOLOGY.

PUGILISM. See BOXING.

PULITZER PRIZES. See LITERATURE, ENGLISH AND AMERICAN.

PULP, PULP-WOOD INDUSTRY. See FORESTRY; PAPER.

PURDUE UNIVERSITY. A State technological institution in Lafayette, Ind.; founded in

1869. The main purpose of the institution has been to train men for service in the fields of engineering, agriculture, and applied science and women in the fields of home economics and general science. The enrollment for the autumn of 1930 was 4589, of whom 3881 were men and 708 women; registration in the 1930 summer session was 704. There were 416 members on the faculty. The endowment amounted to \$340,000, and the income for 1930-31 was \$3,278,870. The library contained 96,240 volumes. During 1930 several new buildings were erected, including a chemistry building, pharmacy building, and mechanical engineering laboratory. Important gifts received included: \$20,000 from Mrs. W. F. M. Goss to establish the William Freeman Myrick Goss Memorial Library; \$100,000 from David E. Ross, a member of the board of trustees; and a substantial sum from J. K. Lilly, also a member of the board, to establish 17 fellowships in pharmacy and science. President, Edward C. Elliott, Ph.D., LL.D.

PUTNAM, ARTHUR. An American sculptor, died in Paris, France, May 27, 1930. He was born in Waveland, Miss., Sept. 6, 1873, and was educated at Kemper Hall, Davenport, Iowa. Although entirely self-taught, he was one of the ablest and best of animal sculptors. In 1906 he exhibited at the Paris Salon and was highly praised by Rodin and other French sculptors. In 1915 he won the Gold Medal at the Panama-Pacific International Exposition in San Francisco. His work was marked by a knowledge of the habits and character of the animals of the Southwest, supplemented by a careful study of anatomical structure, which enabled him to interpret their natural quality. His principal works are: "Snarling Jaguar" (Metropolitan Museum, New York City); "The Death" (Museum of Fine Arts, Boston); "The Foot-Print" (Mills College); and "The Cave Man," "Tiger Love," "Mates," "Puma and Deer," and "Sleeping Puma" (California Palace of the Legion of Honor, San Francisco).

PUTNAM, GEORGE HAVEN. An American publisher, died in New York City, Feb. 27, 1930. He was born in London, Apr. 2, 1844, of American parents, by whom he was brought to the United States while a child. He attended the Columbia Grammar School in New York City and studied at the Sorbonne in Paris and at the University of Göttingen. He returned to the United States to serve with the 176th New York Volunteers in the Civil War from 1862 to 1865, during which time he rose from private to the rank of major. He was a military prisoner at Libby Prison and at Danville, Va. After the war, he entered the publishing house founded by his father, George Palmer Putnam, in New York City, at whose death in 1872 he became president of the firm, the name of which was changed from George Putnam & Son to G. P. Putnam's Sons. Through a branch office in London, he kept in close touch with English authors and publishers. In 1887 he organized the American Copyright League, originated by his father in 1851, and was secretary of the organization during its struggle to gain international copyright, which resulted in the passage of the Copyright Law of 1891. For this work, he was decorated by France with the cross of the Legion of Honor. Mr. Putnam wrote *Authors and Publishers* (1883); *Question of Copyright* (1891); *Authors and Their Public in Ancient Times* (1893); *The Artificial Mother*

(1894); *Books and Their Makers in the Middle Ages* (1896); *The Censorship of the Church of Rome and Its Influence upon the Production and the Distribution of Literature* (2 vols., 1907); *Abraham Lincoln—the People's Leader in the Struggle for National Existence* (1909); *George Palmer Putnam* (1912); *Memories of My Youth* (1914); *Memories of a Publisher* (1915); *Some Memories of the Civil War* (1924).

PYROMETALLURGY. See METALLURGY.

QUAKERS. See FRIENDS, RELIGIOUS SOCIETY OF.

QUARANTINE, PLANT. See ENTOMOLOGY, ECONOMICS.

QUARRY ACCIDENTS. See WORKMEN'S COMPENSATION.

QUEBEC, kwëbëk'. The largest Province in Canada; bounded on the west by Hudson Bay and Ontario, on the north by Hudson Strait, on the east by Labrador, and on the south by New Brunswick, the United States, and southern Ontario. Area, 594,434 square miles; population, according to the census of 1921, 2,361,199, of whom 357,295 were of British origin, and 1,899,277 of French origin; estimated June 1, 1930, 2,734,600. Capital, Quebec. The chief cities with their populations, according to 1927 municipal statistics, are Montreal, 989,835; Quebec (the capital), 131,000; Hull, 27,087; Verdun, 46,477; Three Rivers, 35,000; and Sherbrooke, 26,300. Births in 1928 numbered 83,621; deaths, 36,632; marriages, 19,126. Quebec had 8125 schools of all kinds in 1927, with 605,491 pupils and 23,399 teachers. All schools are sectarian.

Agriculture is the basic industry, there being 6,893,000 acres under cultivation. In 1929, field crops from 7,051,605 acres were valued at \$153,664,000. Mineral production in 1929 reached a record figure of \$46,454,820 (\$37,037,420 in 1928), due chiefly to the increased output of copper, asbestos, and gold. The Province supplies more than 85 per cent of the world's asbestos. With a forest area of 187,500 square miles, Quebec in 1928 produced 2,018,566 tons of pulp wood, valued at \$67,467,328, or more than half of the total Dominion output. Fur production in 1927-28 was valued at \$3,500,194.

At the end of 1928, there were 7231 manufacturing establishments; the net value of production for the year increased \$46,369,820 over 1927 to a new high total of \$502,581,419. The hydraulic horse power installed on Jan. 1, 1930, totaled 2,595,430, as compared with 5,727,162 for the whole of Canada. Total exports from the ports of the Province in 1929 were \$417,586,970 and the imports for consumption were \$320,549,122. For the fiscal year ended June 30, 1930, ordinary provincial revenues amounted to \$43,585,140 and ordinary expenditures to \$39,374,910. There were over 4870 miles of railway lines and a total highway mileage of 32,354 miles at the beginning of 1930. Of the highways, 12,502 miles were improved and 4874 miles were trunk roads. The Montreal Harbor Bridge, connecting the city with communities south of the St. Lawrence River, was opened May 24, 1930 (see BRIDGES). A total of 815 overseas vessels of 3,727,849 net tons entered the port of Montreal during the 1930 season.

Quebec is governed by a lieutenant-governor and a responsible ministry, assisted by a legislative council of 24 members, appointed for life by the Lieutenant-Governor, and a legislative assembly of 85 members elected for five years.

In the election of May 10, 1927, 75 Liberals and 10 Conservatives were elected to the Legislative Assembly. In the Dominion general election of July 28, 1930, the Province returned 25 Conservatives, 37 Liberals, and 1 Independent to the House of Commons at Ottawa. Lieutenant-Governor in 1930, Henry George Carroll; Premier, Attorney-General, and Minister of Municipal Affairs, L. A. Taschereau. See CANADA.

The return to Canada of large numbers of French Canadians who had migrated to the New England and other American States was reported during 1930 by the provincial Minister of Colonization. The Quebec Liquor Commission reported a profit of \$9,560,000 for the year ended June 30, 1930.

QUEEN'S-CHICORA COLLEGE. A college for women in Charlotte, N. C., founded in 1867; nonsectarian in purpose but under the direction of the Presbyterian Church. The enrollment for the autumn term of 1930 was 376. There were 38 members on the faculty. The library contained 12,500 volumes. President, William H. Frazer, D.D., Litt.D.

QUEENSLAND. A state of the Australian Commonwealth, occupying the northeastern quarter of the continent. With an area of 610,500 square miles, it is second in size after Western Australia; the population, Mar. 31, 1930, was estimated at 934,643, as compared with 755,972 at the census of 1921. During 1929, there were 18,486 births, 8309 deaths, 6169 marriages, and a net immigration of 4005, making a total increase of 14,182. Capital, Brisbane, with 318,631 inhabitants (Jan. 1, 1930).

State schools in 1928 numbered 1733 and the average daily attendance was 112,588. There were also 187 private schools, with 24,487 pupils. Queensland University at Brisbane had 588 students (1929). Stock raising, agriculture, and manufacturing are the chief industries. The total area under cultivation in 1929-30 was 1,921,675 acres and the total value of agricultural production the same year was £13,803,792. Leading crops are sugar cane, corn, wheat, cotton, and hay. Preliminary figures for the gross values of other industries were: Manufacturing, £18,631,000; pastoral, £17,218,000; dairying, poultry, and bee keeping, £7,987,000; forestry and fisheries, £2,475,000; mining, £1,952,000; total £60,613,000 as compared with £63,744,000 in 1927-28. In 1929, there were 19,975,752 sheep (wool production, 150,108,044 pounds), 5,122,063 cattle, and 493,101 horses. Mineral production in the same year was estimated at £1,707,179 (coal, £1,197,862). The value of direct overseas imports in 1929-30 was estimated at £11,540,080 and of overseas exports, £18,822,608. State revenue for the fiscal year 1928-29 totaled £16,736,188 and expenditure, £16,902,145. The gross state debt on June 30, 1930, was £112,623,979. State railways in operation in 1928-29 extended 6447 miles, the gross earnings were £7,569,000, and the operating expenses, £6,203,000. There were 274 miles of private railways.

Executive power is vested in a governor, who acts through a responsible ministry, and legislative power in a legislative assembly of 72 members elected for three years. Governor in 1930, Sir T. H. J. C. Goodwin; Premier, Chief Secretary, and Vice President of the Executive Council, A. E. Moore, who headed a coalition Government of Nationalists and Country Progressives. See AUSTRALIA for other developments in 1930.

QUICKSILVER. The quicksilver market of 1930 was marked by diminished production and also consumption, the latter figure being estimated at less than 100,000 flasks. Also there was a gradual decline in price from \$122 in January to \$104 in December, with European quotations of about £22 at the close of the year. A Spanish-Italian cartel controlled, as in previous years, the European production, and figures of output were not forthcoming. Mines in Italy and Spain were either closed or operating on a limited scale, while in Russia quicksilver properties were in process of development. The production of quicksilver in Mexico picked up during the latter part of the year. In the United States production decreased markedly and was estimated at less than 19,000 flasks, as compared with 23,682 flasks in 1929, with an apparent consumption of about 25,000 flasks, as compared with 37,974 flasks during the preceding year. Financial conditions affected several mining properties in the United States, with a notable decrease of production in Nevada from 4764 flasks in 1929 to 3300 in 1930.

The production of quicksilver in the United States in 1929 amounted to 23,682 flasks of 76 pounds each, according to the U. S. Bureau of Mines. The calculated value of the production, using the average price of mercury during the year, was \$2,892,638. This was the largest domestic production since 1918 when 32,450 flasks were produced, but was only about 73 per cent of the average annual production from 1850 to 1921, inclusive. The incentive to produce was greater in 1929 than during the period 1850 to 1921 as the average quoted price was approximately \$122 a flask compared with \$48 a flask for the period 1850 to 1921. California again led the mercury-producing States in production in 1929 with an output of 10,139 flasks, Nevada was second with 4764 flasks, followed by Oregon with 3657 flasks. Washington produced 1397 flasks, and Texas, Arizona, and Alaska, together, 3725 flasks. In addition to the above 171 flasks of mercury were produced in Nevada from gold and silver pan-amalgamation tailings.

In 1929, 14,292 flasks (1,086,221 pounds), valued at \$1,447,142, were imported, compared with 15,378 flasks, valued at \$1,572,017, in 1928. Of the quantity imported in 1929, 9412 flasks were received from Spain, 1249 flasks from Belgium, 892 flasks from Italy, 701 flasks from Germany, 323 flasks from France, 1209 flasks from Mexico, 493 flasks from Canada, and 13 flasks from Peru. In 1930 imports were 223,686 pounds valued at \$295,829.

R-101, DESTRUCTION OF. See AERONAUTICS.

RACIAL STUDIES. See ANTHROPOLOGY.

RACING. The 1930 racing season, while characterized by increased attendance and interest in the sport, was notable chiefly for the emergence of Gallant Fox, three-year-old son of Sir Gallahad III and Marguerite, as one of the greatest thoroughbreds of racing history. Owned by William Woodward, trained by James Fitzsimmons, and ridden by Earl Sande, Gallant Fox won \$308,275 during 1930 and raised his total winnings to \$340,665, breaking all previous records for both earnings in one year and earnings by a single horse. Commencing his phenomenal victories by defeating Crack Brigade in the Wood Memorial, he then finished first in the Preakness, the Dwyer, at a mile and a half, the Arlington American Classic, at a mile and a quarter, the Saratoga Cup, at a mile and three-quarters, the Lawrence

Realization, at a mile and five-eighths, and the Jockey Club Gold Cup at two miles. His single defeat of the year came when Jim Dandy, a 100-to-1 shot, passed him in the mud at Saratoga to win the Travers. At the end of the season Gallant Fox was retired to the stud.

By capturing the \$120,000 Futurity at Belmont Park, George D. Widener's Jamestown, son of St. James, won general recognition as the outstanding two-year-old of the season. Jamestown met one defeat during the year, losing to G. A. Cochran's Epithet in the Hopeful at Saratoga. Harry Payne Whitney's Equipose won the \$50,360 Pimlico Futurity. Vander Pool and Twenty Grand were other leading two-year-olds, the latter setting a world's record for his class of 1:36 flat for the mile in the Kentucky Jockey Club Stakes. The leader in the older division was Sun Beau, owned by Willis Sharpe Kilmer. Tourist II won the Grand National steeplechase, after Arc Light had been disqualified.

Aga Khan's horse Blenheim, H. Wragg up, won the British Derby. Iliad, a length behind, was second, and Diolite third. The Oaks was won by Rose of England, Lord Glanely's filly, the Ascot Cup by Bosworth, and the Grand National by Shaun Goilin. The Grand Prix de Paris held at Langechamp, France, on June 29, 1930, was won by M. Henriquet's filly, Commanderie, who led Chateau Bouscaut, winner of the French Derby, by a length and a half. A short time before the Grand Prix, Commanderie won first place in the French Oaks.

HARNESS RACING. Hanover's Bertha, star three-year-old filly of the Hanover Shoe Farms, and May E. Grattan, owned by J. C. Thompson of New York, were the outstanding trotter and pacer, respectively, of the year. Hanover's Bertha annexed the Hambletonian Stakes, the Kentucky Futurity, and five other major races, winning a total of \$60,087. She established a world's record for one mile of 1:59½ for three-year-old trotters. Protector was the outstanding two-year-old trotter of the year. May Grattan won the \$25,000 Pacing Derby at Kalamazoo and the \$10,000 events at Windsor and Avon. A fund of \$250,000 was subscribed during the year to rehabilitate harness racing. Nearly 1600 harness race meetings were held during the year, with approximately 5,000,000 spectators and \$5,000,000 offered in purses, according to estimates.

RACKETEERING. See CRIME.

RACQUETS. The United States in 1929-30 successfully defended the International Racquets Cup against an invading British team headed by Lord Aberdare, winning five games out of six. Lord Aberdare and Dr. H. W. Leatham, of England, however, captured the national amateur doubles title, while Stanley G. Mortimer of Tuxedo, N. Y., defeated Clarence C. Pell, of New York, for the national amateur singles championship. Pell eliminated Lord Aberdare in the final to win the Tuxedo Gold Racquet for the 12th time. The English player fulfilled his ambition of winning the American court tennis crown, defeating Frank P. Frazier, of Boston, in the final. He also won the Canadian racquets singles, and with Dr. Leatham, the Canadian racquets doubles. Charles Williams, of Chicago, retained world's racquets championship.

The defeat of Jay Gould and William C. Wright, of Philadelphia, by Frazier and George W. Wightman, of Boston, in the court tennis amateur doubles championship final attracted wide atten-

tion in racquets circles. Pierre Etchebaster, of France, retained both the world's professional and the United States national professional court tennis titles. The United States lost to England in the international Bathurst Cup matches in London, while E. M. Baerlein again captured the English court tennis championship.

In squash racquets, the national amateur championship was regained by Herbert N. Rawlins Jr., of New York. Boston won the national amateur team title, the United States captured the international Lapham Trophy from Canada, and the national women's singles title was garnered by Mrs. George W. Wightman, of Boston. In squash tennis, the world's open title remained with Frank Ward, of the New York city A. C. Harry F. Wolf, of the same club, captured the national amateur Class A title, while the Class B and Class C championships went to Howell Van Gerbig, of the Fraternity Club, and Frederick J. Walters Jr., of the Princeton Club, respectively. A change in the dimensions and markings of squash tennis courts was introduced by the National Squash Tennis Association at the beginning of the 1930 season. The new courts corresponded closely with squash racquets courts.

RADBURN, N. J. See CITY AND REGIONAL PLANNING.

RADCLIFFE COLLEGE. A nonsectarian college for women in Cambridge, Mass.; founded in 1879. The enrollment for the autumn of 1930 was 1077, distributed as follows: Regular students, 758; graduate students, 287; special students, 32. Instruction was given to the students of the college by 300 teachers from Harvard University. The productive funds amounted to \$4,826,448, and the income, including tuition, for college purposes, was \$541,000. The library contained approximately 67,000 volumes, exclusive of pamphlets. In the fall of 1930 a lecture and recitation building costing approximately \$700,000, was opened to accommodate all classes, with the exception of those in science and music. The college also received assurance of a grant of \$500,000 from the General Education Board for the construction of a laboratory for chemistry and physics. President, Ada Louise Comstock, A.M., Litt.D., L.H.D., LL.D.

RADIOBEACONS. See LIGHTHOUSES.

RADIO COMMUNICATION. Radio communication, including broadcasting in 1930, showed a general trend toward improvement and development, rather than any startling innovations. For the first time the possession of radio equipment figured in the United States decennial census returns, and one of the questions asked was whether the individual or his family possessed a radio set. Wider interest than ever was manifested in the programmes broadcast to the radio listeners, and it was generally admitted that there was improvement in the material sent out. Studio work was improved, and especially in the New York studio of the National Broadcasting Company, where a number of technical improvements were installed. During the year there were a number of important international broadcasting arrangements scheduled, which attracted general attention and which promised to become an even more important feature. It was realized that American listeners were anxious to hear notable utterances from European speakers of prominence, and considerable attention was paid to the words of King George V, the Prince of Wales, and noted British and French statesmen and others,

widely distributed through the United States.

The desire to use greater power of transmission on the part of a number of the leading broadcasting companies was also one of the tendencies of the year, and a number of corporations petitioned the U. S. Radio Commission to increase their power 50 kilowatts, which would afford a greater area for the broadcasting stations.

Another notable development of the year was the successful synchronization or operation of two or more broadcasting stations, such as those at Des Moines (WHO) and Davenport (WOC), which received the approval of the engineers of the U. S. Radio Commission, and arrangements were completed for synchronizing four important stations of the National Broadcasting Company, so as to get more efficient and uniform distribution.

Radio communication between the General Electric short-wave station at Schenectady and New Zealand and Australia also was a feature of the year, and a conversation between Adolph S. Ochs of *The New York Times* and Rear Admiral Richard E. Byrd, U. S. N., was carried on when the latter reached Dunedin, New Zealand, from Little America. A conversation between Kingsford-Smith at Schenectady and his mother at Sydney, Australia, a few hours after the east-to-west flight across the Atlantic was terminated, was another event of the year. Round-the-world short-wave broadcasts were conducted via Holland, Java, Australia, and Schenectady.

During the year increased attention was paid to the broadcasting of classic concerts, and arrangements were secured whereby the rendering of music by some of the best orchestras at leading cities was effectively broadcast. Also a considerable advance was made in educational broadcasting and further work was planned in that field.

The U. S. Bureau of Census in its census of manufactures taken in 1930 revealed that in 1929 the total output of radio receiving sets (tube type not including tubes) involved 4,938,099 sets valued at \$250,602,162. In 1927 the total number of radio receiving sets was 1,978,057 with a total value of \$95,162,393. Combination phonograph and radio sets in 1929 totaled 152,106 with a value of \$22,193,702, as against 31,342 sets valued at \$6,416,402 in 1927. Transmitting sets manufactured in 1929 were 2243 valued at \$5,788,077, as against 1093 valued at \$2,233,483 in 1927. There were manufactured in 1929, 3,301,314 loud speakers valued at \$30,279,287, as against 2,458,785 sets valued at \$18,838,751 in 1927, and transformers to the number of 5,204,505 valued at \$9,478,891 in 1929, as against 4,116,046 valued at \$5,447,403 in 1927. The manufacture of radio accessories and parts, including kits, amplifiers, power packs, microphones, controls, eliminators, head sets, etc., in 1929 were valued at \$57,027,008, as against \$54,591,302 in 1927. See also EDUCATION under Radio.

RADIO FOG SIGNALS. See LIGHTHOUSES.

RADIUM. In 1930 the U. S. Bureau of Mines, together with the U. S. Geological Survey, at the request of the Committee on Mines and Mining of the U. S. House of Representatives submitted reports in reference to the reestablishment of a radium industry in the United States. These reports stated that any effort to resume and develop the production of radium from the Colorado-Utah ore areas should be considered in connection with the joint production of vanadium and radium, and that the situation was rather more complicated than appeared on the surface. In 1929

and 1930 deposits of radium bearing ores were found in Canada and were subjected to tests. Those found in the Wilberforce district of Central Ontario were about to be exploited by the Ontario Radium Corporation. Near Hunter Bay, McTavish Arm, Great Bear Lake, below the Arctic Circle, well-developed veins containing radium ore were found, but the district is inaccessible except by airplane. No further work was done on radium deposits previously found in Australia. The world's supply in 1930, as in previous years, was made available by the Belgian monopoly treating ores from Africa. The imports into the United States of radium salts in 1930 totaled 260 grains valued at \$924,852, as against 165 grains valued at \$579,085 in 1929. See CHEMISTRY, INDUSTRIAL.

RAILROADS. See RAILWAYS.

RAILWAY ACCIDENTS. The U. S. Interstate Commerce Commission, in its Accident Bulletin No. 98 covering the calendar year 1929, reported a grand total of 6496 persons killed on American railways and 76,995 injured. This may be compared with 6509 killed and 85,561 injured in 1928. The total number of passengers killed in train accidents was 36, which may be compared with the low record for 1927 when 10 were killed. In train service accidents in 1929, 61 passengers were killed and 2101 injured, as against 67 killed and 2055 injured in 1928. The total number of employees killed in train and train service accidents was 1069 and 21,970 were injured in 1929, as against 962 killed and 23,591 injured in 1928. In non-train accidents 279 employees were killed and 38,120 injured in 1929, as against 281 killed and 46,101 injured in 1928. The casualties for "other persons," which include passengers carried on contract, such as, for example, newsdealers, employees not on duty, and miscellaneous persons, both trespassers and non-trespassers, totaled 4966 killed and 10,886 injured in 1929, and 5099 killed and 10,337 injured in 1928. The foregoing statistics were for train and train service accidents. Adding to the above those killed in non-train accidents, the grand total for "other persons" in 1929 would have been 5048 killed and 12,534 injured, as against 5181 killed and 11,842 injured in 1928. Of course among "other persons" must be included the very large number of deaths and injuries at highway grade crossings, these in 1929 aggregating 2485 killed and 6804 injured, of which 210 were reported as having subsequently died in 1929, as against 2568 killed and 6666 injured in 1928.

The total amount of damage to cars, locomotives and roadways because of collision and derailments in 1929 was \$19,375,760, as against \$19,558,441 in 1928. The 1929 damage included: Collisions, \$4,645,176; derailments, \$13,137,632; other train accidents, \$1,592,952.

Among the important railway accidents in the United States during 1930 were the following:

January 20. In a derailment of a passenger train of the Louisville & Nashville at Trafford, Ala., the locomotive was overturned, several cars wrecked, the engineer killed, and 54 persons injured, 47 of whom were passengers. The cause was undiscovered.

January 22. The driver of a school bus, together with nine of the ten pupils inside the vehicle, were killed in a grade-crossing accident at Berea, Ohio, on a four-track line of the New York Central.

February 23. A passenger train of the Chicago, North Shore & Milwaukee was derailed in a grade-crossing collision with an automobile at Kenosha, Wis., causing the death of 14 persons and injury to 129 others.

March 7. Collision between the two sections of train No. 9 of the Central of Georgia Railway at Zellobee, Ga., resulted in injury to 65 persons, including 56 passengers.

April 11. Passenger train No. 7 of the Atchison, Topeka & Santa Fe ran into a motor bus stalled on a crossing at Isleta, N. Mex., the bus being demolished and the driver and 21 passengers killed.

August 31. In a derailment of the Texas Special of the St. Louis-San Francisco near St. Louis, Mo., six persons were killed and 11 were injured. Rocks had been piled on the rails, probably by small boys who were in the vicinity at the time.

Among the notable railway accidents in other parts of the world during 1930 were the following:

January 10. Twelve persons were killed and 14 injured in a wreck at Clutterbuckganj, India.

March 10. Eight persons were killed and 26 injured near São Paulo, Brazil.

April 7. An explosion aboard a train near Oita, Japan, caused the death of 20 persons.

June 1. In a derailment near Montereau, France, six persons were killed and 30 injured.

June 27. In the vicinity of Sudbury and Capreol, Ont., Canada, three trains of the Canadian National Railways were derailed by washouts and 13 persons were killed.

June 30. Twenty-two persons were killed and 28 were injured in a wreck near Leningrad, Russia.

July 3. Sixteen persons were killed in a wreck at Sasso, Italy.

August 3. Eight persons were killed in an express train crash at Braga, Portugal.

August 14. In a collision between two express trains near Bucharest, Rumania, 11 persons were killed and 17 injured.

September 7. Four persons were killed and 42 injured in a wreck at Dacca, India, caused by the removal of bolts from plates binding the rails.

October 29. In a derailment of an express train at Perigueux, France, 13 persons were killed and 25 injured.

November 26. A freight train, composed mostly of circus equipment, was derailed on the Aguascalientes division of the National of Mexico near Rivera, resulting in the death of 20 persons. Following the derailment two tank cars of gasoline exploded, and many of the animals in the circus cars were burned to death.

The railways of Great Britain for 1929 reported 417 persons (including 80 passengers) killed and 25,364 (including 5522 passengers) injured. In addition 327 trespassers and suicides were killed and 131 trespassers injured. The number of passengers killed in actual train accidents was only three, which was lower, with the exceptions of 1923 and 1925, than in any year since 1920. It is of interest to note that there were 281 collisions, compared with an average of 251 for the five years 1920-24. The number of derailments remained remarkably uniform, while the progressive decrease in respect of broken rails and axles was maintained. Casualties due to accidents at public road level crossings amounted to 16 killed and 29 injured, of which 15 deaths and eight cases of injury were those of pedestrians. Under the heading of "Movement Accidents" (exclusive train accidents), passenger casualties showed an increase of three killed and 465 injured compared with the year 1928. In the case of railway servants the figures showed an increase of four killed and 151 injured. Of other persons, excluding trespassers and suicides, the number of fatalities was five more, and of injured seven more, than in 1928. The list of passenger casualties caused by falling out of carriages totaled 35 killed and 51 injured, an increase of 17 compared with the figures for 1928. The liability to accident in this direction during 1929 was one in about 20,000,000 passenger journeys, including those made by season ticket holders. Two cases of death and eight of injury were caused by trespassers coming into contact with the live rail of electrically operated railways; all the victims were young children.

RAILWAYS. In its annual report to Congress for 1930, the Interstate Commerce Commission

recommended that the railways be allowed to retain earnings in excess of 6 per cent on their valuations, and that other means of transportation, such as inland waterways and bus lines, be subjected to regulation by the Commission in the same way that the steam railways were subjected to regulation. This may well mark the end of one trend and the beginning of another in the history of the regulation of railways in the United States. It indicates a recognition on the part of the Commission of their responsibilities and of the fact that, insofar as steam railways are concerned, a policy of purely negative repression did not fulfill the entire responsibilities of such a body as the Interstate Commerce Commission.

Another phase of this change was shown in the earnings of the railways themselves. With occasional outstanding exceptions, the problem of railroad development in the United States has been one largely of providing adequate facilities for doing an ever-increasing business economically. On the other hand, 1930 was in general a year of severe depression. With the railways it was more than that. The period of expansion which began with the building of the first mile of railway in the United States had come apparently to a definite end.

As the man on the job, say the division superintendent, saw it, it now became of paramount importance to move a smaller amount of freight and passenger business with greater economy. Heretofore it had been of paramount importance to get the business moved. There was always pressure brought to bear to make the division superintendent do his work, that is get trains over the line, as economically as possible. But whereas heretofore a division superintendent's main hope of making a reputation for himself lay in getting passenger trains through on time, cleaning up his freight yard, keeping his cars and locomotives moving, now the emphasis was placed on saving money.

The easiest place to save money in the management of a railroad is in maintenance of way. It is interesting to look at the policy pursued by some of the railways in regard to maintenance of way. It is a little safer to take the figures for the first nine months of the year rather than the whole twelve months' figures, because in this way "window dressing" which may take place in October, November, and December will not be reflected in the figures. Most railroad men, familiar with conditions throughout the United States, would probably agree that the Atchison, Topeka, & Santa Fe had been, for the last ten years at least, maintained, that is, repaired and renewed adequately, if not extravagantly, regardless of expense. In the first nine months of 1930, the Atchison, Topeka, & Santa Fe itself, operating 9630 miles, spent \$22,264,661 for maintenance of way, a decrease of 10 per cent. Compare this with the Pennsylvania Railroad, operating 10,878 miles. It spent in the nine months of 1930, \$54,403,773, a decrease of 14 per cent as compared with the first nine months of 1929. Neither of these railways were under the necessity of drastically cutting maintenance of way expenditures in order to continue to pay the same dividend rate, namely, 10 per cent in the case of the Atchison, Topeka, & Santa Fe, and 8 per cent (\$4 per \$50 par value share) in the case of the Pennsylvania.

It is interesting to compare these figures with those of a railway company which appeared actually to be face to face with the necessity for

cutting its newly established 8 per cent dividend rate on its common stock. The Southern Railway began the payment of dividends on its common stock only four years ago. It was paying 8 per cent in 1930. In that year the South felt the effects of the general depression very severely. Both agriculture and manufacturing were affected. The depression was thus made doubly hard on the Southern Railway. The Southern Railway, operating 6731 miles of railway, spent \$15,651,927 for maintenance of way in the first nine months of 1930, a decrease of only between 3 and 4 per cent from the amount spent in 1929. Apparently what happened was this. The Southern Railway management kept its head even under very trying circumstances. In the opinion of the management, some saving could be made in maintenance, but a drastic saving was apparently considered to be false economy. In the case of the Santa Fe and of the Pennsylvania Railroad there was a greater margin for saving, and the management availed themselves of this margin of safety by making larger savings in 1930 in maintenance of way.

NEW CONSTRUCTION. In 1930 there were 513 miles of new railway completed. This compared with 666 miles completed in 1929 and with 6026 miles completed in 1902, in which year the greatest mileage completed was shown by the records kept since 1893 by the *Railway Age* (New York).

The *Railway Age* in this connection stated:

As in previous years, the major projects among the new lines fell into three classifications: Those which were built to furnish new traffic routes; those to provide shorter lines or easier grades along existing routes; and those which were projected to develop new territory or industrial centers.

Typical of the first classification was the extension by the Atchison, Topeka & Santa Fe, of the line of the former Kansas City, Mexico & Orient from Paisano, Mex., to Presidio, 65 miles, which not only provides a new route to the City of Mexico, but to the central sections of that country and which will eventually bring the Pacific ports on the west coast of Mexico, several hundred miles nearer to the eastern sections of the United States. Another project of this character is the new line, approximately 200 miles long, between Klamath Falls, Ore., and Keddle, Cal., which is being built by the Great Northern and the Western Pacific to provide a new route from the Northwest into San Francisco and from Oregon and Northern California points to the East.

The most prominent in the second class is the co-ordinated construction which is being carried out by the Chicago, Milwaukee, St. Paul & Pacific and the Rock Island & Pacific, between Trenton, Mo. and Birmingham, to provide a joint line into Kansas City, of easy grades, light curvature, and less mileage.

Notable examples of lines constructed to develop new territory or to reach industrial centers includes the Texas & Pacific line to Lovington, N. M., 73.5 miles; the 20-mile extension, in Oklahoma, of the Beaver, Meade & Englewood; the two lines in Oregon, aggregating 27 miles, completed by the Spokane, Portland & Seattle, and the extension by the Seaboard Air Line of the Prince George & Chesterfield, 16 miles, into Hopewell, Va.

In all probability the most important piece of new mileage built in 1930 was the extension of the Pittsburgh & West Virginia east to a connection with the Western Maryland at Connelville, Maryland. This was important because it completed the final gap in a main trunk line from Chicago to the Atlantic Ocean. It was the completion of this gap which proved the final, insurmountable barrier to the Gould scheme of having a truly transcontinental railway under one financial control. It will be remembered that this scheme envisaged the Western Pacific starting at San Francisco and connecting with the Denver & Rio Grande at Salt Lake City, the Denver & Rio Grande ran from Salt Lake City across the Rocky Mountains to Pueblo, Colorado, where it connected

with the western terminus of the Missouri Pacific, which took it as far as Chicago. From Chicago to Toledo, the Gould system had the Wabash. From Toledo to a point not far west of Pittsburgh, it had the Wheeling & Lake Erie. It got into Pittsburgh over the Pittsburgh & West Virginia. The Western Maryland, which ran from Connellsville to Baltimore, was already owned jointly by the Goulds and the Rockefellers. Now in 1930 that most expensive link across the Alleghenies from the Pittsburgh & West Virginia to Connellsville was completed. This was a major piece of railway building in the completion of the railway map of the United States.

One other major expenditure, which deserves mention, is in the nature of a betterment of existing facilities, rather than an extension of new facilities. This is the beginning of the rebuilding of the Broad Street station of the Pennsylvania Railroad at Philadelphia. On June 29, 1930, the Pennsylvania began the electric operation of all suburban and local passenger trains between Philadelphia, Pa., and Trenton, N. J., 33 miles. Electric operation was extended on July 20 to include suburban and local passenger trains on the Schuylkill division from Philadelphia to Norristown, Pa., 17 miles.

CONSOLIDATION. Although actually given to the public in the last two weeks of 1929, the plan for the proposed consolidation of the more than 1000 railway companies of the United States into 21 systems, as worked out by the Interstate Commerce Commission, belongs properly to the year 1930. In brief, this plan lays down a general scheme which presumably will be controlling in any actual consolidations which may be carried out. It will be remembered that the Interstate Commerce Commission had not been given the power by Congress to compel consolidations. On the other hand, consolidations, if they violate the Anti-trust Act as interpreted by the courts, will become legal if they meet the approval of the Interstate Commerce Commission. For this reason the plan outlined by the Interstate Commerce Commission was of importance.

In briefest outline, the plan was as follows: New England is divided into two systems—(1) a system based on the Boston & Maine with the Delaware & Hudson added to it; (2) a system based on the New York, New Haven & Hartford, with the New York, Ontario & Western added to it, giving the system an outlet to the Great Lakes, and the Lehigh & Hudson and the Lehigh & New England added to it, giving the system an entrance into the Pennsylvania coal fields. The so-called trunk-line territory, which may roughly be thought of as the New York to Chicago territory, is divided between four systems, namely, the Interstate Commerce Commission's System No. 3, the New York Central and its subsidiaries, the Interstate Commerce Commission's System No. 4, the Pennsylvania Railroad and its subsidiaries, the Interstate Commerce Commission's System No. 5, the Baltimore & Ohio, and the Interstate Commerce Commission's System No. 6, which includes the Erie, the Chesapeake & Ohio, the Nickel Plate (the right name of which is the New York, Chicago and St. Louis), and the Pere Marquette.

System No. 7 is made up of the Wabash, the Lehigh Valley, the Western Maryland, the Wheeling and Lake Erie, and the Pittsburgh & West Virginia, and to this trunk-line system is added the Seaboard Air Line, making it (System No. 7) both a trunk-line and a southeastern system.

Beside this hybrid System No. 7, the Southeast has System No. 8, made up of the Atlantic Coast Line, the Louisville & Nashville, and some others. There is also in the Southeast, System No. 9 which is based on the Southern Railway and is extended into Florida by the addition of the Florida East Coast Railway.

The Mississippi Valley and the wheat country west of Chicago is to be served by two systems, System No. 10, based on the Illinois Central, to which is added the Minneapolis & St. Louis and the St. Louis-Southwestern, and System No. 11, which is based on the Chicago & North Western, to which is added the Chicago & Eastern Illinois and the Mobile & Ohio.

The Northwest has two systems, System No. 12 being a combination of the Great Northern and the Northern Pacific. System No. 13 is founded on the Chicago, Milwaukee, St. Paul & Pacific and some short lines.

The Chicago, Burlington & Quincy, with its already controlled line, the Colorado and Southern, is made into System No. 14, competitive with System No. 15, which is founded on the Union Pacific, to which is added the Kansas City Southern.

Of course the Southern Pacific is a system of itself, System No. 16, and the Atchison, Topeka & Santa Fe is also a system of itself, System No. 17.

The Southwest is divided between two systems, the Missouri Pacific, to which is added the Denver & Rio Grande and the Western Pacific, together making system No. 18, and system No. 19, a combination of the Chicago, Rock Island & Pacific Railway and the St. Louis-San Francisco Railway.

The two remaining systems are unimportant. One is made up of the Canadian National lines in the United States and the other the Canadian Pacific line in New England and the Canadian Pacific's controlled line, the Minneapolis, St. Paul and Sault Ste. Marie.

On December 30, President Hoover announced that an agreement had been reached by which the railroads in official classification territory—that is, between New York and Chicago, excluding New England and extending as far south as the coal fields of West Virginia—by which these railways were to be grouped among four large systems.

The agreement was made by President W. W. Atterbury, President of the Pennsylvania Railroad, P. E. Crowley, President of the New York Central Railroad, J. Van Sweringen, Chairman of the Board of the Chesapeake & Ohio, and representing the so-called Nickel Plate interests, and lastly, Daniel Willard, President of the Baltimore & Ohio. The four systems, excluding New England, were to be based on (one) the New York Central Railroad, to which was added the Delaware, Lackawanna & Western, (two) The Pennsylvania Railroad, (three) the so-called Nickel Plate, which takes in the Chesapeake & Ohio, the Erie, the New York Chicago & St. Louis, and to which was added the Lehigh Valley Railway and the Pittsburgh & West Virginia Railway, (four) the Baltimore & Ohio, to which was added the Reading Railway and the Central Railroad of New Jersey.

President Hoover, in making the announcement, added: "Of course, the agreement is subject to the independent approval of the Interstate Commerce Commission." If the President persuaded himself that this was true in spirit as

well as in letter, he did more than the average intelligent man could do to persuade himself of the fact.

The Interstate Commerce Commission had devised a comprehensive plan, outlined above, for the consolidation of the railways of the United States and had set out a Wabash system which was to include the Lehigh Valley and the Pittsburgh & West Virginia. The agreement reached between the four railway presidents and carrying, presumably, President Hoover's approval, gave the Lehigh Valley and the Pittsburgh & West Virginia to the Nickel Plate system, and left out the Wabash completely. Politics and human nature being what they are, the practical effect of President Hoover's going over the heads of his own appointees, ditched, it was believed, the carefully worked out, comprehensive plan which very high-minded experts, after years of study, had devised. It might be well to mention here that the Interstate Commerce Commission plan was primarily the work of Commissioner Claude R. Porter. There was a tendency on the part of many to consider this action of President Hoover as the grossest kind of interference with the work of one's subordinate by one who knew very little about the complexities of the question involved.

RECEIVERSHIPS. The only important receivership during the year 1930 was that of the Seaboard Air Line, which was placed in receivers' hands in December. The general business depression, and especially the very severe depression following the boom in Florida, was the cause of the Seaboard receivership.

LEGAL DECISIONS. There were no very important legal decisions affecting railways during the year 1930.

CARS AND LOCOMOTIVES ORDERED. Quoting again from the *Railway Age*, which in its annual statistical number gives the results of a very careful compilation, the number of locomotives ordered was 555 comparing with 1395 ordered in 1929. The number of freight cars ordered was 49,496, comparing with 124,140 ordered in 1929. The number of passenger cars ordered was 885, comparing with 2458 ordered in 1929. The number actually built, according to the *Railway Age*, was, locomotives 1023, freight cars 77,097, passenger cars 1514.

RAINFALL. See METEOROLOGY.

RANDOLPH-MACON WOMAN'S COLLEGE. An institution for the higher education of women in Lynchburg, Va., under the auspices of the Methodist Episcopal Church, South; founded in 1893. The enrollment for the autumn of 1930 was 775. The faculty numbered 61. The endowment amounted to \$1,202,935, while the income for the year was \$278,678. The library contained over 35,000 volumes. During 1930 construction of Presser Hall, the new music building, named in honor of the Presser Foundation of Philadelphia, was completed at a cost of \$130,000, half of which sum had been met by the foundation. President, Dice Robins Anderson, Ph.D., LL.D.

RAPID TRANSIT. The first New York subway, a pioneer rapid transit development in the United States, was also practically the last great "pick and shovel" job. Subway design had not changed greatly from the excellent standards adopted in New York some 25 years previously, but subway construction methods were almost completely revolutionized. Recognizing these im-

portant changes the *Engineering News-Record* (N. Y.) published a complete series of articles during the year on the new methods of subway construction. The old plan of open cut and cover construction disappeared, of course, with the last work, the lower Broadway-Brooklyn extension, of the first subway. On this section the scheme of decking over the street and excavating under this deck, thus maintaining traffic at all times, appeared for the first time. Later years, particularly just after the World War, witnessed an extensive replacement of hand labor by machines. The steam, or rather compressed air, shovel appeared in the subway excavation and later the hoisting of spoil to street level for loading gave way to the present system of ramps which permit the motor trucks to descend into the excavation and to be loaded directly by the excavating machines. The most recent developments, which were described in these articles, have to do primarily with the new methods of sheeting and shoring the excavation and supporting the decking during construction—all clever and interesting devices which have been evolved from the experiences of a new group of engineering-contractors—the subway builders of New York.

NEW YORK. The subways previously built in New York City and those proposed make a most complicated network. Satisfactory progress was made during the year in constructing the new line described in previous YEAR BOOKS. Indeed subway construction in New York had become almost an everyday matter and attracted but little attention. The Fourteenth Street crosstown line was delayed somewhat due to the failure of the contractor, but remarkable progress was made on the Houston Street line. This latter construction was carried out largely in open cut. Private property was condemned, houses torn down, the subway was being built, and later new buildings would be erected over much of the line.

Negotiations also were under way looking toward the centralization of operation in municipal hands by securing control for the city of the old Interborough Rapid Transit lines. While the five-cent fare agitation had subsided somewhat it seemed reasonably certain that New York will have a trial at least of municipal operation with a five-cent fare and with the taxpayers meeting the operating deficit.

CHICAGO. Plans were completed for the first section of the Chicago subway—a four-track line, 3½ miles long and estimated to cost about \$45,000,000. Construction was certain to be very difficult with bad soil conditions and several under-river crossings.

PHILADELPHIA. Bids were opened September 15 for a new subway extension on the old Market Street line. The work involved the demolition of the old Market Street Bridge and its replacement by a tunnel under the Schuylkill River.

TORONTO, CANADA. Public subway projects for Toronto were defeated both in 1911 and in 1915. The City Council, however, asked the Toronto Transportation Co. to make a report and proposals for a subway system.

TOKYO, JAPAN. The first two sections of the Tokyo subway were expected to be in operation as the year came to a close. Work on the third section was under way. See 1928 YEAR BOOK. See **TUNNELS**; ILLINOIS under *Political Events*.

RATEAU, AUGUSTE. A French engineer, died in Paris, Jan. 14, 1930. He was born in Royan, Oct. 13, 1863, and was educated in Cognac, study-

ing later at the École Supérieure des Mines in Paris. In 1886 he was given the rank of inspector of mines and in 1888 was appointed professor in the mining school at Saint-Etienne. About 10 years later, he returned to Paris as professor of electrical engineering in the École Supérieure des Mines. His early work in mine ventilation was the foundation for his work on steam turbines and turbo-blowers. In 1896 he patented his form of multi-stage impulse turbine and in 1900, at the Paris Exhibition, he displayed complete designs for a turbine installation of a torpedo boat. He founded the Société Rateau in 1903, a workshop for machine construction which grew into an organization employing some 3000 workmen with branches in all European countries. He also experimented with compound centrifugal air compressors and fitted turbine superchargers to aero engines and to marine Diesel engines. M. Rateau was elected to the Académie des Sciences in the Institut de France. His publications include *Études sur les turbines à vapeur*; *Théorie des turbo-machines et des hélices propulsives*; *Théorie du vol des aéroplanes*.

RATIONALIZATION. See GREAT BRITAIN under *Industry and Shipping*.

RAWLE, ral, FRANCIS. An American lawyer, died in Philadelphia, Pa., Jan. 28, 1930. Born in Freedom Forge, Pa., Aug. 7, 1846, he was graduated from Harvard in 1869 and was admitted to the Pennsylvania bar in 1871. One of the organizers of the American Bar Association in 1878, he served as treasurer until 1902, and as president in 1902-03. In 1887 he was a delegate from the United States to the London meeting of the Association for the Reform and Codification of the Law of Nations. He wrote *Car Trust Securities* and "Life of Edward Livingston" in *Lives of Secretaries of State*. He also revised three editions of Bouvier's *Law Dictionary* (1883, 1898, 1913).

RAYON. According to the *Textile World* (New York), the world production and consumption of rayon showed increases in 1930 over the previous year. The grand total for 1930 was 426,700,000 pounds, as against 404,155,000 pounds in 1929. The estimated consumption was 388,500,000 pounds, showing an excess in production for the year. In the United States, which produced 119,000,000 pounds in 1930, there was for the first time a decline in output, compared with 123,130,000 pounds in the previous year. The Viscose Company with 45,000,000 pounds (62,000,000 in 1929) was the leading producer, followed by the Du Pont Rayon Company with 18,500,000 pounds (24,600,000 in 1929). The 1930 production of 119,000,000 pounds may be compared with 9,000,000 pounds in 1920. Consumption in the United States declined even more sharply than did production, amounting to approximately 105,000,000 pounds, as against 132,000,000 pounds in 1929. Imports in 1930 were estimated at less than 6,000,000 pounds, as against nearly 16,000,000 pounds in 1929. An interesting feature of the year was the development of a considerable rayon industry in Japan, which had captured a large part of the market for this material in Asia. In Great Britain the production of rayon, yarn, and waste was estimated at 48,770,000 pounds, as against 56,900,000 pounds in 1929. The accompanying table, also from the *Textile World*, indicates the world production of rayon by the four different processes in the years 1929 and 1930.

WORLD PRODUCTION OF RAYON BY PROCESSES [In thousands of lbs.]

| Process | 1929 | Per cent | 1930 | Per cent |
|-----------------|---------|----------|---------|----------|
| Viscose | 387,865 | 87 | 373,525 | 88 |
| Acetate | 25,168 | 6 | 30,100 | 7 |
| Cupra | 18,216 | 4 | 14,145 | 3 |
| Collodion | 11,671 | 3 | 8,930 | 2 |
| Total | 442,420 | 100 | 426,700 | 100 |

WORLD PRODUCTION AND CONSUMPTION OF RAYON—1930 From Textile World [In thousands of lbs.]

| | Production | Imports | Exports | Estimated consumption |
|--------------------------|------------|---------|---------|-----------------------|
| Belgium | 12,500 | 1,750 | 6,750 | 7,000 |
| Great Britain | 49,700 | 675 | 6,600 | 42,400 |
| France | 41,600 | 2,450 | 17,975 | 23,000 |
| Germany | 50,300 | 25,900 | 15,775 | 59,000 |
| Holland | 18,750 | 2,350 | 19,600 | 2,600 |
| Italy | 66,400 | 1,975 | 34,000 | 30,000 |
| Switzerland | 10,650 | 4,050 | 8,850 | 5,250 |
| Other European ... | 17,350 | 33,205 | 5,655 | 43,250 |
| Total European .. | 267,250 | ..... | ..... | 212,500 |
| Japan | 35,100 | 525 | 2,500 | 29,000 |
| Other Asia ..... | ..... | 26,075 | ..... | 24,200 |
| Total Asia | 35,100 | ..... | ..... | 53,200 |
| Total Africa ..... | ..... | 1,900 | ..... | 1,900 |
| Canada | 5,350 | 2,000 | ..... | 7,250 |
| United States | 119,000 | 5,575 | 860 | 105,000 |
| S. & C. America ..... | ..... | 6,250 | ..... | 5,400 |
| Total American .. | 124,350 | ..... | ..... | 117,650 |
| Total Australasian ..... | ..... | 3,825 | ..... | 3,250 |
| Grand total | 426,700 | ..... | ..... | 388,500 |

RAYS, RADIATION. See PHYSICS.

REALISM. See PHILOSOPHY.

RECALL. See MUNICIPAL GOVERNMENT.

RECLAMATION, UNITED STATES. The U. S. Reclamation Bureau published a report by a special board, appointed in 1929 by President Hoover to study western irrigation projects. The report was based on a study of 22 plants, both Federal and private, and proposes two important changes in reclamation policy. Critics of the work of the Reclamation Bureau, established under President Roosevelt in 1902, had pointed out that Federal funds had been sometimes used to build projects which could never be expected to return even the low interest rate contemplated in the Reclamation Act. The report calls attention to the fact that Federal funds were being used for flood protection and river and harbor work, and that there was equal reason for their expenditure on the development of public lands. It was held that at least ample provision was necessary to encourage and take care of the needs of settlers in the early years of such projects while they were developing the raw lands into productive farms. The minimum capital expenditure is put at \$5000 for each settler—a sum which the settler can seldom command but which must be expended before the land becomes even self-supporting. The establishment of a reclamation credit institute was therefore recommended.

Noting that under the existing system there was a tendency for each State, through its political officers, to attempt to get as much Federal aid as possible and to ask for the development

of lands which were not economically suited to reclamation, the report proposed active participation by the States in the financial and other responsibilities of construction. This, it was believed, would check use of Federal funds for the development of low-grade land.

To the many opponents of recent reclamation policy this report did not offer very much consolation or probability of reduced expenditures. That the existing situation was bad could not be doubted and it seemed probable that in the future some such plan as that of State participation, as proposed, was essential to a reasonable use of Government funds.

RIVER DES PERES, ST. LOUIS. The River des Peres, which roughly parallels the old city limits of St. Louis, Mo., and drains into the Mississippi, was turned into a huge storm-water channel and conduit involving extensive and unusual construction features. A large part of the new channel is open concrete-lined canal on which construction was begun in 1926. For over four miles, however, the construction consists of a closed concrete-arch conduit. Part of this is single tube design but a considerable section is of double, or twin, arch form. The arch conduits are of large size, up to 32 feet in span, and the construction was difficult and was carried out with a typically modern construction plant.

ZUIDER ZEE, HOLLAND. The first results of this huge undertaking were demonstrated during the year when the polder, or diked area, just inside the Island of Wieringen, on the North Holland Peninsula, was drained. Some 27 square miles of new land was thus recovered from the sea. The next step in the work would be the completion of the main 18½-mile dike across the Zuider Zee to Friesland. The project has been described in previous YEAR BOOKS.

EGYPT. The beginning of a second raising of Aswan Dam, greatly increasing the storage, is noted under DAMS. As thus increased in size the Aswan Dam will back up the water of the Nile for 230 miles above Aswan to Wadi Halfa on the Sudanese border. Stored behind this new dam will be the stupendous total of 4,000,000 acre feet of water—1320 billion gallons.

In connection with this new work it is interesting to note the other irrigation works below Aswan which serve to divert the Nile flow to the irrigation works.

| | | |
|--------------|------------------------------|------|
| Aswan Dam | 590 miles above Cairo, Built | 1902 |
| Esna Barrage | 490 " " " " | 1909 |
| Nag Hamdi " | 367 " " " " | 1930 |
| Assuit " | 250 " " " " | 1902 |
| Delta " | 15 " below " " | 1890 |
| Zifta " | 17 " " " " | 1903 |

Works on the Upper Nile include the barrage at Sennar as well as the works noted in the 1929 YEAR BOOK.

RED CROSS, AMERICAN NATIONAL. A semi-governmental organization chartered by Congress in January, 1905. The charter designates its obligations as follows: "To furnish volunteer aid to the sick and wounded of armies in time of war . . . to perform all duties devolved upon a national society by each nation which has acceded to the treaty of Geneva . . . to act in matters of voluntary relief and in accord with the military and naval authorities as a medium of communication between the people of the United States and their Army and Navy . . . to continue and carry on a system of national and inter-

national relief in time of peace and to apply the same in mitigating the sufferings caused by pestilence, famine, fire, floods and other great national calamities, and to devise and carry on measures for preventing same."

On June 30, 1930, there were 3550 chapters of the American Red Cross. Service work for enlisted men and disabled veterans and their dependent families was carried on by 2941 chapters, the national organization spending \$870,608 for this purpose in addition to the expenditure on the part of chapters. Service to ex-service men and their families included assistance in filing death and disability claims for Federal and State benefits, such as compensations, bonus, etc., and social or financial aid while adjustment of claims was pending. Recreation and other service was conducted in 64 Government hospitals, including those of the Veterans' Bureau, Army, Navy, and Department of the Interior.

The year brought many opportunities to the Red Cross for rendering service, as there were 108 disasters, 102 of which were in the United States and its insular possessions. Contributions of funds were made to six foreign Red Cross societies for the relief of victims of major disasters. Communities in 38 States were affected, several States being forced twice to request relief.

Beginning Aug. 15, 1930, the Red Cross undertook drought relief operations in the form of seed distribution, \$450,000 being the initial allotment. Rye, wheat, and oats seed were given for five-acre plantings, in 245 counties of six States, to provide feed for winter pasturage and crops in the spring. Garden seed was also distributed. This programme went forward in close coöperation with the county agricultural agents and home demonstration agents. The seed distribution came to a virtual end in November, with efforts continued through the chapters toward the alleviation of distress among families in the drought-stricken areas.

Outstanding among the year's disasters were the Nashua (N. H.) fire, the Frost (Texas) tornado, and the Santo Domingo hurricane. The latter involved assistance by airplane, the only means of immediate access to the island. For domestic disaster relief the national organization spent \$958,110 and the chapters spent \$20,598, making a total of \$978,708. For insular and foreign operations in disaster relief, \$105,166 was expended. Total expenditures of the national organization and chapters for the year ending June 30, 1930, were \$9,250,000; this sum included the \$1,083,875 spent in disaster relief. The membership of the Red Cross was 4,130,966 adults, while 6,930,849 children were enrolled in the American Junior Red Cross.

Enrollment of Red Cross Nurses, acting as a reserve for the Army and Navy and other governmental nursing services, and for call during emergency, totaled 51,047, of whom approximately 27,000 were on the active list. The Red Cross employed an average of 824 nurses each month in public-health work. Home hygiene and care of the sick certificates were issued to 32,626 graduates of this course; first-aid certificates issued numbered 74,437, a total of 424,928 to date; life saving members enrolled were 52,798, with 273,202 enrolled to date. Garments for disaster victims, etc., numbered 192,051; surgical dressings, 3,495,137; volumes transcribed into Braille for the blind, 2038. Welfare service was provided

for an average of 12,486 families each month in communities where no other agency existed for such work.

National headquarters of the American National Red Cross are located at 17th and D Streets, N. W., Washington, D. C., with branch offices in St. Louis and San Francisco. Judge John Barton Payne continued as chairman of the organization's central committee, in which are vested all powers of control, management, and administration. For relief of draught sufferers see AGRICULTURE.

REED COLLEGE. A nonsectarian, liberal college of arts and sciences for men and women in Portland, Ore., founded in 1911. The enrollment for the autumn term of 1930 totaled 379, of whom 190 were men and 189 women. These were distributed as follows: Freshmen, 141; sophomores, 103; juniors, 75; seniors, 50; special students, 8; graduate students, 2. (No students are accepted for graduate study unless they are Reed College alumni and assistants.) The faculty numbered 32, with 8 graduate assistants. The productive funds for 1929-30 amounted to \$1,870,205, while the income for the year was \$96,270. The library, housed in the new Eric V. Hauser Memorial Library, contained approximately 40,000 volumes. President, Norman Frank Coleman, LL.D.

REFERENCE WORKS. See PHILOLOGY, MODERN; LITERATURE, ENGLISH AND AMERICAN; FRENCH LITERATURE; GERMAN LITERATURE; ETC.

REFINING OF METALS. See METALLURGY.

REFORMED CHURCHES THROUGHOUT THE WORLD HOLDING THE PRESBYTERIAN SYSTEM, ALLIANCE OF. An organization formed in London, England, in 1875 with the one great purpose, to encourage comity, cooperation, and efficiency in the accomplishment of Christian work. In 1930 there were 106 churches connected with the alliance. The members and adherents of the Presbyterian and Reformed churches throughout the world numbered about 60,000,000, including members of the Evangelical Church in Germany. The general secretary in 1930 was the Rev. W. H. Hamilton of Edinburgh, Scotland, and the American secretary was the Rev. Henry B. Master, D.D., whose offices are at 1012 Witherspoon Building, Philadelphia. A general council of the alliance was to be held in Belfast, North Ireland, in 1933.

REFORMED CHURCH IN AMERICA. Composed originally of settlers from Holland and known until 1867 as the Reformed Protestant Dutch Church in North America, the denomination has since become largely intermixed with elements from many other nationalities. It adheres to the doctrines of the Belgic Confession and the Heidelberg Catechism: in 1839 it indorsed the Westminster Catechism. The form of government is of the Presbyterian type, with four classes of officers: Ministers, teachers (or professors), elders, and deacons. Administratively the church is divided into consistories, classes, provincial synods, and the general synod, the latter operating through a board of direction. In 1930 the Reformed Church in America reported 738 churches, 842 ministers, 87,002 families, 159,325 communicants, and approximately 200 foreign and 235 domestic missionaries. The church maintained foreign missions in Japan, China, India, Arabia, and Mesopotamia, the latter jointly with the Presbyterian Church in the United States of America and the Reformed Church in the United States. The value of property used for purposes of wor-

ship was placed at more than \$38,000,000 in the Federal census of religious bodies of 1926. The church maintains seminaries in New Brunswick, N. J., and Holland, Mich., and also Hope College in Holland, Mich., Central College in Pella, Iowa, and the Northwestern Junior College in Orange City, Iowa. Schools are conducted for Indians in Oklahoma and New Mexico, for the mountain people of Jackson County, Ky., and for Negroes in Brewton, Ala. Rutgers University in New Brunswick, N. J., is historically affiliated with the denomination, although entirely independent of ecclesiastical control. The official periodical of the denomination is the *Christian Intelligencer*. At the session of the general synod in June, 1930, the Rev. Milton J. Hoffman, D.D., of New Brunswick, N. J., was elected president.

REFORMED EPISCOPAL CHURCH. A denomination formed in December, 1873, by clergymen and laymen who had withdrawn from the Protestant Episcopal Church. It was the outcome of an intense discussion over sacerdotal and ritualistic tendencies. As indicated in its name, the denomination held that it supported the principles of the Anglican Church of the time of the Reformation, and of the Protestant Episcopal Church as organized after the American Revolution. The denomination maintains a theological seminary in Philadelphia, Pa., and from that city issues a periodical, the *Episcopal Recorder*. Statistics for 1930 were: Churches, 86; ministers, 91; church members, 25,300; and Sunday-school enrollment, 26,000. The triennial general council of the denomination was held in Philadelphia, May 21-23, 1930, at which time the revision of the Prayer Book was adopted. The Rev. Joseph E. Kearney was elected a Missionary Bishop and consecrated for the special missionary jurisdiction of the South. Bishop Robert Westly Peach, D.D., of Philadelphia, was Presiding Bishop.

REFUSE DISPOSAL. See GARBAGE AND REFUSE DISPOSAL.

REGINA INTERNATIONAL GRAIN FAIR. See EXPOSITIONS.

REGIONAL PLANNING. See CITY AND REGIONAL PLANNING.

REINDEER. See ALASKA.

RELATIVITY. See ASTRONOMY; PHYSICS.

RELIGION, STUDIES IN. See PHILOLOGY, MODERN; LITERATURE, ENGLISH AND AMERICAN.

RELIGIOUS DENOMINATIONS. See articles on respective denominations.

RENAISSANCE LITERATURE. See PHILOLOGY, MODERN.

RENSSELAER POLYTECHNIC INSTITUTE. A nonsectarian institution for the technical training of men in Troy, N. Y.; founded in 1824. In 1930 there were 1709 students enrolled for the autumn term, distributed as follows: Civil engineering, 486; mechanical engineering, 299; electrical engineering, 476; chemical engineering, 211; business administration, 81; biology, 27; physics, 20; chemistry, 21; architecture, 59; specials, 7; graduate students, 22. The teaching staff numbered 130. The productive funds amounted to \$5,697,000, and the income for the year to \$708,000. The total value of the property of the institute, including market value of securities and value of buildings and equipment, was more than \$10,000,000. The gifts for endowment during the year amounted to \$262,300. The library contained 20,174 bound volumes and 21,400 pamphlets. During 1930 a building for the school of architecture, costing approximately

\$400,000, and an extension to the shop building for the department of mechanical engineering, costing approximately \$100,000, were under construction. President, Palmer C. Ricketts, E.D., LL.D.

REORGANIZED CHURCH OF JESUS CHRIST OF LATTER-DAY SAINTS. See LATTER-DAY SAINTS, REORGANIZED CHURCH OF JESUS CHRIST OF.

REPARATIONS. The second Reparation Conference, held at The Hague, Jan. 3 to 20, 1930, achieved, temporarily at least, the "general liquidation of the financial questions raised by the World War and the subsequent Treaties of Peace" which the Young Committee of 1929 declared necessary to the financial and economic rehabilitation of Europe. Fourteen agreements were signed by representatives of 21 Governments: viz., Austria, Belgium, Bulgaria, Czechoslovakia, France, Germany, Great Britain, Australia, Canada, India, New Zealand, South Africa, Greece, Hungary, Italy, Japan, Yugoslavia, New Zealand, Poland, Portugal, and Rumania. The agreements provided not only for the definite settlement of Germany's reparation liabilities and for the constitution of the Bank for International Settlements, as proposed in the Young Plan, but also for the settlement of the reparation liabilities of Austria, Hungary, and Bulgaria, and for the consolidation or cancellation of the so-called "liberation" debts of Czechoslovakia, Yugoslavia, Poland, and Rumania.

AGREEMENT WITH GERMANY. The agreement with Germany provided for the putting into force of the Young Plan as modified by The Hague Agreements of Aug. 31, 1929 (see 1929 YEAR BOOK) and Jan. 20, 1930. The Young Plan fixed for the first time the total reparation liabilities of Germany (at about 37,000,000,000 gold marks, or \$9,000,000,000) and the annual payments to be made, rising from 1,641,600,000 Reichsmarks in 1930-31 to 2,352,700,000 Reichsmarks in 1965-66 and then falling to 897,800,000 Reichsmarks in 1987-88, when reparation will have been made in full. The German payments were to be made to and distributed by the Bank of International Settlements (see below). The annuities were identical with those fixed in the original Young Plan, except that the amounts due to the United States were omitted, direct payment of these having been provided for in a separate agreement. The Young annuities were made a definite and fixed obligation of Germany, secured by her commercial credit. Germany was granted the right, in case of need, to postpone the payment of about two-thirds of each annuity for a period of not more than two years. Payment of the remainder (amounting to 612,000,000 Reichsmarks annually) was to be unconditional. Disputes as to the application or interpretation of the Young Plan were to be settled by the World Court.

The revised Young Plan, signed by 15 nations on January 20, officially went into effect May 17, 1930, after the Bank of International Settlements in Basle, Switzerland, had been officially constituted. The other conditions to the inauguration of the Young Plan—ratification by Germany, France, Belgium, Great Britain, and Italy, and the enactment of requisite laws by Germany—had been previously fulfilled. In fact, however, Germany commenced paying the Young annuities, in place of those provided under the Dawes Plan, on Sept. 1, 1929. Under a compromise agreement reached at the first Hague Conference

in August, 1929, the Agent General for Reparation Payments loaned back to the German government the subsequent surpluses paid over and above the Young annuities. After the January Hague Agreements, this system was abandoned and Germany (commencing February 1) paid the actual Young annuities, with the understanding that if the Young Plan did not come into force she would make up the deficit.

With the official inauguration of the Young Plan, France commenced the evacuation of the Third Zone of the Rhineland, and the Reparation Commission and all other agencies of foreign control over Germany established by the Dawes Plan and the peace treaties were abolished, in accordance with The Hague Agreements. On May 17, S. Parker Gilbert, the American Agent General for Reparation Payments under the Dawes Plan, turned over some 150,000,000 marks to the Bank of International Settlements and ended his work in Berlin. The Reparation Commission terminated its existence on May 19, its last official act being the burning of German bonds equivalent to nearly \$40,000,000,000, representing promises to pay extracted from Germany in 1921 and at the inauguration of the Dawes Plan in 1924. The Young Plan scaled down the total of German reparation payments to slightly less than \$9,000,000,000. For the agreement as to distribution of the German annuities among the creditor nations see the 1929 YEAR BOOK.

The final agreement upon the Young Plan at the second Hague Conference was reached only after three crises had threatened to terminate the negotiations. The first issue, raised by Premier Tardieu of France, concerned the method by which a possible German default was to be determined. It was finally agreed that the Permanent Court of International Justice should judge whether or not Germany had willfully defaulted and that in case of an affirmative decision the creditor states would then recover "full liberty of action." Another obstacle was encountered in settling the question of payment of arrears in case of a moratorium as provided in the Young Plan. It was agreed that payments delayed because of one moratorium must be settled before another moratorium could be granted. The third issue involved the Allied demand that Germany float no other long-term foreign loans until the first reparation loan was placed. The Germans demurred, pointing out their immediate need of additional foreign funds. Under the compromise effected, the proposed reparation loan was increased from \$200,000,000 to \$300,000,000, and the German government was given the option of receiving one-third of the proceeds.

Dr. Hjalmar Schacht, president of the Reichsbank, alarmed the conference on January 13 by announcing that he would refuse to allow the Reichsbank to perform the duties of a bank of emission under the Young Plan, or to subscribe to the capital of the proposed Bank for International Settlements. He was forced to capitulate, however, when the German delegation, of which he was not a member, arranged to secure subscriptions to the capital of the International Bank from a Government-controlled bank and the Prussian State Bank.

CONCURRENT MEMORANDUM. The "concurrent memorandum" attached to the Young Report by the Young Committee was confirmed by an agreement signed by representatives of Belgium, France, Great Britain, Greece, Italy, Portugal,

Rumania, and Jugoslavia at the January session of The Hague Conference. The memorandum set forth the amount of the Young annuities required to cover annual outpayments on war debts owed by the creditor Powers to the United States, and provided that two-thirds of every reduction of the American claim on the Allies during the first 37 years shall be passed on to Germany. The total amount of any relief during the last 22 years will be credited to Germany. The average annual payment of Germany to her creditors under the Young Plan is \$495,000,000 for the 58-year period, while the average annual payments of her creditors to the United States totals \$325,000,000.

AGENT-GENERAL'S REPORT. The final report, issued June 15, 1930, by S. Parker Gilbert, Agent-General for Reparation Payments, under the Dawes Plan, placed the total of the five annuities paid by Germany at 7,970,000,000 marks (\$1,896,860,000) on which there was an interest gain of 23,000,000 marks (\$5,474,000), which more than covered the total expenses of his office, amounting to 17,500,000 marks (\$4,165,000). In addition, the Agent-General transferred to the creditor nations a further sum of 306,000,000 marks (\$72,828,000) during the transition period from Sept. 1, 1929, the end of the fifth Dawes Plan year, to May 17, 1930, the date of the inauguration of the Young Plan. This left a cash balance of about 15,000,000 marks (\$3,570,000) when Mr. Gilbert ended his duties as custodian for the creditor powers. Deliveries in kind during the fifth year under the Dawes Plan, totaled 1,200,000,000 marks (\$285,600,000).

THE INTERNATIONAL BANK. The Bank for International Settlements, in substantially the form outlined in the Young Report (see 1929 YEAR BOOK), opened for business at Basle, Switzerland, following the issuance of its capital shares on May 20, 1930. The first official meeting of the board of directors was held May 12. The location of the bank was agreed upon in a treaty signed at The Hague between Switzerland, on the one hand, and Belgium, France, Germany, Great Britain, Italy, and Japan on the other.

The bank has two main functions—to collect and distribute reparation payments in accordance with the Young Plan, and to promote general international financial and economic stability. It is authorized to facilitate the transfer of reparation payments by giving Germany temporary credits, by financing deliveries in kind, or by investing marks in German enterprises. In case Germany suspends her conditional payments, or reports serious difficulty in meeting them, the bank is authorized to convene the special advisory committee provided for in the Young Plan. The statutes prohibit it from issuing notes or engaging in the acceptance business. The depositors are all national central banks or private banks and the clients are all depositors.

The capital of the bank is fixed at 500,000,000 Swiss francs (about \$96,500,000) and is divided into 200,000 shares, at least 112,000 shares of which must be paid in. The requisite shares were issued and subscribed on May 20 simultaneously in Paris, London, Berlin, Brussels, Rome, Tokyo, and New York, where, in each case, 16,000 shares were offered, and in Amsterdam, Stockholm, and Zurich, each of which was allotted 4000 shares. The operation netted the International Bank about \$18,000,000 in cash, representing subscriptions of \$68,000,000. In some markets the shares were retained by the central banks. In others, as

in New York, they were distributed among banking institutions. In still others, as in Paris, they were sold to the public.

Gates W. McGarrah, an American banker, was chosen the first president, and Pierre Quesnay, a Frenchman, general manager. A German, Dr. Ernst Huelse, was named deputy general manager. Other officers selected were: Vice presidents, Sir Charles Addis of Great Britain and Dr. Melchior of Germany; general secretary, Signor Pilotti of Italy; head of the investment department, Paul van Zeeland, of Belgium; deputy to President McGarrah, Leon Fraser, second American director on the board.

One of the first major operations of the International Bank was the flotation of a Young Plan loan of slightly more than \$300,000,000, with the unconditional German reparation annuities as security. The loan was successfully launched on June 12 and 13, 1930, in nine of the world's money markets—New York, London, Paris, Rome, Berlin, Brussels, Stockholm, Amsterdam, and Zurich. The allotments of the respective countries was as follows: the United States, \$98,250,000; Germany, 36,000,000 Reichsmarks; Belgium, 35,000,000 belgas; France, 2,515,000,000 francs; Great Britain, £12,000,000; Holland, 73,000,000 florins; Italy, 110,000,000 lire; Sweden, 110,000,000 kronor; and Switzerland, 92,000,000 Swiss francs. Of the total proceeds of the loan \$100,000,000 was allotted to Germany and the remaining \$200,000,000 was divided among the reparation creditors sharing in the unconditional German annuities.

The statement of the bank as of Aug. 31, 1930, is on page 677. It does not include service on international loans for which the bank is trustee.

NON-GERMAN REPARATION. The settlement of the non-German, or so-called Eastern European reparation problem, was worked out in principle at the second Hague Conference and in detail at a subsequent conference in Paris, which ended with an agreement signed Apr. 28, 1930. The settlement involved the reparation obligations of Austria, Hungary, and Bulgaria, and the claims and liabilities of the Succession States of the former Austro-Hungarian Empire (Czechoslovakia, Jugoslavia, and Rumania). In the interest of a general settlement, the Great Powers agreed to sacrifice a large proportion of their shares in the prospective reparation payments.

The settlement with Austria absolved her of all financial obligations arising under the Armistice of Nov. 3, 1918, and the subsequent peace treaties, with the exception of a special arrangement entered into with Italy. In settlement of this, Austria agreed to pay Italy some 23,000,000 crowns, the payments to commence in 1943 and run until 1966. Control of the Reparation Commission over Austrian finances was ended. Finally, the agreement provided for the cessation of the liquidation of the property of Austrian nationals in the creditor states.

Bulgaria's reparation debt, fixed at 2,250,000,000 gold francs by the Treaty of Neuilly and reduced to 550,000,000 gold francs in 1923, was further reduced at The Hague to a total of 420,243,808 gold francs, payable over a period of 35 years commencing Apr. 1, 1930. The annuities were made payable to the Bank for International Settlements and were subject to the transfer protection clause agreed to when the Refugee Settlement Loan of 1926 was issued under the auspices of the League of Nations. Disbandment of the Inter-Allied Commission for Bulgaria and

BANK FOR INTERNATIONAL SETTLEMENTS
[Situation as of Aug. 31, 1930]

| ASSETS | |
|--|---------------|
| I. Cash on hand | \$ 640,527 |
| II. Sight funds at interest | 20,784,707 |
| III. Rediscountable bills and acceptances at cost: | |
| (1) Commercial bills and bankers' acceptances | \$ 29,428,543 |
| (2) Treasury bills | 16,307,532 |
| Total | 45,736,075 |
| IV. Time funds at interest: | |
| (1) Not exceeding three months | 104,540,975 |
| (2) Between three and six months | 85,110,422 |
| (3) Between six and nine months | 14,595,461 |
| Total | 204,246,858 |
| V. Sundry: | |
| (1) Maturing within two years | 29,032,159 |
| (2) Maturing in more than two years | 281,773 |
| Total | 29,313,932 |
| VI. Other assets | 1,079,591 |
| Total assets | \$301,781,690 |
| LIABILITIES | |
| I. Capital (authorized capital, 200,000 shares of 2,500 Swiss gold francs each; 160,000 shares issued, one-fourth paid in) | \$ 19,782,500 |
| II. Long-term deposits: | |
| (1) Annuities trust accounts | \$29,823,659 |
| (2) German Government's deposit | 14,747,905 |
| (3) French Government guarantee fund | 13,190,273 |
| Total | 57,761,837 |
| III. Time deposits: | |
| (1) Between three and six months: | |
| (a) Central banks for their own account | 24,929,648 |
| (b) Central banks for account of others | 76,018,436 |
| Total | 100,948,084 |
| (2) Not exceeding three months: | |
| (a) Central banks for their own account | 50,646,055 |
| (b) Central banks for account of others | 27,436,272 |
| (c) Other depositors | 1,218,374 |
| Total | 79,300,701 |
| IV. Sight deposits: | |
| (a) Central banks for their own account | 14,381,362 |
| (b) Central banks for account of others | 28,256,654 |
| Total | 42,638,016 |
| V. Miscellaneous liabilities | 1,350,552 |
| Total liabilities | \$301,781,690 |

the termination of Bulgaria's relations with the Reparation Commission were provided for also.

The agreement with Hungary involved unusual difficulties, which were solved in principle only at an all-night session on the eve of the adjournment of the January Hague Conference. Hungary's reparation charges and other treaty obligations up to 1943 were fixed in 1924 in connection with the issue of the Hungarian Reconstruction Loan under League of Nations auspices. This schedule, calling for payments rising from 7,000,000 to 14,000,000 gold crowns annually, was confirmed at The Hague, but the payments are to be made to the Bank for International Settlements, instead of the Reparation Commission, whose relationship with Hungary was ended. For the period 1944 to 1966 Hungary agreed to pay 13,500,000 gold crowns annually in final settlement of all treaty claims, but those payments were to be utilized by the creditor Governments to insure settlement of claims of Hungarian nationals whose properties were liquidated by the Succession States. Further liquidation of Hungarian property in the Succession States under the Economic Clauses of the Treaty of Trianon was ended, but existing agreements for the settlement of pre-war debts were to continue in force.

The settlement at The Hague of the problem of the Hungarian "optants" in Rumania and the other Succession States removed one of the principal obstacles to the peace of central Europe.

For six years the question had been before the Council of the League of Nations in one form or another, without solution. As later modified at the Paris Conference on Eastern Reparations, The Hague agreement provided for the establishment of two funds, known as "A" and "B" Funds, from which approved Hungarian claims were to be met, the Succession States being freed of further liability. The two funds were to be constituted from: (1) payments or restoration of properties by the Succession States under their national legislation; (2) the shares of Belgium, France, Great Britain, Italy, Japan, and Portugal in the payments to be made by Hungary up to 1943 inclusive; and (3) all payments to be made by Hungary after 1943. In addition, France, Italy, and Great Britain agreed to contribute jointly an average of 3,300,000 gold crowns annually.

"A" Fund, amounting to a maximum of 240,000,000 gold crowns (reduced to 219,500,000 gold crowns at Paris), was set aside to meet claims, approved by mixed arbitral tribunals, of Hungarian nationals whose properties had been expropriated in connection with the agrarian reforms enacted in Rumania, Czechoslovakia, and Jugoslavia. "B" Fund, amounting to a maximum of 100,000,000 gold crowns, was to compensate for the seizure or liquidation of other Hungarian properties, such as those of the Hapsburg Archdukes, the Church properties, etc. The com-

promise effected was without prejudice to the legal view of either side as regards the legality of the expropriations under the Treaty of Trianon.

The remaining problems disposed of involved the so-called Czechoslovakia "liberation debt" of £30,000,000 and the distribution of non-German reparation receipts. The Czechs had postponed payments on the liberation debt, which was advanced by the Allied governments, pending settlement of a number of counter-claims. At The Hague it was agreed that Czechoslovakia should pay 37 annuities of 10,000,000 marks (£500,000) each in full settlement of her liabilities.

In accordance with a promise made by the British, French, and Italian governments at the August, 1929, session of The Hague Conference, the agreement reached in January assigned to Greece: (1) the Bulgarian payments from Apr. 1, 1927, to Apr. 1, 1930, inclusive, which had not yet been distributed; (2) 76.73 per cent (instead of the Spa Conference share of 12.7 per cent) of subsequent payments by Bulgaria and by Hungary up to 1943. Small allocations of the Bulgarian and Hungarian payments were made to the other Succession States and the balance was distributed in the percentage fixed by the Spa Agreement. The Czechoslovak annuities were distributed among the creditor governments other than Rumania, Czechoslovakia, and Jugoslavia, on the Spa percentage basis. Shares of Belgium, the British Empire, France, Italy, Japan, and Portugal in Hungarian reparation up to 1943, and the whole of the Hungarian annuities from 1944 to 1966 were diverted to Funds "A" and "B." Finally, the liabilities of the Succession States for public properties in the ceded territories of the old Austro-Hungarian Empire were cancelled, as were all claims for "liberation debts" incurred by Jugoslavia, Rumania, Poland, and Czechoslovakia, except the payment agreed to by Czechoslovakia. See GERMANY under *History*.

BIBLIOGRAPHY. The texts of the Young Report, the Young Plan, and the various agreements signed at The Hague in January, 1930, together with authoritative discussions, will be found in the following sources: Dr. Leon Fraser, "The Reparation Settlement Signed June 7, 1929," *International Conciliation*, October, 1929 (published by the Carnegie Endowment for International Peace); "The Final Settlement of the Reparations Problems Growing Out of the World War," *International Conciliation*, September, 1930; Thomas W. Lamont, "The Final Reparations Settlement," *Foreign Affairs*, April, 1930; Carl Bergmann, "Germany and the Young Plan," *Foreign Affairs*, July, 1930; Sidney B. Fay, "The Reparation Settlement," *Current History*, March, 1930.

REPTILIA. See ZOOLOGY.

RESEARCH, NATIONAL. See NATIONAL RESEARCH COUNCIL.

RESERVE BANKS. See BANKS AND BANKING; FINANCIAL REVIEW.

RESERVE OFFICERS' TRAINING CORPS. See MILITARY PROGRESS.

REUNION, RA'ŋ'nyōn'. An island colony of France in the Indian Ocean, situated 420 miles east of Madagascar. Area, 970 square miles; population at the census of 1926, 186,637, of whom 180,694 were French citizens. St. Denis, population 23,390 in 1926, is the capital and Pointe des Galets, the chief port. Sugar and rum, production of which was 50,122 metric tons and 1,086,158 gallons, respectively, in 1928, are the leading

products. Others are coffee, manioc, tapioca, vanilla, and spices. Imports in 1928 totaled 152,906,000 francs; exports, 118,107,000 francs. The budget for 1929 balanced at 48,573,728 francs, while the public debt was 1,399,998 francs. There are about 80 miles of railway. The governor is assisted by a privy council and an elected council-general. The island sends one representative to the French Senate and two to the Chamber of Deputies. Governor in 1930, M. J. Repiquet.

REVOLUTION, AMERICAN, ANNIVERSARY CELEBRATIONS. See CELEBRATIONS.

RHEUMATIC FEVER. See MEDICINE, PROGRESS OF.

RHINELAND, EVACUATION OF. See GERMANY and FRANCE, under *History*.

RHODE ISLAND. POPULATION. According to the Fifteenth Census, the population of the State on Apr. 1, 1930, was 687,497. According to the State census of 1925, it was 679,260, as compared with 604,397 at the United States Fourteenth Census in 1920. The capital is Providence.

AGRICULTURE. The following table gives the acreage, production, and value of the principal crops in 1929 and 1930:

| Crop | Year | Acreage | Prod. Bu. | Value |
|----------------|------|---------|-----------|-------------|
| Hay | 1930 | 39,000 | 48,000* | \$1,071,000 |
| | 1929 | 45,000 | 64,000* | 1,394,000 |
| Corn | 1930 | 9,000 | 378,000 | 416,000 |
| | 1929 | 9,000 | 378,000 | 529,000 |
| Potatoes | 1930 | 2,000 | 380,000 | 437,000 |
| | 1929 | 2,000 | 250,000 | 450,000 |

* Tons.

Farms in the State numbered 3366 in 1930, as against 3911 in 1925 and 4083 in 1920.

MINERAL PRODUCTION. The total value of the mineral products of the State was \$4,045,849 for 1928, as against \$4,251,137 for 1927. The decline was mainly due to a smaller total value for the clay products of 1928, which totaled \$1,462,055; those of 1927 had totaled \$1,802,772. The production of stone of divers grades attained 1,278,190 short tons for 1928, as against 1,197,870 for 1927; the yearly value of this product was \$2,203,863 for 1928 and \$1,992,558 for 1927. There was a considerable production of raw clay in excess of the quantity used in the State's own clay products. The only other native mineral produced in excess of \$40,000 a year was sand and gravel.

FINANCE. State expenditures in the year ended Nov. 30, 1929, as reported by the U. S. Department of Commerce, were: for maintaining and operating governmental departments, \$6,977,781 (of which \$475,857 was for local education); for conducting public-service enterprises, \$17,248; for interest on debt, \$882,774; for improvements, \$5,157,805; total, \$13,035,608 (of which \$4,442,115 was for highways, \$921,011 being for maintenance and \$3,521,104 for construction). Revenues were \$15,471,248. Of these, property and special taxes afforded 56.4 per cent; departmental earnings and compensation to the State for officers' services, 3.8; sale of licenses, 34.1 (in which was included the gasoline sale tax, totaling \$1,441,128). Of funded State debt there was outstanding on Nov. 30, 1929, \$22,616,500, of which \$6,523,000 was for highways; net of sinking fund assets, the debt was \$18,331,647. On assessed property with a valuation of \$1,393,742,141 were levied in the year State taxes of \$1,254,368.

TRANSPORTATION. The total number of miles of railroad line under operation on Jan. 1, 1930, was 195.77; 13.73 miles of track were built in 1930.

EDUCATION. A building programme characterized as the most extensive in the history of the State was in progress during the year in its school system. Changes were made in the organization of the State Department of Education; three directors were appointed, to deal respectively with vocational education, adult education, and problems of research and survey. Progress was made at the Rhode Island College of Education in connection with a movement to lengthen the course for intending teachers to four years.

CHARITIES AND CORRECTIONS. The control of State institutions, penal, reformatory and for mental treatment, as well as that of five administrative departments promoting the welfare of divers classes of individuals, rested in 1929 in the State Public Welfare Commission. This body, as created by an act of 1929, consisted of three unpaid appointive members. With regard to the State institutions, it had as its executive officer a Director of State Institutions (L. A. Halbert). Its Children's Bureau, placing children in homes, had 1084 children so placed. Its Mothers' Aid Department dispensed aid to 375 families. Its Probation Department, keeping an officer in every court in the State, worked to keep families together and supervised 1566 adult and 704 juvenile probationers. The Bureau for the Blind instructed blind persons in trades in their own homes. The Psychological Bureau determined the intelligence levels of individuals to be instructed in institutions. The State institutions of care or custody, with their inmates as of Oct. 30, 1930, were: State Hospital for Mental Diseases, 171; State Infirmary (for the old and infirm), 903; Rhode Island State Prison and Providence County Jail, 703; Women's Reformatory, 37; Oaklawn School (girls), 32; Sockanosset School (boys), 179; State Home and School (neglected and dependent children not yet in foster homes), 226; Exeter School for the Feeble-minded, 525.

LEGISLATION. The State Legislature at its annual session amended the State inheritance tax law with regard to the allocation of the proceeds. A bill was passed to require that the question of Prohibition be submitted to the voters at the November election for a State-wide referendum. Unable to defeat such a bill, the Republicans in the lower house, with support from the advocates of Prohibition, put it through in a form requiring that the referendum be on the question of "retaining," instead of "repealing" the Prohibition law.

POLITICAL AND OTHER EVENTS. A writ of mandamus, sought by the State of Rhode Island, to compel a Federal Judge to turn over to the State Superior Court for trial a Federal Prohibition agent charged with having entered a dwelling without a search warrant, was denied by the U. S. Supreme Court on January 8. Thus was defeated a movement in the State to bring such Federal agents under the jurisdiction of its courts. The Democratic State convention adopted on October 1 a platform calling for repeal of the Eighteenth Amendment and for reform of the State constitution. It named former Senator Gerry candidate for the U. S. Senate and Theodore Francis Green candidate for Governor. The Republican State convention renominated Jesse H. Metcalf for U. S. Senator and Norman S. Case for Governor.

ELECTIONS. The State elected the entire Republican ticket on November 4, but at the same time

voted its disapproval of the Eighteenth (Prohibition) Amendment to the United States Constitution. United States Senator Jesse H. Metcalf, Republican, was reelected, defeating former Senator Peter G. Gerry, Democrat, by 112,374 votes to 109,615 (unofficial total). Governor Norman S. Case, Republican, was likewise reelected, obtaining 112,318 votes, to 108,643 (unofficial) for Green, Democrat. Other Republican State officers elected were James G. Connolly, Lieutenant-Governor; E. L. Sprague, Secretary of State; G. C. Clark, General Treasurer; and B. M. McLyman, Attorney-General. The Legislature remained Republican in both branches. In the referendum on the question submitted by the Legislature: "The Eighteenth Amendment to the Constitution of the United States—shall it be retained?", the vote was "No" in the proportion of more than 3 to 1. Two Republicans and one Democrat were elected to the House of Representatives.

OFFICERS. Governor, Norman S. Case; Lieutenant-Governor, James G. Connolly; Secretary of State, Ernest L. Sprague; Treasurer, George C. Clark; Comptroller, Albert E. Godfrey; Attorney-General, Benjamin M. McLyman.

JUDICIARY. Supreme Court: Chief Justice, Charles F. Starns; Associate Justices, Chester W. Barrows, John S. Murdock, Elmer J. Rathbun, John W. Sweeney.

RHODESIA, rō-dē'zhī-ā or -zī-ā. A British territory in south central Africa, extending northward from the Transvaal to the borders of the Belgian Congo and Tanganyika Territory. It is divided into Northern Rhodesia and Southern Rhodesia by the Zambezi River; Southern Rhodesia comprises the districts of Matabeleland and Mashonaland.

NORTHERN RHODESIA. In 1911 this region was formed from the former provinces of Northeast and Northwest Rhodesia. Area, 287,950 square miles. The permanent European population in December, 1928, was 7536; the native population a year earlier was estimated at 1,261,972. Capital, Livingstone. The chief crops are corn, cotton, wheat, tobacco, fruits, and rubber, and the minerals include gold, copper, zinc, and lead. The total value of all minerals mined in 1928 was £903,680 (£360,337 in 1927). In 1930, six companies with capital of \$38,668,000 were developing copper deposits in Northern Rhodesia estimated to contain 20,000,000 tons. Imports in 1928 totaled £2,422,841 and exports, £860,704. The chief exports are live animals, lead, copper, corn, flour, hides and skins, and tobacco. In 1928-29, revenues totaled £541,576 and expenditures, £525,168. Expenditures for 1929-30 were estimated at about £547,000. The administration consists of a governor and executive council and a legislative council, partly official and partly elected, the official members having the majority. Governor in 1930, Sir J. C. Maxwell, appointed Aug. 31, 1927.

SOUTHERN RHODESIA. The area of Southern Rhodesia is estimated at 149,000 square miles. The population at the census of May, 1926, totaled 873,647 (39,174 Europeans and 834,473 natives); estimated June 30, 1929, 1,032,703 (including 47,663 Europeans). Capital, Salisbury, with 22,000 inhabitants.

The principal crops are maize, tobacco, ground-nuts, legumes, and fodders. Fruit cultivation is expanding and the livestock industry is of major importance. The value of the total mineral output in 1928 was £4,448,300 (£4,238,300 in 1927). Im-

ports in 1928 amounted to £8,435,000 and exports to £8,004,000. Gold bullion, tobacco, asbestos, food-stuffs, cattle, chrome, and coal are the chief exports. For the fiscal year ended Mar. 31, 1929, revenues totaled £2,330,000 and expenditures, £2,208,525. For 1929-30, the estimated revenue was £2,353,000 and the estimated expenditure, £2,364,386. The public debt Mar. 31, 1929, was £6,145,881. At the end of 1928, there were 2525 miles of railway. A survey of a railway route from Rhodesia to Walvis Bay in Southwest Africa was authorized by Premier Moffat in 1930.

Executive power is vested in a governor aided by an executive council; legislative power in an elected legislative assembly. Governor and Commander-in-Chief in 1930, Sir Cecil H. Rodwell, appointed August, 1928; Premier and Secretary for Native Affairs, H. U. Moffat.

A customs union between Southern Rhodesia and the Union of South Africa was renewed in 1930. The South African Minister of Finance announced that the agreement was in anticipation of "some measure of eventual political union or federation." Resolutions condemning the British government's White Paper on East Africa and demanding withdrawal of the Government's instructions for carrying out the new native policy set forth in the White Paper were adopted at a meeting of white settlers and farmers in Rhodesia a Lusaka early in August. See KENYA and SOUTH AFRICA. UNION OF.

RICE. The world rice situation in 1930 showed a recovery from the heavy production of the crop year 1928-29 as stocks in surplus countries were reduced and prices towards the latter part of the commercial year indicated some improvement. The production of the crop year 1930-31 of nine rice-growing countries reporting to the International Institute of Agriculture, Rome, was placed at 1,313,527,000 bushels. The estimated yields of some of these countries were as follows: Japan 578,567,000 bushels, Java and Madura 260,913,000 bushels, and Italy 31,920,000 bushels. India in the crop year 1929-30 produced 2,364,777,000 bushels. These yields are in terms of rough rice of 45 pounds per bushel. Statistics of the world's rice production are generally incomplete as data on the large production of China are seldom available.

In the United States, as reported by the Department of Agriculture, a total area of 900,000 acres was harvested and the yield was estimated at 41,367,000 bushels, an increase of 905,000 bushels over the crop of 1929 but over 1,000,000 bushels below the average of the past four years. The average yield per acre was 43.1 bushels compared with 46.6 bushels in 1929. The drought which characterized the year was not seriously injurious to the crop, although in some sections there was a shortage of water for irrigation. On the basis of an average farm price of 76.4 cents per bushel on December 1, the total value of the crop was \$31,923,000 as compared with 97.7 cents per bushel and a total value of \$39,536,000 in the preceding year. The crops of the five States included in the estimates were as follows: Louisiana, 17,676,000 bushels; Texas, 8,463,000 bushels; Arkansas, 7,912,000 bushels; California, 7,271,000, and Missouri, 45,000 bushels. The average yields per acre were 36, 45.5, 46, 66.1 and 45 bushels respectively. The total yields of Texas and California were approximately a million bushels above the 1929 yield while Louisiana produced 1,000,000 bushels less than in the previous year.

The exports of rice by the United States in the fiscal year ended June 30, 1930, amounted to 234,535,000 pounds valued at \$9,598,000, a decrease of 78,870,000 pounds below the exports of the preceding fiscal period. In addition to the rice grain 54,373,000 pounds of rice flour, rice meal, and broken rice were exported which was 24,906,000 pounds less than the quantities shipped abroad the year before. The imports for the fiscal year 1930 were recorded as follows: cleaned rice, 20,946,000 pounds; uncleaned rice, 7,005,000 pounds; patna rice, for use in canned goods, 2,176,000 pounds; and rice flour, rice meal, and other rice products, 1,085,000 pounds. These quantities were all under those imported the year before. The Federal rice-grading service in charge of the Department of Agriculture was extended during the year in Arkansas and Texas.

RICE INSTITUTE. A coeducational institution for higher education in Houston, Texas; opened in 1912. The enrollment in the autumn of 1930 was 1369, and the faculty numbered 95. The plant equipment and productive funds of the institution were estimated at \$15,000,000, and the income from endowment for the fiscal year 1929-30 was in excess of \$600,000. The library contained approximately 81,100 volumes. President, Edgar Odell Lovett, Ph.D., Sc.D., LL.D.

RICKETS. See FOOD AND NUTRITION.

RIDGE, WILLIAM PETT. An English novelist, died in Chislehurst, Kent, Sept. 29, 1930. Born in Chartham, near Canterbury, in 1860, he was educated in the Birkbeck Institution. He was best known for his humorous stories of lower-class life in London. His books include: *A Clever Wife* (1895); *Secretary to Bayne, M. P.* (1897); *Mord Em'ly* (1898); *A Breaker of Laws* (1900); *Lost Property* (1902); *The Wickhamses* (1906); *Thanks to Sanderson* (1911); *The Remington Sentence* (1913); *The Happy Recruit* (1914); *The Kennedy People* (1915); *The Amazing Years* (1917); *Top Speed* (1918); *Bannerton's Agency* (1921); *Miss Mannering* (1923); *Just Like Aunt Bertha* (1925); *The Two Mackenzies* (1928); *The Slippery Ladder* (1929); *Eldst Miss Collingwood* (1930).

RIFLE SHOOTING. See SHOOTING.

RIISER-LARSEN, HJALMAR. See POLAR RESEARCH.

RIKER, ANDREW LAWRENCE. An American inventor and engineer, died in Fairfield, Conn., June 1, 1930. He was born in New York City, Oct. 22, 1868, and attended Columbia University. His first important invention was the locomobile, on which was based his electric tricycle (1884), a four-wheeled electric motor car (1895), and a gasoline car (1902). In 1899 his electric motor car established a world's speed record of one mile in 63 seconds on Long Island, which was held for ten years for electric cars, and in 1908 a racing automobile that had been developed from his early gasoline car won the Vanderbilt Cup race. He was among the first to manufacture electric trucks and other vehicles. He was president of the Riker Electric Motor Company and of the Ventilouvre Company, and from 1902 to 1920 was vice president and chief engineer of the Locomobile Company of America. In 1915 he was appointed a member of the Naval Consulting Board, acting as chairman of the committee on internal combustion engines. He was also first president of the Society of Automotive Engineers, and in 1900 received a medal from the French government for meritorious achievement in automobile design.

RIO GRANDE DO SUL. See **BRAZIL** under *History*.

RIO GRANDE RIVER. For boundary commission's recommendations for straightening of channel, see **MEXICO** under *History*.

RIVOIRE, révwär, ANDRÉ. A French poet, dramatist, and critic, died in Paris, Aug. 19, 1930. He was born in Vienne (Isère) May 5, 1872, and attended the Lycée de Lyon and Lycée Henri IV. From 1897 to 1912 he was secretary of the editorial board of the *Revue de Paris*. He also acted as dramatic critic for *L'Echo de Paris* and *Le Temps*. His verse was noted for its grace, delicacy, and freedom from the affectations of the Symbolists. Among his poetical works are *Les vierges* (1895); *Berthe aux grands pieds* (1899); *Le songe d'amour* (1900); and *Le chemin de l'oubli* (1904), which was crowned by the Academy. His dramas include: *La peur de souffrir* (1899); *Il était une bergère* (1905); *Le bon roi Dagobert* (1908); *Mon ami Teddy* (with Lucien Besnard, 1910); *Pour vivre heureux* (with Yves Mirande, 1912); *L'Humble offrande* (1916); *Roger Bontemps* (1920); *Juliette et Roméo* (1920); *La belle Angevine* (with Maurice Donnay, 1922); *Les baisers de Panurge* (1926); and *Pardon, Madame* (with Romain Coolus, 1930). In English appeared *The Little Shepherdess* (1915). He was an officer of the Legion of Honor.

ROADS AND PAVEMENTS. Stimulated by desire to relieve the financial and industrial depression and also by increasing unemployment, large sums of money were provided for highway construction in 1930 and still larger sums were appropriated for 1931. This action was taken by Federal and State governments and counties while cities and villages increased their usual street-paving work. Congress increased Federal aid to State highway construction by \$50,000,000 a year, bringing the total to \$125,000,000, first effective for the year 1930-31. As this money had to be matched by State appropriations and most of the State legislatures were not in session in 1930, Congress authorized \$80,000,000 for advances to the several States, against their Federal-aid allotments, to be repaid by 1936. Of the \$724,000,000 of funds announced by President Hoover on Dec. 23, 1930, as having been provided for public works, \$220,000,000 was allocated to highway construction, including the regular Federal-aid appropriation, enlarged to \$125,000,000, the \$80,000,000 advance to the States and special allowances for use in drought-afflicted States. More than 90 per cent of the \$220,000,000 was to be specifically allotted to the several States, most of it for the construction of the Federal-aid highway system.

It should be understood that the actual road construction by Federal aid, matched dollar for dollar by State funds, is done by the several States, but the location, design and construction of the roads, and of the bridges included, is subject to the approval of the Secretary of Agriculture, represented by the Bureau of Public Roads. The authorized permissible length of the Federal-aid system totals 206,000 miles, including extensions authorized by Congress in 1928. This is 7 per cent of the road mileage certified by the several States, plus recent increased allowances equal to the mileages of the designated system in each State lying within national forests, Indian and other reservations—the Federal government now paying the entire cost of road improvements on public lands whereas formerly the States in which

those lands are located paid half the cost of improving such roads if they were a part of the Federal highway system.

Of the 206,000 miles of roads just mentioned 86,218 had been improved with Federal aid on June 30, 1930, including some still under "stage construction." In the fiscal year 1929-30 7317 miles were finished and at the close of the year about 2200 were under stage construction or reconstruction. Reconstruction extended to only some 20 miles. It was the first reconstruction work since Federal aid began but it would increase yearly thereafter, because of the increasing age and mileage of the Federal-aid system.

There was a temporary decline in Federal-aid construction in 1929-30, because in the earlier years of the work the Federal appropriations were not matched by the States, so the money piled up, to become available later. When the lag was taken up less Federal aid was available than before, until the addition of \$50,000,000 a year, already mentioned.

Besides the Federal-aid roads, some of the States spent huge sums in highway improvement. Due in part to the drive for public works construction late in 1929 and on into 1930, road improvement for the first ten months of the year, in all the 48 States, totaled 38,217 miles, an increase of 5715 miles over the full year 1929, according to a report made to the Association of Highway Officials by its executive secretary. The 38,217 miles were thus divided: paved surface, 12,500; low-type surface, 15,763; graded and drained, 9951. Of a total of 3,024,223 miles of roads of all kinds, 662,435 had some kind of surfacing on November 1. Large State road-bond issues voted at the November elections were \$83,000,000 by New Jersey and \$75,000,000 by Louisiana.

The amount of road construction by counties and towns and of street paving in cities during the year was unknown, but it was certain that this work, combined with State highway work, makes up a large percentage of the total yearly bill for public works construction in the whole country. That only a beginning had been made appears from the figures given above, showing that for the 48 States only a fifth of the highways had been improved, while of that only a good start had been made towards so-called permanent surfacing. In the cities, too, including many of large to medium size, only a good start had been made towards satisfactory pavements. How best to finance road and street construction was a problem receiving much attention. In municipalities, first costs were met by assessments on abutting real estate and by bond issues, supplemented by taxation. The same was more or less true for counties. For State road construction the Association of State Highway Officials, at its November convention, adopted a revised code of principles, first as to road classification and second as to financing and general administration. A summary of this code is given in *Engineering News-Record*, Nov. 27, 1930, p. 852. In part the summary reads:

All public roads should be classified as: (1) primary roads, comprising the federal-aid and State systems; (2) secondary roads, comprising the principal county trunk or State-aid highways; and (3) third-class roads, comprising purely local or township roads.

State and federal funds for new construction should be devoted first to primary highways and should be expended by or under the supervision of the State highway department. Secondary highways should be financed by local general taxes and State aid. Third-class roads should be financed by local general taxes, but special assessments on adjoining land may be justified to defray a portion

of the cost. Improvement districts to raise funds by special assessment may properly be organized where special benefits result from extraordinary highway undertakings in congested districts; this practice should be limited to conditions that are not average or normal and does not apply to rural districts.

In financing state roads general principles may be set down as follows: (1) States in the initial stage of highway development should issue bonds to defer that portion of the annual charge for construction which would overburden either property or the road user; (2) States where the original construction programs are well under way can in the main finance new construction from current funds, utilizing bond issues to defer the costs of special projects; (3) States where original construction is largely completed are concerned chiefly with maintenance and reconstruction and should depend on current funds except in cases of emergency. State bonds should be serial, maturing over 30 years, and bonds for political subdivisions of the state should mature over 20 years and also be serial. Maturities should be scheduled so that annual payments will be as nearly uniform as practicable.

Sound financing requires that the retirement of State bonds, as well as the interest on them, be provided for by motor-vehicle license fees and gasoline taxes, but these payments should be guaranteed by the full taxing power of the State as a provision against failure of these levies and to secure a lower rate of interest.

A fixed charge should be made for each class and weight of motor vehicle, in the form of a license fee in lieu of all personal property taxes or in the form of a combination license fee and personal property tax. The total rate of such a tax, however, as well as the gasoline tax (which is not to be in lieu of a license or property tax) should be as uniform in the several States as practicable, consistent with State constitutions, road-bond obligations or road needs. The State should be the sole agency levying special taxes on the motor vehicle or the highway user.

All motor-vehicle funds including personal property taxes should be used for highway purposes.

Toll bridges should be built only when it is impossible to finance them by any other method. If toll bridges are constructed the construction should be financed by the State or political subdivision and the bridge made free as soon as the financial obligations of interest and original investment are met.

See AGRICULTURE, UNITED STATES DEPARTMENT OF; AUTOMOBILES; for highways of other countries see articles on each under *Communications*.

ROBERTSON, JAMES WILSON. A Canadian agriculturist and educator, died in Ottawa, Ont., Mar. 20, 1930. Born in Dunlop, Ayrshire, Scotland, Nov. 2, 1857, he was educated in Scotland before going with his parents in 1875 to Canada, where he engaged with his father in farming and the management of cheese factories. He was professor of dairying at Ontario Agricultural College in Guelph from 1886 to 1890, a part of which time (1888-90) he was also non-resident lecturer on dairy husbandry at Cornell University in Ithaca, N. Y. During 1890-95 he was dairy commissioner for the Dominion of Canada and agriculturist to the Central Experimental Farm in Ottawa and, from 1895 to 1904, he was commissioner of agriculture and dairying for the Dominion. In 1902 he was appointed one of the governors of the Victorian Order of Nurses in Canada, having previously (1897) served as honorary secretary of a committee for founding the order. He was principal of the Macdonald College at Saint Anne de Bellevue in Quebec from 1905 to 1910, becoming in the latter year chairman of the Royal Commission on Industrial Training and Technical Education. He became chief commissioner of the Boy Scouts of Canada in 1919 and chairman of the executive committee of the Canadian Red Cross Society in 1920. He was a frequent lecturer on educational and agricultural subjects and was the author of *Conservation of Life in Rural Districts* (1911).

ROBERTSON, THORBURN BRAILSFORD. A British biochemist, died Jan. 25, 1930. He was born in Edinburgh in 1884 and was educated at the University of Adelaide, South Australia. In 1904

he went to the United States as a research student in the University of California, where, in 1905-07, he became assistant in physiology and in 1916 professor of biochemistry and pharmacology. After a year (1918-19) at the University of Toronto as professor of biochemistry, Professor Robertson returned to the University of Adelaide to become professor of biochemistry and general physiology. After he was appointed chief officer in charge of investigations on the nutrition of animals for the Commonwealth Council for Scientific and Industrial Research, he gave up his teaching but continued as a member of the senate at the University of Adelaide. He was one of the founders of the *Australian Journal of Experimental Biology and Medical Science* and, in addition to numerous papers in scientific journals, he wrote *The Universe and the Mayonnaise, and Other Stories for Children* (1914); *The Physical Chemistry of the Proteins* (1918); *Principles of Biochemistry* (1920, 2d ed., 1924); *The Chemical Basis of Growth and Senescence* (1923).

ROCHESTER, UNIVERSITY OF. A nonsectarian institution of higher education for men and women in Rochester, N. Y., founded in 1850. It consists of three schools—the college of arts and sciences, composed of a college for men and a college for women; the Eastman School of Music; and the school of medicine and dentistry. A school of nursing is also maintained in conjunction with the Strong Memorial Hospital, the property of the university. The new River Campus of the college for men, completed and occupied for the first time in September, 1930, was formally dedicated on October 10-12. It comprises 11 colonial buildings, in addition to five fraternity houses already constructed, on a campus of 87 acres on the banks of the Genesee River in the outskirts of the city. The old campus of 24 acres was rededicated to the exclusive use of the college for women, with buildings remodeled and renovated.

The enrollment for the autumn session of 1930, exclusive of extension division and special music students, totaled 1678, distributed as follows: Arts and science, 1125, of whom 654 were men and 471 were women; bachelor of music course, 395; medicine and dentistry, 158. For the summer session, 927 were enrolled in the arts college and 382, in the music school. There were 1546 in the extension division. The faculty had 377 members, distributed as follows: College of arts and science, 135; school of music, 74; and school of medicine and dentistry, 168, of whom 84 were on full time. The productive funds as of June 30, 1930, amounted to \$29,082,941, and the total resources, including land, buildings, equipment, and endowment, were approximately \$50,000,000. The main library contained 136,405 volumes; the Sibley musical library, 31,702 volumes; and the school of medicine library, 23,159 volumes. President, Rush Rhees, DD., LL.D.

ROCHESTER MEMORIAL ART GALLERY. See ART MUSEUMS.

ROCKEFELLER FOUNDATION, THE. An institution chartered in 1913 "to promote the well-being of mankind throughout the world," and in 1929 merged with the Laura Spellman Rockefeller Memorial, forming a new organization which received from the two consolidating corporations all their assets and assumed all their obligations. Its plan of work provided for cooperation toward the advancement of knowledge in the fields of public health, the medical sciences, the natural sciences, the social sciences,

and the humanities. During the year 1930 approximately \$16,500,000 was expended by the foundation for work in the five fields in which its interests lie.

INTERNATIONAL HEALTH DIVISION. The governments of 39 States of the United States and 43 foreign countries were assisted in projects for improving public health conditions. This aid included participation in studies of yellow fever, malaria, hookworm disease, tuberculosis and respiratory diseases; in campaigns for the reduction of yellow fever in Brazil; in demonstrations of malaria and hookworm disease control and of local health work; and in the development of essential services of State and National health departments. Assistance also was given toward the advancement of the work of the health organization of the League of Nations, and special provision was made for epidemiological investigations in several States of the United States.

THE MEDICAL SCIENCES. Grants for the advancement of medical education were made in the form of endowments or contributions toward construction programmes or development of departments, or toward maintenance of a number of institutions, including the following: Albany Medical College, Albany, N. Y.; University of Rochester, Rochester, N. Y.; University of Montreal, Canada; University of Lyon, France; University of Paris, France; University of Breslau, Germany; University of Sydney, Australia; All-India School of Hygiene and Public Health, Calcutta, India; Graduate School of Hygiene and Public Health, University of the Philippines, Manila; National Central University College of Medicine, Woosung, China; Peiping Union Medical College, Peiping, China; Shanghai Union Medical College, China; Shantung Christian University, China; Chulalongkorn University, Bangkok, Siam.

A number of grants for fluid research funds or special research projects in medical schools were made to groups or departments engaged in research important to the advancement of medical knowledge. Among the institutions receiving such aid were the following: Stanford University, California (fluid research fund, research in diseases of the kidneys); University of California (chemical aspects of vitamins and hormones); Yale University (fluid research fund, dental pathology); the Johns Hopkins University (study of obstetrical records); Harvard University (physiology and physical chemistry); Cornell University (rôle of internal secretion glands in relation to growth and inheritance); Columbia University (medical mycology, studies on nutrition in Porto Rico); Trudeau Foundation (tuberculosis); University of Rochester (fluid research fund, diathermy studies); University of Pennsylvania (living tissue study); University of Toronto (pediatrics); McGill University (surgery); Tuberculosis Study Clinic, Jamaica. B. W. I. The Rockefeller Foundation also granted and itself administered approximately 100 fellowships in medicine for graduate students to enable them to study in countries other than their own. In addition, funds were given to the National Research Council (Washington), the Medical Research Council of Great Britain, the *Notgemeinschaft der Deutschen Wissenschaft*, and the Hungarian Scholarship Council for the support of fellows in medicine, of their own selection.

In addition to assistance to institutions of nursing education the foundation made grants

during the year toward studies of hospital service and the training of executives for such service; toward the work of the Committee on the Cost of Medical Care; to the United Hospital Fund Committee on Dispensary Development for transferring its activities to permanent agencies; to the National Medical Association of China for the development of plans for merging the different medical associations of China; and to the China Medical Board, Inc.

THE NATURAL SCIENCES. In the field of the natural sciences contributions toward endowments, building programmes, apparatus and equipment, maintenance, general development, etc., were made to the following universities and scientific institutions: Hopkins Marine Station, Stanford University, Calif.; Scripps Institution of Oceanography, University of California; California Institute of Technology, Pasadena; Field Museum of Natural History, Chicago; Woods Hole Oceanographic Institution, Mass.; Harvard University, Cambridge; University of Minnesota; University of Washington, Seattle; Alaska Agricultural College and School of Mines, Fairbanks; Bermuda Biological Station for Research; University of Vienna, Austria; Research Institute of Experimental Biology, Carlsberg Foundation, Copenhagen, Denmark; Henry Herbert Wills Physics Laboratory, University of Bristol, England; Davy-Faraday Research Laboratory, Royal Institution of Great Britain, London; Marine Biological Stations, Roscoff and Banyuls-sur-Mer, France; University of Munich, Germany; Kaiser Wilhelm Institutes for Cell Physiology and Physics, Berlin-Dahlem, Germany; Observatory at Johannesburg, Union of South Africa; Fukien Christian University, Foochow, China; Tsing Hua University, Peiping, China; Yenching University, Peiping, China; Keio Gijuku University, Tokyo, Japan; Tohoku Imperial University, Tokyo, Japan; Chulalongkorn University, Bangkok, Siam; Bishop Museum, Hawaii.

In addition, contributions toward the advancement of knowledge in the field of the natural sciences were made through specific appropriations for research to the following institutions and organizations: Smithsonian Institution, Washington, D. C. (experiments in radiation); University of Chicago (research in biological sciences, experiments in light velocity); the Johns Hopkins University (biological research, chemical research); Harvard University (astronomy); Washington University, St. Louis, Mo. (fluid research fund); Princeton University (geology); University of North Carolina (natural sciences); National Research Council (research aid fund); National Research Fund of the National Academy of Sciences; II Physikalisches Institut, University of Vienna, Austria (atomic disintegration); University of Freiburg, Breisgau, Germany (physical chemistry); Kaiser Wilhelm Institute of Physical Chemistry and Electrical Chemistry, Berlin-Dahlem (colloid chemistry); Royal Hungarian Joseph Technical University of Budapest, Hungary (chemistry of carbohydrates); Bishop Museum, Hawaii (Polynesian anthropology); Australian National Research Council (anthropological studies); human paleontological research carried on by investigators in Asia.

THE SOCIAL SCIENCES. Research programmes were aided in the following institutions or organizations: University of California (public ad-

ministration); President Hoover's Conference on Unemployment, and Research Committee on Social Trends; Association for the Study of Negro Life and History, Washington, D. C.; Harvard University (industrial hazards, international law, crime and criminal justice in Boston, economic research); Columbia University, New York (Council for Research in the Social Sciences, compensation for automobile accidents); Economic Foundation, New York City; National Bureau of Economic Research, New York City; Social Science Research Council, New York City; Fisk University, Nashville, Tenn. (social sciences); University of Toronto (child study and parent education); McGill University, Canada (fluid research fund); Austrian Institute for Trade Cycle Research, Vienna (cyclical fluctuations); National Institute of Industrial Psychology, London (general research programme); Notgemeinschaft der Deutschen Wissenschaft (anthropological study of the German people); Institute of Pacific Relations (international programme of research in the social sciences); University of Hawaii (sociological research).

Contributions were also made toward endowments, buildings, apparatus and equipment, maintenance, etc., in the following universities, institutions or organizations: Institute of Human Relations, Yale University; Committee on Cost of Medical Care, Washington, D. C.; National Catholic School of Social Service, Washington, D. C.; American University, Washington, D. C.; Commission on Interracial Cooperation, Atlanta, Ga.; Department of Anthropology, University of Chicago; Graduate School of City Planning, Harvard University; Laboratory of Anthropology, Santa Fe, N. M.; School of Citizenship and Public Affairs, Syracuse University, New York; American Law Institute, New York City; Cities Census Committee, New York City; National Institute of Public Administration, New York City; University of Virginia, Charlottesville, Va.; Canadian National Committee for Mental Hygiene, Toronto, Canada; Institute of Economics and History, Copenhagen, Denmark; Institute for Comparative Research in Human Culture, Oslo, Norway, general budget; Post-graduate Institute of International Studies, Geneva.

THE HUMANITIES. In this field the foundation made grants to the following universities and institutions: University of Chicago (studies in comparative philology); the Johns Hopkins University (fluid research fund); University of North Carolina (toward financing the University Press); British Museum, London (toward expenses of a new edition of its catalogue); American Library in Paris (general budget); Bibliothèque Nationale, Paris (purchase of journals and for expenses incurred in printing its general catalogue); American School of Classical Studies, Athens (fellowships in archaeology for workers excavating the Athenian Agora); American Schools of Oriental Research, Jerusalem and Bagdad (endowment and current expenses). During the year library commissions from the Universities of Oxford and Cambridge, Eng., visited libraries in the United States and Canada as guests of the foundation. Grants in aid of research were also made to the American Council of Learned Societies and to a number of individuals engaged in humanistic studies.

Headquarters of the Rockefeller Foundation are at 61 Broadway, New York City. The presi-

dent of the organization in 1930 was Max Mason, Ph.D., who assumed office on Jan. 1, 1930.

ROCKETS. See **AERONAUTIC ROCKET EXPERIMENT.**

ROCKS. See **GEOLOGY.**

ROERICH COLLECTION. See **ART SALES.**

ROGERS, ROBERT WILLIAM. An American Orientalist, died in Chadds Ford, Pa., Dec. 12, 1930. He was born in Philadelphia, Pa., Feb. 14, 1864, and attended the Universities of Pennsylvania, Johns Hopkins, Haverford, and Leipzig. After serving as professor of English Bible and Semitic history at Dickinson College during 1890-92, he was appointed to the chair of Hebrew and Old Testament exegesis at Drew Theological Seminary, which he continued to hold until his retirement in 1929. His publications include: *Outlines of the History of Early Babylonia* (1895); *A History of Babylonia and Assyria* (2 vols., 1900; 8th ed., rev., 1915); *The Religion of Babylonia and Assyria* (1908); *Cuneiform Parallels to the Old Testament* (1912); *The Recovery of the Ancient Orient* (1912); *History and Literature of the Hebrew People* (1917); and *History of Ancient Persia* (1929).

ROLLINS COLLEGE. A nonsectarian, co-educational institution of higher learning in Winter Park, Fla., founded 1885. The enrollment for the fall term of 1930-31 totaled 425, of whom 59 were seniors, 70 juniors, 98 sophomores, 175 freshmen, 2 graduate students, 5 specials and 16 unclassified. The full-time faculty members numbered 48 and the complete staff of special lecturers and part-time faculty members brought this total to approximately 70. The productive endowment funds of the college amounted to approximately \$1,250,000, yielding an income of about \$67,500 per annum. The income from other sources amounts to about \$150,000 annually in addition. The library contained 32,450 volumes. During 1930 three new dormitory units were completed, in a Spanish-Mediterranean type of architecture especially suitable for this locality. Also during the year gifts aggregating approximately \$900,000 for endowment purposes were received. Some of the special features at Rollins are the "Winter School," the Institute of Statesmanship, and the religious conference held under the auspices of the Federal Council of the Churches of Christ in America. President, Hamilton Holt, LL.D., Litt.D., L.H.D.

ROLSHOVEN, JULIUS. An American painter and teacher, died in New York City Dec. 7, 1930. Born in Detroit, Mich., in 1858, he studied with Hugo Crola at the Düsseldorf Academy, with Löfftz in Munich, and with Fleury and Bouguereau in Paris. He founded the Rolshoven life class in Paris in 1890 and a similar class in London in 1896. "The Chioggia Fishing Girl" and two of his etchings are in the Cincinnati Museum, and "The Refectory of San Damiano, Assisi" is on exhibition in the Detroit Institute. He also is represented in the Minneapolis, Brooklyn, and Santa Fé (N. M.) Museums.

ROMAN CATHOLIC CHURCH. Four important Encyclicals were sent out to the world by Pope Pius XI, during 1930. The first urged the promotion and wider use of the Spiritual Exercises; the second, a review of the principal events of the Jubilee year, which was extended to June; the third, on the Christian education of youth (January 11) and the respective parts the State and the Church must take in it; and the fourth (April 22), commem-

orating the fifteenth centenary of the death of St. Augustine. A letter (February 8) to Cardinal Pompili suggested world-wide reparation services for "the horrible and sacrilegious wickedness perpetrated in Russia against God and souls." On May 4 in approving the decree for the canonization of Cardinal Bellarmine, the Pope delivered a glowing eulogy of the Jesuits and their work. Cardinal Robert Bellarmine, S.J., and the eight Jesuit North American martyrs, Isaac Jogues, René Goupil, John Lalonde, John de Brébeuf, Gabriel Lalemant, Anthony Daniel, Charles Garnier, and Noel Chabanel, were canonized June 29; Catherina Thoma, a Spanish canoness, and Lucia Filippini, Italian foundress of a teaching congregation of Sisters, were canonized June 22. Cardinal Rouleau of Quebec and a number of American and Canadian bishops and Jesuits attended the canonization ceremony of the North American martyrs. Theophilus da Corte of the Franciscan Order was also canonized.

On June 30 five new cardinals were created at a consistory and in an allocution the Pope reviewed the affairs of the Church in the world, stressing "events which caused sorrow and anxiety," especially the trouble in Malta (q.v.) with the British government over church administration, and proselytizing in Rome. In his Christmas address to the cardinals (December 24) he deplored the "universal financial and economic uneasiness" and made an earnest plea for "a better social and international arrangement inspired by greater justice and Christian charity." He wished peace to all the world, the peace "of Christ, not a sentimental, confused and indiscreet pacifism," and announced a coming encyclical on "Christian marriage, its conditions, needs and the present-day evils affecting the family and society."

In 1930 the dioceses of the world numbered 1251, an increase of five; the Vicariates Apostolic were 261, an increase of six. The Holy See had diplomatic representatives accredited to 35 nations. Twelve countries had ambassadors and 24 ministers plenipotentiary at the Vatican. During the Jubilee year there were 543 pilgrimages to Rome with 126,992 members. Of these 21 were from North America with 3175 members.

THE CARDINALS. Of the five new cardinals created June 30, three were prelates attached to the Roman Curia and two holding residential sees. They were the Most Rev. Francesco Marchetti-Selvaggiani, Titular Archbishop of Seleucia, Secretary of the Sacred Congregation of the Propagation of the Faith; the Most Rev. Raffaello Carlo Rossi, Titular Archbishop of Thessalonica, Assessor of the Consistorial Congregation; the Rt. Rev. Giulio Serafini, Titular Bishop of Lampsacus, Secretary of the Sacred Congregation of the Council; the Most Rev. Leme da Silveira Cintra, Archbishop of Rio de Janeiro, Brazil, and the Rt. Rev. Achille Liénart, Bishop of Lille, France. Eight cardinals died during the year, reducing the membership of the Sacred College to 29 Italians and 30 non-Italians. The deceased cardinals were: Carlo Perosi (February 22); Merry del Val (February 26); Calvalcanti (April 18); Luçon (May 28); Vanutelli (July 9); Casanova y Marzo (October 23); Charost (November 7); Mistrangelo (November 7). Cardinal Pacelli succeeded Cardinal Gasparri as Secretary of State February 10.

THE HIERARCHY. Bishops Sebastian G. Messmer of Milwaukee, Wis., died August 4, and Austin Dowling of St. Paul, Minn., November 29.

Rt. Rev. Ferdinand Brossart, retired Bishop of Covington, Ky., died August 6, and the Rt. Rev. Aurelius Stehle, O.S.D., Archabbot of St. Vincent's, Latrobe, Pa., died February 13.

Bishop Samuel A. Stritch of Toledo was appointed Archbishop of Milwaukee, November 12. Bishop Francis J. L. Beckman of Lincoln, Neb., was appointed Archbishop of Dubuque, January 23; Mgr. J. H. Schlarmann of Belleville, Ill., Bishop of Peoria, April 19; the Rev. Louis B. Kucera of Protovin, Iowa, Bishop of Lincoln, Neb., June 24; the Rev. Dr. Edwin V. O'Hara, Director of the Rural Life Bureau, N.C.W.C., Bishop of Great Falls, Montana, August 5, succeeding Bishop Mathias C. Lenihan, resigned and named titular Archbishop of Preslav. Mgr. James Cassidy, V.G., of Fall River, Mass., was named auxiliary of that see March 26; Rev. Thomas J. Emmet, S.J., Vicar Apostolic of Jamaica, B.W.I., July 10, succeeding Bishop J. N. Dinand, resigned; the Rev. Joseph Espelage, O.F.M., of Cincinnati, Ohio, Vicar Apostolic of Wuchang, China, and Rev. Thomas Wade, S.M., of Providence, R. I., Vicar Apostolic, of the Solomon Islands, and the Rev. John J. Norris, S.M., Apostolic Prefect in Korea April 13. The Rev. Francis Liou, the eleventh native Chinese priest so honored, was named Bishop and Vicar Apostolic of Fenyang July 14. The Internunciature at Haiti was raised to the rank of Nunciature and a new Nunciature was created for Santo Domingo. Archbishop Fietta, Internuncio to Central America, was made Nuncio to the two West Indies republics.

The annual meeting of the hierarchy at Washington, November 11-13, was attended by three cardinals, eight archbishops and 53 bishops. The administrative committee in formal resolutions urged coöperation with the National Administration for the betterment of economic conditions and called attention to and urged application in every field of business and civic life of the Christian principles of justice and charity particularly as set forth in the Encyclical *Rerum Novarum* of Leo XIII and the bishops' reconstruction programme and joint pastoral letter of the bishops of the United States of 1919. The committee stated that every bishop in the United States through agencies at his command, particularly charity and aid organizations, was doing his utmost to relieve the condition of the unemployed.

STATISTICS. The Catholic population of the United States, Alaska, and Hawaii, according to the *Official Directory* for 1930, was 20,203,702, an increase of 90,944 over the previous year. The administration of the Church was devolved on 16 archbishops (four of them cardinals); 102 bishops; and 26,925 priests (of these 9052 were members of the regular orders), an increase of 151 and 421 respectively. There were 18,166 churches, increase 230; 135 seminaries, with 16,300 students, increase 1614; 219 men's colleges; 743 women's schools. Parish schools numbered 7225 with pupils 2,248,571; orphan asylums 329 with inmates 51,523; hospitals 624; homes for aged 142.

Vatican statistics estimated that there were 341,430,900 Catholics in the world, divided up geographically: America, 109,097,000; Europe, 208,882,000; Asia, 16,536,900; Africa, 5,330,000; Australia, 1,585,000. In England and Wales there were 2,206,255, an increase of 31,571 for the year. There were 22,740 in the British army. The Institute of Social and Religious Research in its

survey found that three out of every 10 adult church members in the United States were Catholics. There were 211,437 Negro Catholics, and 3049 were made converts during the year.

Representatives of the 40 Provinces, into which the Jesuit order all over the world, with its 21,678 members, is divided, were received by the Pope at the Vatican on September 30. They were attending a convention in Rome on business of their order. There are seven of these Provinces in the United States: New York—Maryland, New England, Chicago, St. Louis, New Orleans, and two on the Pacific coast, San Francisco, which takes in California, Nevada, Utah, Arizona, of the old Province, and a new one (established December, 1930) to include Oregon, Montana, Washington and Idaho. There were 719 Jesuits on the Pacific coast. They served nine Indian missions in the northwest and 17 mission stations in Alaska and had nine missionaries in China. Ten per cent, or 2590 of the whole order, were laboring on foreign missions.

The official figures of the Sacred Tribunal of the Rota showed that during 1929 the matrimonial cases dealt with numbered 58. In only 20 of these was a decree of nullity returned. In 28 of the cases the parties were poor and paid no fees; and of the 30 who paid, only eight secured nullity decrees, the remaining 22 marriages being declared valid. In the cases of the poor parties 12 marriages were declared null and the others valid.

EDUCATION. Reports prepared by the Executive Secretary of the Department of Education of the National Catholic Welfare Conference showed that there were in the United States 89 Catholic colleges for women and 73 for men. In this number were included 14 universities with undergraduate schools. The enrollment of collegiate grade was 86,306 with 6333 instructors. Of the latter 47 per cent were members of religious teaching communities. The total valuation available of 124 of these institutions was \$240,939,095. A total of 2,640,000 students began the scholastic year 1930-31 in 10,481 Catholic institutions. They were divided into 2,283,000 pupils in 7811 elementary schools; 228,000 students in 2235 high schools; 102,000 students in 171 colleges; 9000 students in 77 normal schools; and 18,000 students in 187 seminaries.

A biennial survey 1926-28 gave a total of 2,201,942 pupils attending 7664 elementary schools, an increase of 90,382 pupils and 215 schools. The teachers employed increased from 55,155 to 59,013. The attendance was divided into 646,535 boys and 676,465 girls.

CONGRESSES AND CONVENTIONS. The Thirtieth International Eucharistic Congress was held at Carthage, Africa, May 7-10 with Cardinal Lepicier officiating as the Pope's Legate. More than 20,000 pilgrims from all over the world, including deputations from the United States, with 8 cardinals, 100 bishops, and several thousand priests, attended and revived the glories of this ancient city of the Church and home of the early Christian martyrs. At Omaha, Neb., the sixth National Eucharistic Congress, under the auspices of the Priests' Eucharistic League of the United States, was held September 23-25. The Pope sent a special letter which was read by the Apostolic Delegate, Mgr. Biondi, and four archbishops, 40 bishops, and several thousand priests, with 20,000 laymen, participated. President Hoover sent a cordial greeting. The general

theme of the discourses of the Congress was "The Blessed Eucharist, by Divine Institution, the Source and Centre of Christian Life." An International Eucharistic Congress, directed by the Pope, was to be held in 1932, at Dublin, Ireland.

Other notable assemblages were the Fourth National Convention of the Catholic Alumni Federation at Washington, April 25-27; the Diamond Jubilee National Convention of the Central Verein at Baltimore, August 17-20; the Catholic Students' Spiritual Leadership Convention at Chicago, June 20-22; the Forty-eighth Convention of the Supreme Council of the Knights of Columbus (q.v.) at Boston, August 19-21; the Tenth Annual Convention of the National Council of Catholic Men at Kansas City, Mo., October 19-21; the National Conference Catholic Charities at Washington, September 28-October 2. The International Union of the Catholic Women's League, representing 63 national organizations, met in Rome, May 20 and advocated a modesty in dress code; the International Catholic Press Congress held its sessions at Brussels with 244 delegates representing 28 countries September 2-5.

MISSIONS. The official returns to the Congregation for the Propagation of the Faith showed that in June, 1927, the missionaries distributed in 374 ecclesiastical divisions, in 81 countries, and hailing from 51 different nations totaled 46,174 persons; or, 12,952 priests, 5110 Brothers, 28,112 Sisters. There were 281 bishops in mission lands and a total Catholic population of 13,345,373. The churches and chapels numbered 45,826 and the schools 31,418 with 1,521,710 pupils; hospitals, 691; orphanages, 1525; homes for aged, 299; leper asylums, 81; other institutions, 134. In Europe, particularly in Scandinavia and in the south-eastern areas of the continent, the congregation cares for 1,041,399; in India and Burma 2,172,340; in Indo-China 1,237,339; in China 2,373,677; in the Japanese Empire 206,754; in Malasia and Oceania 596,534; in Africa 3,202,993, while in the missionary regions of the Americas 2,280,541.

The Society for the Propagation of the Faith, in the United States, sent to Rome, during 1929, for mission support, \$1,382,263, the largest contribution from any nation. The Catholic Church Extension Society received during the year \$1,500,971 for home mission purposes.

In China, despite war conditions, there has been an increase of 47,637 Catholics for the period July 1928-29. Foreign priests in China numbered 2011 and the native clergy 1371. Of the 96 mission territories, 13 were in charge of native priests. See also MEXICO and MALTA under *History*.

BIBLIOGRAPHY. In the books of the year were included: William Thomas Walsh, *Isabella of Spain*; Myles V. Ronan, *The Reformation in Ireland*; Most Rev. A. Goodier, *The Public Life of Our Lord*; M. C. Darcy, S.J., *Thomas Aquinas*; Hartmann Grisar, S.J., *Martin Luther*; Francis X. Talbot, S.J., *Richard Henry Tierney*; Hilaire Belloc, *Wolsey*; Selden P. Delany, *Why Rome?*; Philip Hughes, *The Catholic Question*; G. F. Lahey, S.J., *Gerard Manley Hopkins, S.J.*; G. K. Chesterton, *The Resurrection of Rome*; Theodore Maynard, *De Soto and the Conquistadores*; John L. Stoddard, *Twelve Years in the Catholic Church*; V. F. O'Daniel, O.P., *Dominicans in Early Florida*; Paul J. Folk, *Pioneer Catholic Journalism*; Joseph H. Schlarman, *From Quebec to New Orleans*; George Stebbing, C.S.S.R., *The*

Position and Prospects of the Catholic Church in the English Speaking Lands; Friederich von Hugel, *Some Notes on the Petrine Claims*; Don Cuthbert Butler, *The Vatican Council*; Herbert Thurston, S.J., *No Popery*; Henri Bremond, *The Thundering Abbot*; James J. Walsh, *Mother Alphonsa*; Joseph J. Williams, S.J., *Hebrewisms of West Africa*; John T. Gillard, S.J., *The Catholic Church and the American Negro*; John J. Wynne, S.J., *The Jesuit Martyrs of North America*.

ROMANCE LANGUAGES AND LITERATURES. See PHILOLOGY, MODERN; FRENCH LITERATURE; SPANISH LITERATURE; ETC.

ROMAN EXCAVATIONS. See ARCHÆOLOGY.

ROOSEVELT, Gov. FRANKLIN D. See NEW YORK; UNEMPLOYMENT.

ROSENWALD FUND. See LIBRARY PROGRESS.

ROSS, BENNETT BATTLE. An American chemist and educator, died in Miami, Fla., Apr. 4, 1930. He was born in Tuskegee, Ala., Dec. 25, 1854, and was graduated from the Alabama Polytechnic Institute in 1881. From 1884 to 1887 he was an assistant chemist at this institution, receiving the degree of M.Sc. in 1886. In 1887 he was called to Louisiana State University as professor of chemistry, where he remained until 1893 when he returned to Alabama Polytechnic Institute as professor in the chemistry department. From 1908 to 1921 he was dean of the college of agricultural sciences at this institute, and from 1921 until the time of his death, dean of the department of science. He was also acting president during the greater part of 1919-20 and had served as State chemist of Alabama since 1893. During 1895-96 he was president of the Association of Official Agricultural Chemists of the United States and during 1926-27, president of the Association of Feed Control Officials of the United States. He was also chairman of the Alabama section of the American Chemical Society, 1913-15, and was a member of the council, 1915-16, 1919-22, and 1925-30. He was the author of several bulletins and papers on the chemistry of sugars, fertilizers, and so forth, and was co-author of *Chemistry in Agriculture* (1926).

ROTARY CLUBS. Organizations established for the purpose of developing the highest ideal of unselfish service; of making practical application of that ideal to the business and professional life of the individual members, to organizations of which they may be members, and to the communities and nations in which they live; and of advancing international peace and goodwill through a fellowship of business and professional men of all nations united in the ideal of service. Membership in the clubs is limited to one representative of each business, profession, or institution in a community.

The 1930 convention of Rotary International was held June 23-27 in Chicago, the home of the first Rotary club, in honor of the organization's twenty-fifth anniversary. There were 11,019 Rotarians and members of their families present, representing Rotary clubs in 51 countries. The convention adopted a resolution accepting, on behalf of the Rotary clubs in the United States, the opportunity for service offered in the Government's campaign to eliminate illiteracy. The 1931 convention was to be held in Vienna, Austria, June 22-26.

On Nov. 15, 1930, Rotary International consisted of 3387 clubs, with an approximate member-

ship of 155,000. There were 2422 clubs in the United States, 106 in Canada, 340 in Great Britain and Ireland, and 519 in other parts of the world. Officers for 1930-31 were: President, Almon E. Roth, Palo Alto, Calif.; first vice-president, William deCock Buning, The Hague, the Netherlands; second vice-president, Smith L. P. Free, Masterton, New Zealand; third vice-president, Clinton P. Anderson, Albuquerque, N. M.; secretary, Chesley R. Perry, Chicago; treasurer, Rufus F. Chapin, Chicago. Headquarters of Rotary International are at 211 West Wacker Drive, Chicago, with a branch office at 74 Bahnhofstrasse, Zurich, Switzerland.

ROUMANIA. See RUMANIA.

ROUND TABLE CONFERENCE ON INDIA. See INDIA under *History*.

ROUSSEAU, KEAR ADMIRAL HARRY HARWOOD, U. S. N. An American naval officer, died at sea July 24, 1930. He was born in Troy, N. Y., Apr. 19, 1870, and was graduated from the Rensselaer Polytechnic Institute in 1891. After serving as draftsman and engineer for private companies in New York and Pittsburgh, he was appointed a civil engineer in the U. S. Navy, with the rank of lieutenant, in 1898. He was assigned as an engineer to the Bureau of Yards and Docks of the U. S. Navy Department in Washington in 1899, and in 1903 became engineer of public improvements at the Mare Island Navy Yard, Calif. He was appointed chief of the Bureau of Yards and Docks in 1907, and in the same year became a member of the Isthmian Canal Commission. He was engineer in charge of the design and construction of the canal terminals, including dry docks, ship-repair shops, piers, coaling and fuel-oil plants, breakwaters, and floating cranes, during 1914-16, and for this service was promoted, through special act of Congress, to the rank of rear admiral in the Civil Engineers Corps. During 1917-19 he was manager of the shipyard-plants division of the Emergency Fleet Corporation, and during 1918-20, vice-chairman of the Port Facilities Commission of the U. S. Shipping Board. He had been a member of the Commission on Navy Yards since 1916, director of the Naval Petroleum Reserves since 1927, and chief coordinator of the Federal Coordinating Agencies since 1928. At the time of his death he was on the way to the Canal Zone to inspect the Panama Railroad, of which he was director.

ROWING. The Eastern colleges definitely demonstrated their rowing supremacy over crews from the Far West at the intercollegiate regatta at Poughkeepsie, N. Y., June 26, 1930, when the Cornell varsity crew won in 21 minutes, 42 seconds for the first time since 1915. Syracuse followed three lengths behind, with Massachusetts Institute of Technology, California, Columbia, University of Washington, Pennsylvania, and Wisconsin trailing in the order named. The Navy shell was swamped and did not finish the race. The junior varsity race was also won by Cornell and the freshman race by Syracuse, with Cornell second.

Yale won the annual race at New London from Harvard, 20 minutes, 9½ seconds, the Carnegie Cup in a three-cornered race with Cornell and Princeton, and the Blackwell Cup against Columbia and Pennsylvania. Columbia won the Childs Cup for the third year in succession. The Harvard junior and freshmen crews won from Yale at the New London regatta. Princeton excelled among the American college lightweight crews,

but was defeated in the British Henley in July, as was the Kent School crew. At the American Henley on the Schuylkill, the Penn A. C. established a new record for the course of 6:22½. Penn A. C. later entered a regatta in Belgium, but was defeated. In England, the Oxford-Cambridge race was won by Cambridge. London Rowing Club won the Grand Challenge Cup at the Henley Regatta, Brasenose College (Oxford) captured the Visitors' Challenge Cup, and J. S. Guest, of Toronto, Canada, the Diamond Sculls.

Other title holders of 1930 were: World's professional, Ted Phelps, of England; American national senior singles, William G. Miller, Philadelphia; national senior quarter-mile, Algernon Fitzpatrick, Philadelphia; national senior doubles, E. J. McGreal and W. E. Garrett Gilmore, Philadelphia; national senior quadruple sculls, Bachelors Boat Club, Philadelphia; national senior eight-oared, Springfield (Mass.) Rowing Association.

ROYAL GEOGRAPHICAL SOCIETY CENTENARY. See EXPLORATION.

RUANDA-URUNDI. See CONGO, BELGIAN.

RUBBER. Few industries suffered more from the world-wide depression during 1930 than rubber, and the market price of plantation ribbed smoked sheets was the lowest known in history, while other grades suffered proportionately.

IMPORTATIONS OF CRUDE RUBBER INTO THE UNITED STATES BY MONTHS FOR YEAR ENDED DEC. 31, 1930

[Estimated net weights—long tons. Compiled by the Rubber Manufacturers Association, Inc.]

| Month | Plantations | Paras | Africans | Centrals | Guayule | 1930 | Total all grades 1929 | 1928 |
|-----------------|-------------|-------|----------|----------|---------|---------|--------------------------|---------|
| January | 46,404 | 747 | 76 | 10 | 125 | 47,362 | 52,305 | 46,243 |
| February | 42,785 | 788 | 66 | 14 | 75 | 43,728 | 64,538 | 29,445 |
| March | 44,334 | 894 | 37 | 15 | 150 | 45,430 | 53,824 | 40,894 |
| April | 48,906 | 881 | 53 | 12 | 75 | 49,927 | 54,171 | 37,240 |
| May | 40,064 | 530 | ... | 1 | 150 | 40,745 | 49,180 | 32,883 |
| June | 41,945 | 492 | ... | 128 | 88 | 42,653 | 44,490 | 25,792 |
| July | 33,400 | 489 | 30 | ... | 159 | 34,084 | 44,251 | 33,382 |
| August | 34,179 | 346 | 26 | 7 | ... | 34,558 | 38,292 | 29,805 |
| September | 38,780 | 508 | 27 | 2 | 150 | 39,467 | 32,515 | 46,062 |
| October | 43,159 | 526 | ... | 5 | 39 | 43,729 | 43,725 | 42,515 |
| November | 31,367 | 378 | 16 | 4 | ... | 31,765 | 40,621 | 34,720 |
| December | 34,302 | 593 | ... | ... | ... | 34,895 | 43,542 | 46,840 |
| Total * | 479,625 | 7,172 | 337 | 198 | 1,011 | 488,343 | 561,454 | 446,421 |

* 3,822 Tons liquid latex reduced to dry weight included in this total.

Plantation ribbed smoked sheets quoted at 15½ cents per pound in January, 1930, reached the high for the year of 16½ cents in February, declining to 7½ cents on October 1 and closing in December at 8½ cents, as compared with a high of 26½ cents and a low of 15½ cents for 1929. There was an ample supply of crude rubber and with a limited demand prices fell for the raw material and were considerably lower for finished products as well.

The world production of rubber in 1930 was estimated at about 800,000 tons or over 50,000 tons less than in 1929. The consumption in 1930

was estimated at 858,000 tons, due in part to the decline in the production of automobiles. See AUTOMOBILES. Stocks on hand at the beginning of 1930 were estimated for the United States at 105,138 tons and 73,319 tons for the United Kingdom. Both of these amounts increased until at the end of the year the United States had a stock of 202,246 tons on hand and in transit overland, and 56,035 tons afloat for the United States ports, making a total of 258,281 tons. In the United Kingdom the total stock at the end of the year was estimated at 116,000 tons, or an increase of 42,681 tons in the year.

Imports of crude rubber into the United States in 1930, according to the Bureau of Foreign and Domestic Commerce, totaled 1,089,829,613 pounds valued at \$140,641,134, as against 1,262,938,646 pounds valued at \$240,966,170 in 1929. In 1930 British Malaya, with exports to the United States valued at \$97,242,790, was the leading source of supply, followed by Ceylon, \$13,353,366; Netherland East Indies, \$26,316,480; and Brazil, \$2,044,774. The accompanying table indicates the various grades of rubber entering the United States. Most of these shipments are received at the Port of New York, the total for 1930 amounting to 418,662 long tons out of an aggregate of 479,625 tons.

The consumption of rubber in the United States

during 1930 was 372,029 tons, as compared with 466,475 tons in 1929, with a consumption in December of but 21,403 tons, which was the smallest figure since December, 1921, for American manufacturers. The American automobile industry in 1930 used 82 per cent of the rubber, so that a comparison of this industry with previous years is significant. The production of tires in 1930 was estimated at 53,000,000 casings. There were no important cuts in prices, as the rubber used had been acquired at far higher cost than the prevailing figures but substantial reductions were looked for during the year 1930.

PRODUCTION AND SHIPMENT OF CASINGS, TUBES, SOLID AND PNEUMATIC TIRES

[Statistics from 80 per cent of American manufacturers. Statistical Department, The Rubber Manufacturers Association]

| | 1930 | | 1929 | | 1928 | |
|-------------------------------|--------------------|-------------------|--------------------|-------------------|--------------------|-------------------|
| | Production 1930 | Shipments 1930 | Production 1929 | Shipments 1929 | Production 1928 | Shipments 1928 |
| Balloon casings | 33,878,514 | 34,939,030 | 41,128,577 | 40,377,781 | 38,878,218 | 35,931,982 |
| High pressure casings | 6,903,864 | 7,974,078 | 13,852,095 | 15,138,103 | 19,579,645 | 19,789,955 |
| Total casings | 40,772,378 | 42,913,108 | 54,980,672 | 55,515,884 | 58,457,863 | 55,721,937 |
| Balloon inner tubes | 33,077,485 | 33,847,719 | 38,921,749 | 38,719,177 | 36,878,990 | 34,095,223 |
| High pressure inner tubes ... | 8,858,575 | 10,104,515 | 16,141,137 | 17,754,126 | 23,255,891 | 23,749,966 |
| Total inner tubes | 41,936,060 | 43,952,234 | 55,062,886 | 56,473,303 | 60,134,881 | 57,845,189 |
| Solids and cushions | 204,280 | 250,738 | 409,344 | 427,779 | 508,223 | 512,602 |

According to a preliminary tabulation of data collected in the U. S. Census of Manufactures taken in 1930, establishments in the United States engaged wholly or principally in the manufacture of rubber products consumed, in 1929, 441,343 long tons of crude rubber, costing \$200,451,421, and 198,379 long tons of reclaimed rubber, costing \$26,223,061. These figures represented increases in quantity of 21.2 per cent and 12.9 per cent, respectively, as compared with 364,057 long tons of crude rubber and 175,774 long tons of reclaimed rubber reported for 1927, the last preceding census year. Stocks of crude rubber on hand increased from 45,733 long tons at the close of 1927 to 48,644 long tons at the close of 1929, and stocks of reclaimed rubber decreased from 16,581 long tons to 13,378 long tons for the same period. The quantities and costs of other important materials consumed in the rubber industries in 1929 were as follows: Carbon black, 163,037,612 pounds, at a cost of \$12,676,825; zinc oxide, 129,847,125 pounds, \$8,886,432; sulphur, 59,301,917 pounds, \$1,293,165; tire fabrics, 270,444,035 pounds, \$122,267,337; hose and belting duck, 34,335,673 pounds, \$12,503,375; other cotton fabrics, 65,900,833 pounds, \$27,552,210; other fabrics, \$11,280,682.

According to the same Census of Manufactures, the total shipments or deliveries in 1929 of rubber goods other than tires, inner tubes, and boots and shoes by manufacturers in the United States were valued at \$320,374,129 (at f.o.b. factory prices), an increase of 2.1 per cent as compared with \$313,750,086 reported for 1927, the last preceding census year. The principal items in the 1929 output were as follows: Rubber heels and soles (including composition or fibre), 338,471,665 pairs, valued at \$26,676,065; rubberized fabrics, \$28,782,758; rubber belting, 45,347,145 pounds, \$26,391,406; rubber hose, 272,276,827 feet, \$37,678,779; rubber packing, washers, gaskets, liner strips, etc., \$10,377,989; hard-rubber goods, \$15,647,816; reclaimed rubber, 365,943,329 pounds, \$24,627,431; druggists' and medical sundries (except rubber gloves), \$10,683,406; rubber flooring, mats, and matting, \$12,602,637; tire sundries and repair materials, \$23,632,057.

In view of the fact that rubber products are indispensable for all civilized nations, the various countries of the world were enacting legislation to encourage local development of rubber manufactures and, as a result, the United States rubber manufacturing industry was meeting with constantly increasing competition, not only from such manufacturing nations as the United Kingdom, Canada, Germany and Japan, but in Argentina, Italy, Soviet Russia, and Australia. During 1930 the United States was able to maintain its market for tires in Germany, Hungary, Sweden, Austria, Denmark, and Czechoslovakia. Previous to 1930, the United States led in the exports of rubber footwear. In that year Japanese exporters became first in the world markets, while, as in other fields, European competitors were active and also British Malaya. Notwithstanding the superior quality of United States rubber footwear, as was true for other American rubber products, it suffered on a price basis in world markets with European and Oriental products.

In 1930 the exports of rubber goods from the United States were valued at \$62,423,293, or a decline of 23 per cent from the total of 1929, \$80,721,664, and 16 per cent decrease from 1928 when the value of exports was \$74,471,433. The dis-

tribution and value of United States exports of rubber goods for the years 1929 and 1930 are shown in the accompanying table.

| Item | 1929 | 1930 |
|-------------------------------|--------------|--------------|
| Automotive rubber goods . . . | \$43,092,441 | \$35,283,779 |
| Rubber footwear | 14,192,296 | 9,081,854 |
| Mechanical rubber goods . . . | 8,251,624 | 6,210,758 |
| Miscellaneous rubber goods . | 15,185,303 | 11,847,402 |
| Total | \$80,721,664 | \$62,423,293 |

See CHEMISTRY, INDUSTRIAL.

RUBIO, ORTIZ. See MEXICO under *History*.

RUDOLPH, ROBERT LIVINGSTON. Presiding Bishop of the Reformed Episcopal Church and Bishop of the Synod of New York and Philadelphia, died in Dorset, Vt., Sept. 16, 1930. He was born in New York City, Dec. 29, 1865, and was graduated from New York University in 1892 and from the Reformed Episcopal Theological Seminary in 1896. He attended Princeton Theological Seminary during 1894-95 and the University of Erlangen in 1905. On ordination as a deacon in 1895 and as a presbyter the following year, he became assistant rector of the First Reformed Episcopal Church in New York City. In 1903 he was appointed professor of dogmatic theology and Christian ethics at the Reformed Episcopal Theological Seminary in Philadelphia, and in 1909 was consecrated Bishop of the Synod of New York and Philadelphia. In 1923 he was elected presiding bishop and president of the general council of the Reformed Episcopal Church. He also served as dean of the Reformed Episcopal Theological Seminary from 1925 until his death. The D.D. degree was conferred on him by New York University in 1906.

RUGGLES TRUST. See UNIVERSITIES AND COLLEGES.

RUINS. See ARCHÆOLOGY.

RUMANIA. A constitutional monarchy forming the largest and northernmost of the Balkan States; bounded on the south by the Danube River and Bulgaria; on the east by Russia and the Black Sea; on the north by Poland, Czechoslovakia, and Hungary and on the west by Yugoslavia. Capital, Bucharest; reigning sovereign in 1930, Carol II (see below under *History*).

AREA AND POPULATION. Before the World War Rumania had an area of 53,849 square miles and an estimated population of 7,904,104 (1915). New territories acquired by the peace treaties of 1919 increased the area to 122,282 square miles and the population to 17,393,140. The estimated population in December, 1928, was 17,903,000. The birth rate for 1928 was 35.9 per 1000 of population and the death rate, 20.2. The chief cities, with their estimated populations in 1927, are: Bucharest, 875,000; Chisinău (Kishinev), 175,000; Cernați (Czernowitz), 175,000; Galati, 130,000; Ploieti, 115,000; Timișoara, 110,000; Iași (Jassy), 100,000; and Cluj (Klausenburg), 100,000.

EDUCATION. Primary education is free and compulsory, except in districts where there are no schools. In 1927-28, there were 14,123 elementary schools, with 1,600,098 pupils; 924 secondary schools, with 185,780 pupils; and 15 higher educational institutions, with 30,892 pupils. The four universities, with the enrollment in 1928, were: Iași (Jassy), 3584; Cluj (Kolozsvar), 1980; Bucharest, 7532; Cernați (Czernowitz).

PRODUCTION. The economic wealth of Rumania is chiefly agricultural, with over three-fourths

of the population deriving a livelihood from the soil. The area devoted to cereals, the leading crops, was 38 per cent of the national territory in 1929. The total area under cultivation (1928) was 31,509,000 acres, or 43 per cent of the national territory. An additional 10,019,000 acres were permanent meadow and pasture; 1,516,000 acres were devoted to trees, shrubs, and bushes, and 17,851,000 acres to woods and forests. Under the agrarian reform act of June 21, 1921, some 15,000,000 acres of land have been expropriated from large landowners and distributed among the peasants. In 1929, nearly 90 per cent of the land was held by proprietors of less than 250 acres. See AGRICULTURE.

Production of the chief crops in 1929, with comparative figures for 1928 in parentheses, was (in metric tons): Wheat, 2,714,847 (3,551,590); rye, 323,351 (300,579); barley, 2,737,114 (1,046,575); oats, 1,359,292 (932,768); maize, 6,100,000 (2,536,937). Exports of cereals and cereal by-products in 1929 were estimated at \$48,908,000. Sugar beets, rape seeds, flax, potatoes, and wine are other leading products. The value of all crops in 1928 was \$409,220,000 (\$410,019,000 in 1927). The 1929 harvest was the best since the World War, but due to low prices failed to relieve the agricultural depression. The total of the five principal grain crops in 1930, while below that of 1929, was slightly above the average annual production for the period 1924-28. Livestock on Jan. 1, 1929, included 4,436,000 cattle, 12,801,000 sheep, 1,945,000 horses, 2,832,000 swine, and 386,000 goats. More than 200,000 head of cattle and hogs, valued at \$10,919,000, were exported in 1929.

Rumania in 1929 ranked second to Russia among European oil-producing countries and sixth among the countries of the world. Crude-oil production increased to 4,827,000 metric tons in 1929 from 1,787,000 tons in 1913. About 97 per cent of the crude-oil output is refined in Rumania. Production of other leading minerals in 1928 was: Coal, 395,000 metric tons; lignite, 2,640,000 tons; iron ore, 84,000 tons; salt, 340,000 tons. Antimony and copper are also worked. Forest products are the third important source of economic wealth, the lumber industry comprising 498 sawmills, with an invested capital of \$11,792,000 and 45,000 workmen in 1927. Lumber exports in 1929 totaled about \$25,401,000. Flour milling, brewing, and distilling are other industries. The value of all industrial products in 1928 was about \$370,956,000. Industry was generally depressed in 1929 and 1930 and this, with the similar condition of agriculture, provoked considerable political unrest.

COMMERCE. Rumania's foreign trade balance showed marked improvement in 1929, the adverse balance being reduced to about \$5,800,000 from \$31,350,000 in 1928. Imports for consumption totaled 29,896,700,000 lei (about \$176,390,000, computed at the 1929 exchange rate of 1 lei for \$0.0059), as compared with 32,145,100,000 lei in 1928. Domestic exports were valued at 28,914,900,000 lei (about \$170,596,000), as against 26,919,300,000 lei in 1928. Larger exports were due chiefly to increases of about 19 per cent and 17 per cent, respectively, in the value of petroleum products and cereal shipments. The tonnage of exported cereals increased by 59 per cent, reflecting the lower market prices abroad. Cotton textiles, ores, metals and

metal manufactures, machinery, wool, wool manufactures, and vehicles were the chief imports and cereals, petroleum products, lumber, cattle, and animal products the leading exports. Germany and Austria were the most important countries in Rumanian trade. The trend toward a favorable trade balance continued in 1930, preliminary returns showing decreased imports and increased exports.

FINANCE. The budget for 1930 was estimated to balance at 37,450,000,000 lei (about \$224,700,000), but collections for the first half of the year fell 30 per cent short of the estimates. The budget estimates for 1929 balanced at 38,300,000,000 lei. Actual revenue, however, amounted to only 33,738,000,000 lei. The deficit for the year totaled about 1,000,000,000 lei, according to preliminary returns, as compared with a deficit of 4,903,000,000 lei in 1928. On Jan. 1, 1930, the total public debt of Rumania stood at 145,330,000,000 lei, of which 121,601,000,000 lei was held abroad. An \$8,000,000 loan was extended to the Rumanian government in 1930 by the International Telephone and Telegraph Corporation in return for a concession to take over and develop the telephone system formerly operated by the state. The unit of currency is the leu (plural, lei), which was officially stabilized at \$0.00598 on Feb. 7, 1929.

COMMUNICATIONS. The railways, which are state owned, comprised 7102 miles of line in 1928. They were operated at a loss of 1,239,340,223 lei (about \$7,436,041) in 1929. Passengers carried during the year totaled 37,198,828, freight, 21,556,691 tons; and operating revenues, \$64,711,940; all the figures were substantially lower than in 1928. The railway construction programme adopted in 1929 was modified in 1930 to provide for more rapid construction of fewer lines. Rumanian highways in 1928 totaled 67,160 miles, of which 36,405 miles were macadam, 5643 miles gravel, 20,791 miles plain dirt roads, and the remaining 4320 miles unclassified. Of the macadam roads, less than one-third were in good condition. Legislation providing a modern system of road administration and finance was adopted in October, 1929, and in 1930 work was under way on the reconstruction of the 96-mile Bucharest-Brasov highway and the rebuilding of 84 steel bridges destroyed during the World War. When turned over to the International Telephone and Telegraph Company in 1930 (see above under *Finance*), the telephone system consisted of 23,000 miles of line connecting about 63,000 telephones. The telegraph system remained under state operation.

In 1929, a total of 1920 vessels of 3,022,000 net tons called at Constantza, Rumania's leading port, as against 1154 vessels of 2,476,000 net tons in 1928. Extensive improvements to the port were made in 1929.

GOVERNMENT. Under the constitution of Mar. 28, 1923, which nationalized all forests and subsoil, executive power is vested in the King and a council of ministers, the King having a suspensive veto over the laws passed by parliament; and legislative power is vested in a senate of 170 members and a chamber of 347 members. The Senate is composed of life members and various officials; the deputies in the lower Chamber are elected by all tax-paying citizens 21 years of age. King Carol II assumed the throne June 8, 1930, succeeding his young son, Mihai (Michael)

I, who had ruled through a regency council composed of Prince Nicholas, the Patriarch Mgr. Miron I. Cristea, and Constantine Saratzeanu, President of the Court of Appeal (see below under *History*). The Maniu Cabinet, representing the National Peasants' party, appointed Nov. 11, 1928, was composed as follows: Prime Minister, Dr. Julius Maniu; Foreign Affairs, George Mironescu; Interior, Dr. Alexander Vayda-Voevod; Agriculture, M. Ion Mihailache; Education, Professor Costakescu; Finance, Dr. Mihai Popovici; Justice, M. Nizescu; Public Health, M. Sever Dan; Labor, M. Raducanu; War, General Cikoski; Industry and Commerce, M. Mirto; Fine Arts, M. Aurel Vlad; Public Works and Communications, M. Halippa; Minister for the Banat, M. Bocu; for Transylvania, M. Nizescu; for the Bukovina, M. Saveanu.

HISTORY

CAROL'S RETURN. A dynastic drama which interested and amused the world opened on the evening of June 8, 1930, when Prince Carol stepped from an airplane at a flying field near Bucharest, ending his five years of exile in France. Within 48 hours Parliament had proclaimed him King and head of the House of Hohenzollern-Sigmaringen. The army and the peasant masses acclaimed him with high enthusiasm. Convoked in extraordinary session, Parliament repealed the law of Jan. 4, 1926, by which Carol was excluded from succession to the throne.

The return of the prodigal son of Dowager Queen Marie had important national and international implications, despite the touch of *opéra bouffé* associated with the event. Premier Maniu, leader of the National Peasant party, admitted in Parliament June 14 that Carol's return had been accomplished with the previous consent of the Government. Likewise Carol enjoyed the support of his brother, Prince Nicholas, and the other members of the Regency Council, which since July 20, 1927, had ruled the country on behalf of Carol's nine-year-old son, King Michael. In spite of noteworthy progress in national rehabilitation, the Maniu Government had been losing prestige steadily as a result of the economic depression. The coalition upon which the Premier's régime depended showed signs of dissolution. The Liberal Opposition, which controlled the National Bank and most of the capital of the country, was increasing its effort to overthrow the Ministry. And finally, the authority and prestige of the Regency Council was steadily waning. A dangerous political crisis appeared inevitable in the event of the death or resignation of one of the Council members, with the possibility that Soviet Russia would seize upon the opportunity to reannex Bessarabia. The Government accordingly placed Carol on the throne as the most expedient way of meeting the threatened crisis. His return meant the eclipse, at least temporarily, of the conservative and financially-powerful National Liberals, who under the Bratianu brothers and with the alleged aid of Dowager Queen Marie, had ruled the country for 60 years previous to the establishment of the Maniu Government on Nov. 9, 1928.

Premier Maniu resigned with his entire Cabinet the day after Carol's return to Bucharest, but reassumed the Premiership June 13, the interim Cabinet having been headed by George Mironescu, Dr. Maniu's Minister for Foreign Affairs. The Premier's position became increasingly untenable,

however, as the economic depression became more and more acute. Dissension among his supporters and the failure of King Carol's effort to effect a reconciliation with Queen Helen added to Maniu's difficulties. On October 6 he resigned again. M. Mironescu, who was called by King Carol to form a Cabinet, announced the new Ministry as follows on October 10: Premier and Foreign Minister, George Mironescu; Interior, Ion Mihalache; Finance, Mihai Popovici; Justice, Gregory Junian; Agriculture, Virgil Madgearu; Railways, Voicu Nitescu; Education, Professor Costatescu; Trade and Commerce, M. Manolescu; Public Works, M. Hacieanu; War, General Condescu; Bessarabia, Pan Halippa.

CAROL'S POPULARITY DECLINES. The King's failure to effect a reconciliation with his divorced wife, Princess Helen of Greece, the mother of Michael, from the first tended to undermine his popularity with his people. As a conciliatory gesture, Carol issued a decree June 12 proclaiming Helen Queen of Rumania. He prepared also to secure the annulment of their divorce. The Queen remained adamant and early in December the failure of the long-drawn-out negotiations was confirmed. Carol then announced his intention of seeking another consort. At the same time, it was reported that the King had made financial settlements with his morganatic wife, Mme. Zizi Labrino, and with his companion, Mme. Magda Lupescu, whom he deserted to return to Rumania. Queen Helen had become the most popular member of the royal family and her refusal to accept the King's advances lost for him much of the popular enthusiasm aroused by his spectacular return. It also caused Carol to postpone his coronation, which had been fixed provisionally for October, until the following year.

The death on December 22 of Vintila Bratianu (q.v.), last of the powerful Bratianu triumvirate, who had led his adherents of the Liberal party in determined opposition to Carol's assumption of the Crown, appeared to open the way for a more harmonious and stable government. His nephew, George Bratianu, head of the pro-Carolist section of Liberals, stood in line for the leadership of the entire Liberal party.

OTHER INTERNAL AFFAIRS. The reparation settlement reached at The Hague and at Paris (see *REPARATIONS AND HUNGARY* under *History*) was acclaimed as a victory for Rumania by Premier Maniu at a special commemorative session of the Chamber on Jan. 21, 1930. The Young Plan, he said, absolved Rumania of obligations for reparation payments, and for indemnification of the Hungarian optants, the Hapsburg archdukes, and the private railways of the territories annexed to Rumania in 1919. In the municipal elections of Feb. 6, 1930, the National Peasant party won 1833 seats, or 82 per cent of the total; the Liberals, 316 seats; and various minor parties, 80. A recrudescence of anti-Semitism spread throughout the country following the election of Prof. Alexander Cuza, anti-Semitic leader, in a parliamentary by-election in the spring (see *Jews*).

The engagement of Princess Ileana to Count Alexander von Hochberg was dissolved March 5. A subsequent tour of the Near East by Queen Marie and Princess Ileana was interrupted at the request of the British Government, which feared a longer stay in Palestine would provoke hostile demonstrations.

FOREIGN AFFAIRS. Although Rumania had benefited to a large degree by the peace treaties of

1919 and was allied with France, Poland, and the Little Entente, she appeared in 1930 to be wavering between support of France or Italy in the struggle between the two continental Powers for hegemony in the Balkans. An Italian-Rumanian commercial treaty was signed at Rome Feb. 25, 1930, accompanied by eulogies of the cultural bonds between the two countries. Premier Maniu, however, acknowledged Rumania's gratitude for French support at the reparation negotiations and in June he lined up with the other members of the Little Entente in warning Hungary that any effort by Prince Otto to emulate Carol's coup d'état would be considered a breach of the peace treaties. The return of Carol introduced an uncertain element into Rumania's international relations, and Europe followed his actions with interest to determine whether he would turn toward Italy or France. Up to the end of the year, he had given no definite indication of his policy in this respect.

On October 20, the Rumanian secret police announced the discovery of a widespread Soviet espionage organization, following the arrest of 140 alleged agents in espionage centres in Bucharest, Jassy, Klausenburg, and Kronstadt. For more than a year, it was charged, the organization had been forwarding information concerning Rumania's political and military activities to Moscow via Vienna. Concentrations of Soviet military forces along the Bessarabian border early in the year and the subsequent movement of two Russian cruisers through the Bosphorus into the Black Sea aroused apprehension in Rumania and led to military and naval preparations to resist a possible Russian attack.

A tariff war broke out between Rumania and Greece in September and Greek ships were forbidden to cast anchor in Rumanian ports. A commercial treaty concluded with Great Britain provided for the admission of British goods to Rumania at the lowest rates of the existing or future Rumanian tariffs. Mutual most-favored-nation treatment between the United States and Rumania was guaranteed by a provisional agreement signed August 20. See *LITTLE ENTENTE*, *JUGOSLAVIA*, *HUNGARY*, *ITALY*, and *RUSSIA* under *History*; also *REPARATIONS*.

RUM ROW, **RUM RUNNING**, ETC. See **PROHIBITION**.

RURAL SOCIOLOGY. See **AGRICULTURAL EXPERIMENT STATIONS**.

RUSSELL SAGE FOUNDATION. An institution established by Mrs. Russell Sage as a memorial to her husband, and incorporated by the Legislature of the State of New York in 1907 "for the improvement of social and living conditions in the United States of America." The members of the staff of the foundation study social conditions and methods of social work; interpret the findings; make the information available by publications, conferences, and other means of public education; and in various ways stimulate action for social betterment.

CHARITY ORGANIZATION. This department studies and publishes in the field of social work and family welfare. During 1930 it published the addresses and papers of Mary E. Richmond, its former director, in a book entitled *The Long View*. The department also worked on plans to meet the unemployment situation during the winter of 1930-31.

INDUSTRIAL STUDIES. This department studies human relations and conditions in industry for

the purpose of providing data for constructive action. Its activities in 1930 centred upon the subject of labor's participation in management; the problem of unemployment and its statistical measurement; labor statistics in general and the development of more adequate data from official sources; and the international aspects of these problems of industrial relations. It also investigated the influence of unemployment upon crime for the National Commission on Law Observation and Enforcement.

LIBRARY. The library of the foundation in 1930 contained 30,371 bound volumes and 101,541 pamphlets and reports. It published bibliographies on coöperative housing, rural life from the aspects of the social worker, prison libraries, books on social subjects published during 1929, juvenile delinquency, leaders in social adventure.

RECREATION. This department assists in the social organization of leisure time and in bringing about adequate provision for all forms of wholesome recreation, outdoor and indoor, urban and rural. From its study in 1930 it advised on the location of approximately 100 new playgrounds and 3550 acres of new park lands in the \$30,000,000 programme of New York City. It also studied school community centres and prepared reports on several phases of child health and protection for the White House conference.

REMEDIAL LOANS. This department protects small loan borrowers from extortion and urges the passage and enforcement of adequate laws for the regulation of small-loan business, and encourages formation of credit unions. It gave consideration to 34 bills affecting small loans introduced in 11 State legislatures in 1930; made studies and surveys of the operation of the Uniform Small Loan Law in the many States where it had been adopted and in the four States where the rate under such law had been reduced by former legislatures; and published a statistical study of 10,000 small loans made in 109 cities in 17 States.

STATISTICS. This department conducts statistical investigations and advises concerning the planning and conduct of statistical inquiries. It has compiled monthly statistics in the field of family-case work over a period of five years and developed a standard statistical practice among the 58 agencies reporting these data. A report on salaries of staff members in 264 family-case-work agencies was published in 1930 under the title *Salaries and Vacations in Family Case Work*. Comprehensive statistics of outdoor relief were collected and distributed from 380 agencies in 79 cities of over 100,000 population in the United States and Canada.

SURVEYS AND EXHIBITS. The department studies and occasionally engages in community projects involving the collection, interpretation, and educational use of facts; advises with those facing practical problems in these fields; and spreads, chiefly through its publications, the information and experience thus gained. During the year two reports for the Regional Plan of New York and Environs were completed.

DELINQUENCY AND PENOLOGY. As consultant on these subjects, this department responded during the year to requests for advice from several States, as well as from India, Japan, South Africa, Vancouver, and Panama, as to improved methods in dealing with criminals, including legislation, and also as to building plans and administration of various correctional institutions.

The trustees of the foundation in 1930 were: Robert W. de Forest, president; Lawson Purdy, vice-president and treasurer; Frederic A. Delano, John H. Finley, Mrs. Frederic S. Lee, Dwight W. Morrow, Mrs. Finley J. Shepard, Harold T. White, and John M. Glenn, who was secretary and general director of the foundation. Shelby M. Harrison was vice general director. Headquarters are at 130 East Twenty-second Street, New York City.

RUSSIA. A republic comprising the greater part of the former Russian Empire; officially entitled the Union of Soviet Socialist Republics. Capital, Moscow.

AREA AND POPULATION. According to the Soviet Union Information Bureau, which supplied much of the material used in this article, the area of the Union of Soviet Socialist Republics is 8,144,228 square miles. The population as of Jan. 1, 1930, was estimated by the Central Statistical Board at 158,500,000. The population, according to the census of 1926-27 was 147,013,600, including 71,024,300 males and 75,989,300 females. In 1914 the population of the same territory was 138,200,000.

The Union of Soviet Socialist Republics is composed of seven constituent republics with their respective populations at the census of 1926 as follows: Russian Socialist Federated Soviet Republic, 100,858,000; Ukrainian Socialist Soviet Republic, 29,020,300; White Russian Socialist Soviet Republic, 4,983,900; Transcaucasian Federation, 5,850,700; Turkoman Socialist Soviet Republic, 1,030,500; Uzbek Socialist Soviet Republic, 5,270,200. The Tadzhik Socialist Soviet Republic, with about 822,600 inhabitants, was established in 1929 out of territory formerly included in the Uzbek Republic (see SOVIET (CENTRAL ASIA)). The Russian Socialist Federated Soviet Republic contained 76 per cent of the population and 94 per cent of the area of the Union. It comprised eleven autonomous republics, twelve autonomous areas, with further subdivisions into provinces, counties, districts, and townships. The other constituent republics embrace similar subdivisions of autonomous republics and areas, established mainly along racial or national lines.

Population of the principal cities at the census of 1926: Moscow, 2,124,500; Leningrad, 1,614,008; Kiev, 513,789; Baku, 452,808; Odessa, 420,888; Kharkov, 417,342; Rostov-on-Don, 308,284; Tashkent, 323,613; Tiflis, 292,973; and Saratov, 215,276.

EDUCATION. Public education in the Soviet Union is a charge against the seven constituent republics and against the localities concerned. Local appropriations are in the aggregate several times those of the republican governments. Total appropriations for education were upwards of \$1,000,000,000 for 1929-30. During the three previous years the expenditures were as follows: 1926-27, \$317,200,000; 1927-28, \$425,330,000; 1928-29, \$738,510,000. Statistics for elementary and secondary schools are shown in the accompanying table.

SOVIET EDUCATION STATISTICS

| | Elementary | | Secondary | |
|--------------|------------|------------|-----------|---------|
| | Schools | Pupils | Schools | Pupils |
| 1913-14..... | 104,600 | 7,235,988 | 1,700 | 563,480 |
| 1926-27..... | 108,424 | 9,903,439 | 1,708 | 784,871 |
| 1927-28..... | 116,873 | 10,502,964 | 1,819 | 805,369 |
| 1928-29..... | 120,012 | 11,101,372 | 1,793 | 813,127 |

There were 134 universities with 155,300 students in 1928-29, as compared with 137 universities with 143,100 students in 1927-28. In 1928-29 there were 109 workers' faculties (higher training schools for workers) with 60,200 students, as compared with 105 workers' faculties with 54,700 students in 1927-28. An average of over 50,000 schools for adult illiterates was maintained during the years 1925-28. In 1928-29, there were 2,700,000 pupils. The campaign to abolish adult illiteracy is conducted largely under voluntary auspices, particularly by the labor organizations. Among the general population (above seven years) illiteracy decreased by one-third in the six years preceding the census of 1926-27, which revealed that 65.4 per cent of the males and 36.7 per cent of the females were literate.

During 1930 there was a notable expansion of the schools for training skilled workers and engineers to take their places in industrial development under the Five-Year Plan. Universal, compulsory education for children of eight, nine, and ten years was introduced Oct. 1, 1930, for the first time in Russian history. Schools in the Soviet Union are conducted in 35 languages among the minor nationalities.

NATURAL RESOURCES. The immense natural resources of Russia have been only partly surveyed. Undeveloped water-power resources were estimated at 62,380,000 horse power, of which nearly two-thirds are in Asiatic territory. Coal reserves were placed at 474,673,000,000 tons, oil reserves at 2,884,000,000 tons, peat, 265,000,000,000 tons; iron, 2,782,000,000 tons, exclusive of the recently surveyed area in the Kursk district, where deposits were estimated at from 20,000,000,000 to 30,000,000,000 tons. Copper reserves in the Urals are estimated at 85,000,000 tons. Reserves of bauxite are 8,000,000 tons. Deposits of sulphur aggregating several million tons were discovered in the Kara-Kum Desert in central Asia, supplementing the former reserves of 500,000 tons in the Kerch Peninsula. Potash deposits estimated at over 1,500,000,000 tons were discovered in the West Ural region in 1927. Large fields of gold and platinum are situated in Siberia. Other minerals include silver and lead ores, pyrites, graphite, phosphate rock, chromic ores, salt, asphalt, asbestos, mica, zinc, uraninite. The forest area covers upward of two billion acres. Resources of fish and furs are enormous.

PRODUCTION, ETC. Land and natural resources are held in trust by the government for the general population, and may not be acquired by private title. Every citizen is entitled to secure land for cultivation, the form of tenure being that of perpetual leasehold. Natural resources are exploited by State trusts, by mixed companies, under concession, in which the State has a participating interest; or by private companies.

The adoption by the Soviet Congress in May, 1929, of an ambitious five-year plan for economic development was considered the most important constructive step since the revolution. (For summary of the plan, see 1929 YEAR BOOK). With the completion of the Five-Year Plan, such basic indicators of national economy as iron, steel and coal production, electric power output, and freight operations in the Soviet Union would be about 20 per cent of these indicators in the United States in 1929. The Soviet Union is a country thrice the size of the United States with approximately 30 per cent more population.

At the close of the fiscal year 1928-29 it was announced that the industrial plan for the year had been exceeded. The plan called for an increase in output of 21.4 per cent. The actual increase was 23.4 per cent. The socialized development of agriculture was also well above the programme. In view of this progress the "control figures" for 1929-30 were revised upward on the basis of completing the Five-Year Plan in four years. In the original plan the increase of the industrial output for 1929-30 was set at 21.5 per cent. It was revised to 31.5 per cent. The actual result, 24.2 per cent, while comfortably above the original plan, was well below the ambitious new goal. Many factors contributed to keep the advance below the "control figures." These included the increasing shortage of labor, particularly in the ranks of skilled workers; the large labor turnover because of the shortage; the difficulties of the transport system in fulfilling the demands imposed by the rapid industrial growth; the world-wide economic depression which particularly hit the prices of exports of grain and other raw materials. As a result of two years under the Five-Year Plan the industrial output was increased about 56 per cent. The original schedule called for an increase of 47.5 per cent. The output for 1930 was double that of 1913. The production of large-scale industry in the calendar year 1930 was valued at 16,884,000,000 rubles, or 23 per cent more than in 1929 (1 ruble was worth \$0.514 in Russia).

In agriculture the programme of "socialization" made great progress in 1930. Thirty per cent of the peasant holdings were pooled in large-scale collective farms and in addition 4,200,000 hectares (1 hectare equals 2.47 acres) were sown in the large-scale highly-mechanized State grain areas. The productivity of the "socialized sector" ranged from 10 to 20 per cent greater than that of the individual farms.

The harvest of 1930 was decidedly the best since the revolution. Total sown area was 130,400,000 hectares, as compared with 120,400,000 in 1929. The grain harvest was estimated by the new federal Commissar for Agriculture, in October, as 20 per cent above the yield of 76,250,000 metric tons in 1929. The sown area in grain was 102,614,000 hectares, compared with 98,262,900 hectares in 1929. The prewar sowings to grain were 102,700,000 hectares with a crop estimated at between 75,000,000 and 80,000,000 metric tons. Grain exports before the war averaged about 11,000,000 tons. They were negligible in 1928 and 1929, but were resumed in the fall of 1930, the export surplus being estimated at from one-fourth to one-third of the prewar average.

In both cotton and sugar beets the sown area in 1930 was 50 per cent greater than in 1929, with commensurate increase in yields. The total cotton crop for 1930 was estimated at 1,294,000 metric tons (unginned) from 1,525,000 hectares, as compared with 976,000 metric tons from 1,036,000 hectares in 1929. Other technical crop yields for 1929, in metric tons, follow: Sugar beets, 8,400,000; flax, 427,700; hemp 520,300; sunflower seeds, 2,112,000. Livestock showed a marked falling off in 1930. During the winter of 1929-30 local authorities in many places in excessive zeal, used coercive methods to force peasants into the collectives. Many of these peasants slaughtered their livestock rather than turn it over to the collectives, and this condition continued until the central authorities, early in

March, ordered that coercive methods cease. Livestock estimates for the spring of 1930 were: Horses, 31,158,400; cattle, 52,591,700; sheep, 89,859,900; hogs 12,182,700. Butter and cheese factories in 1930 were estimated at 8000. The yield of Soviet fisheries in 1929 was 890,000 tons, about half of which was supplied by the waters of the Volga-Caspian region. See COTTON; AGRICULTURE under *World Agriculture*.

The sum of \$1,920,950,000 was expended for capital construction in industry in 1929-30, as compared with \$864,685,000 the previous year. The funds are derived from profits, depreciation account, and government budget appropriations.

Workers employed in large-scale state industry in August, 1930, were 2,625,000, an increase of 269,000 over the same date of the previous year. According to the *Economic Review of the Soviet Union* for Sept. 1, 1930, unemployment decreased from 1,741,000 on April 1, 1929, to 1,081,000 on April 1, 1930, and to 900,000 on June 1, 1930. A labor shortage was reported in the fall of 1930, and the Government withdrew the benefits of unemployment insurance from persons who habitually refused work. Expenditures for unemployment relief were placed at 152,000,000 rubles in 1929 and 135,000,000 rubles in 1930.

Two major construction projects were completed during 1930. The Turkestan-Siberian railway, connecting the Soviet cotton belt in central Asia with the grain and timber districts of Siberia, was finished a year and a half ahead of the original plan. Construction of the tractor plant at Stalingrad, which will have an eventual capacity of 50,000 tractors annually, was also completed in the spring, ahead of schedule. Satisfactory progress was made in the construction of the dam on the Dnieper River, in the Southern Mining District of the Ukraine, where the largest hydro-electric power station in Europe will be erected. At the end of September, Col. Hugh L. Cooper of New York, chief supervisory engineer, reported that the difficult work of laying the foundations had been completed and the work was proceeding according to schedule.

Production of coal by the United Coal Industry in 1929-30 was 46,651,000 metric tons, as compared with 40,570,000 metric tons in 1928-29 and 28,356,000 tons in 1913. Russia ranked third among oil-producing countries, with a production of 17,066,000 metric tons in 1929-30, as compared with 13,700,000 in 1928-29 and 9,215,911 in 1913. Output of electric power in 1929-30 was 8000 million kilowatt hours, as compared with 6465 in 1928-29. The output for 1929-30 was estimated at five times the prewar output. Production of iron ore for 1929-30 was 10,148,000 metric tons, as compared with 7,120,000 in 1928-29 and 8,689,000 in 1913. Statistics of iron and steel production, in thousands of metric tons, are as follows:

IRON AND STEEL PRODUCTION

| | 1929-30 | 1928-29 | 1913 |
|-------------------|---------|---------|-------|
| Pig Iron | 4,982 | 4,018 | 4,206 |
| Steel | 5,552 | 4,723 | 4,247 |
| Rolled Iron | 4,440 | 4,018 | 3,509 |

The output of both agricultural and industrial machinery showed large advances in 1929-30, the former being four and a half times the prewar figure. In the lighter industries substantial increases were made generally, except in the cotton-textile industry, the output of which was lower

than in 1928-29, owing to shortage of raw material. During the year costs of production in industry were cut down 7.1 per cent, which was better than the previous year but only 60 per cent of the schedule. On Oct. 1, 1930, it was announced that two-thirds of all industrial workers were working under the new five-day week. Under this system each worker has one rest-day in five, the rest-days being arranged on a stagger system so that the machinery works every day. On Oct. 1, 1930, it was announced that the seven-hour day, which was being introduced gradually, applied to 45.2 per cent of the workers.

Membership in the coöperatives was reported as upwards of 50,000,000 on Oct. 1, 1929. These organizations conduct many industrial enterprises, especially in the food industry. They are responsible for about two-thirds of the retail trade of the country and conduct 10 per cent of the foreign trade. The Consumers' Coöperatives, with a membership of 33,465,000 as of Oct. 1, 1929, operated 100,462 retail stores.

COMMERCE. The foreign trade turnover for recent years is shown in the accompanying table:

RUSSIAN FOREIGN TRADE, 1925-30

| | Exports | Imports | Total |
|-------------|---------------|---------------|---------------|
| 1924-25 ... | \$296,125,000 | \$370,800,000 | \$666,925,000 |
| 1925-26 ... | 348,447,000 | 389,546,000 | 737,995,000 |
| 1926-27 ... | 396,807,500 | 366,989,000 | 763,796,500 |
| 1927-28 ... | 398,564,000 | 486,523,000 | 885,087,000 |
| 1928-29 ... | 458,350,000 | 431,055,000 | 889,405,000 |
| 1929-30 ... | 516,117,550 | 550,351,660 | 1,066,469,210 |

Foreign trade turnover in 1913 was \$1,490,495,000. The country then included Poland, Finland, and the border states. Foreign trade operations are a government monopoly regulated through the Commissariat for Trade in accordance with the needs of the national economy as a whole. In 1930 nine-tenths of Soviet imports were of a productive nature. The volume of annual imports is determined on the basis of the surplus of Russian products available for export.

The principal Soviet exports are oil products, timber, furs, grain, dairy products, flax, manganese ore, and sheep casings. The principal imports are industrial and agricultural machinery, cotton, and other raw materials. The principal countries taking Soviet exports in 1928-29 were: Germany, 24 per cent; United Kingdom, 22; Persia 8.4; Latvia 8; France 5. The principal countries furnishing Soviet imports were: Germany, 22.5 per cent; United States, 18.3; Persia, 7.6; United Kingdom, 5.3; China, 4.10. Soviet exports to and imports from six principal countries in 1928-29 and 1929-30, in thousands of rubles (the ruble was worth 51.46 cents in Russia), are shown in the accompanying table.

SOVIET FOREIGN TRADE BY COUNTRIES
[In thousands of rubles]

| | 1928-29 | | 1929-30 * | |
|------------------|---------|---------|-----------|---------|
| | Exports | Imports | Exports | Imports |
| Germany | 208,537 | 188,465 | 214,254 | 234,389 |
| England | 192,503 | 44,338 | 238,158 | 160,000 |
| United States .. | 38,469 | 152,925 | 44,579 | 280,360 |
| Persia | 74,061 | 63,766 | 61,189 | 47,355 |
| Latvia | 69,994 | 15,312 | 70,083 | 14,907 |
| France | 43,139 | 30,425 | 44,705 | 33,956 |

* Preliminary.

Final trade figures for 1929-30 placed total exports at 1,002,270,000 rubles and imports at 1,068,742,000 rubles, or increases of 14.1 and 27.9, respectively, over 1928-29. The balance of trade,

which was favorable by 41,293,000 rubles in 1928-29, showed an unfavorable balance of 66,472,000 rubles in 1929-30. The volume of the trade turnover in 1929-30 increased almost 50 per cent over the preceding year, but the gain in values was much less due to international price declines, especially of raw materials. Lumber and lumber products were the principal export line in 1929-30. Oil, which had been first in 1928-29, dropped to second place, followed by furs, wheat, textile piece goods, and flax, in the order named. The leading imports in 1929-30, in the order of value, were: Industrial equipment and parts, tractors and parts, cotton, ferrous metals, iron and steel manufactures, electrical equipment and supplies, wool, and agricultural machinery and parts. In the calendar year 1930 Soviet trade across European frontiers showed a gain of 19.3 per cent over 1929 and was one-third less than in 1913.

The principal Soviet imports from the United States during 1930 were agricultural machinery and equipment, industrial and power-plant equipment, cotton, non-ferrous metals, automotive equipment and office supplies. According to the figures of Soviet trade organizations in the United States, purchases of American products for shipment to the Soviet Union in 1929-30 (Soviet fiscal year ending September 30) were \$149,223,000, as compared with \$107,651,000 the previous year. Purchases of agricultural equipment were \$63,530,000, an increase of 125 per cent over the previous year; purchases of industrial and power-plant equipment were \$50,420,000, an increase of 77 per cent. Cotton purchases were \$17,213,000 as against \$32,175,000 the previous year. The principal Soviet exports to the United States are furs, manganese ore, pulp wood, spruce lumber, precious metals, sheep casings, flax and tow, hides and skins, and bristles. The sales of Soviet products in the United States in 1929-30 were only about one-fifth the purchases. Sales were valued at a total of \$31,017,000, as compared with \$30,749,000 sold in the previous year.

Figures of the U. S. Department of Commerce for the six-year period ended Dec. 31, 1930, showed a favorable balance for the United States in American-Soviet trade of \$355,417,000. During the first six months of 1930 the Soviet Union was the sixth largest foreign customer of the United States. In 1929 it stood sixteenth on the American export list. Figures of the Department of Commerce for the years 1925 through 1930 are given in the accompanying table.

SOVIET-AMERICAN TRADE, 1925-30

| | American exports to U. S. S. R. | American imports from U. S. S. R. | Total |
|-------------|---------------------------------|-----------------------------------|---------------|
| 1925 | \$ 68,900,000 | \$13,200,000 | \$ 82,100,000 |
| 1926 | 48,900,000 | 14,100,000 | 64,000,000 |
| 1927 | 64,900,000 | 12,800,000 | 77,700,000 |
| 1928 | 74,100,000 | 14,000,000 | 88,100,000 |
| 1929 | 84,700,000 | 22,500,000 | 107,200,000 |
| 1930 | 114,356,000 | 23,839,000 | 138,195,000 |
| Total | \$455,856,000 | \$100,439,000 | \$557,295,000 |

* Including flour valued at \$20,000,000 purchased because of the poor harvest of 1924.

FINANCE. Soviet currency was placed on a gold basis by the end of June, 1924. The budgets of Soviet fiscal years, ending September 30, in millions of rubles (1 ruble equaled \$0.515 in Russia), are shown in the table on the next page.

Revenue from taxes in 1929-30 amounted to 5,951,000,000 rubles; the income from state properties and enterprises was 1,882,000,000 rubles; from state loans, 1,212,000,000 rubles; from transportation and communication, 3,363,000,000 rubles. Expenditures for administrative purposes in 1929-30 totaled 1,354,000,000 rubles; for

SOVIET BUDGET OPERATIONS
[In millions of rubles]

| | 1926-27 (actual) | 1927-28 (actual) | 1928-29 (actual) | 1929-30 (actual) |
|------------------|---------------------|---------------------|---------------------|---------------------|
| Revenues | 5,201.3 | 6,950.9 | 8,112.4 | 12,527 |
| Expenditures . . | 5,151.3 | 6,747.6 | 7,864.1 | 12,246 |

financing the national economy, 4,211,000,000 rubles (2,179,600,000 rubles in 1928-29). Of the total expenditure for the development of state enterprises, 2,135,000,000 rubles went to industry, 852,000,000 rubles to agriculture, and 211,000,000 rubles for the construction of new railroads. The expenditure upon the army and navy in 1928-29 was 874,701,000 rubles. The total public debt as of April 1, 1930, was placed at 3,019,700,000 rubles (\$1,555,146,000).

Currency circulation Oct. 1, 1930 was 4,263,900,000 rubles, as compared with 2,642,200,000 rubles Oct. 1, 1930. During the year ending Sept. 30, 1930, the gold fund of the State Bank increased 93 per cent. The rapid increase in currency circulation during the year was terminated October 1, after which a period of note-reduction was inaugurated. Savings deposits Sept. 1, 1930, 722,000,000 rubles (462,400,000 on Sept. 1, 1929).

As the supply of foreign capital was inadequate (amounting to only \$25,750,000 in 1929) and the earnings of Soviet economic enterprises were still insufficient to finance industrial expansion, capital was "pumped" from private sources into socialized economy by means of the budget system. The Commissariat of Finance reported that of the combined net budget for 1927-28 totaling 6,131,900,000 rubles, the private sector paid 72.2 per cent of the revenues and received 5 per cent of the expenditure, while the socialized sector contributed 27.8 per cent and received 95 per cent. The private share in the total national income dropped from 54.5 per cent in 1926-27 to 46.8 per cent in 1928-29 and 38.6 per cent (estimated) in 1929-30. However, the total national income was rapidly increasing—from 25,000,000,000 rubles in 1927-28 to nearly 29,000,000,000 in 1928-29 and to 35,000,000,000 rubles (estimated) in 1929-30.

TRANSPORT. In 1930 the railway system of the Soviet Union comprised 79,934 kilometers (49,774 miles) of line, as compared with 77,128 kilometers the previous year. Railway operations in 1929-30 aggregated 132,956,000,000 ton-kilometers of freight, as compared with 106,748,000,000 in 1928-29. A total of 234,000,000 tons of freight and 510,200,000 passengers were carried in 1929-30, or increases of 33.8 and 50 per cent, respectively, over the figures for 1928-29. Plans for a complete reorganization and modernization of the railways, which proved inadequate to handle the rapidly increasing demands under the Five-Year Plan, were made in 1930. Ralph Budd, president of the Great Northern Railway of the United States, was engaged by the Soviet Railway Administration to study its railway problems and make recommendations for reorganization.

The Turkestan-Siberian Railway, extending 890 miles from Semipalatinsk in Southern Siberia

to Lugovaya on the Kirghiz border and forming the eastern side of the railway triangle linking Russia proper, Siberia, and central Asia, was officially completed on May 1, 1930, nearly a year and a half ahead of schedule. The total cost of the project to May 1 was 175,000,000 rubles (\$90,000,000). In all 1452 miles of track were laid in slightly over three years, there being 1260 miles of main line and 186 miles of sidings. The cheap importation of grain and lumber from Siberia was expected to leave the population of Soviet Central Asia free to devote themselves to the cultivation of cotton on a much greater scale and to supply all the needs of the Soviet textile industry. The railway also made possible the exploitation of rich mineral, grazing, and fruit lands in Kazakhstan over an area of about 480,000 square miles.

In 1930, there were 26,000 kilometers (16,120 miles) of airplane lines in regular operation, as compared with 17,400 kilometers during the previous year. The first direct radio-communication service between the United States and Soviet Russia was opened Nov. 13, 1930. See *AERONAUTICS under Air Transport*.

GOVERNMENT. A description of the constitution of the Union of Soviet Socialist Republics will be found in the YEAR BOOK for 1923. Several changes in the structure of the Council of People's Commissars (the executive cabinet of the Soviet Government) were effected in 1930. The Commissariat for Trade was replaced by a Commissariat for Internal Trade and a Commissariat for Foreign Trade. A federal Commissariat for Agriculture was established. The Central Statistical Board became attached as a bureau in the State Planning Commission, and its chairman ceased to have a seat in the Council. Several changes in the personnel of the Council were made, as the chief of which Maxim Litvinov became Commissar for Foreign Affairs, succeeding Georgiy Chicherin, who retired in the summer after several years of absence on account of ill-health.

Toward the close of 1930 the Council of People's Commissars was composed as follows: Chairman, Alexei I. Rykov; vice-chairmen, J. E. Rudzutak, V. V. Schmidt, V. V. Kuybyshev; Commissar for Army and Navy, K. E. Voroshilov; for Internal Trade, A. J. Mikoyan; for Foreign Trade, A. P. Rozengoltz; for Foreign Affairs, Maxim Litvinov; for Transportation, M. L. Rukhimovich; for Posts and Telegraphs, N. K. Antipov; for Finance, G. F. Grinko; for Labor, A. M. Tsikhon; for Agriculture, Y. A. Yakovlev; for Peasants' and Workers' Inspection, (unfilled); Chairman of Supreme Economic Council, G. K. Ordjonikidze. The chairmen of the Central Executive Committee were: M. J. Kalinin, G. J. Petrovsky, A. G. Chervyakov, Ganzanfar Mussabekov, Netyrbay Aitakov, Faizulla Khodzhayev. These chairmen of the Central Executive Committee are the presidents of the constituent republics. Josef Stalin, General Secretary of the Russian Communist party, was the most powerful political figure in the country.

HISTORY

FOREIGN RELATIONS. Although 1929 had ended auspiciously with the resumption of diplomatic relations with Great Britain and the temporary settlement of the dispute with China over the Chinese Eastern Railway, the year 1930 proved a troubled one in Soviet foreign relations. Three waves of anti-Russian agitation swept the cap-

italist nations during the year, threatening adverse repercussions upon the Soviet Union's diplomatic and economic relations. The success of the entire Communist programme, including the industrialization of Russia and the socialization of agriculture, was directly dependent upon machinery, expert personnel, technique, and methodology obtainable only from the capitalist world. The anti-Soviet agitations were therefore rightly considered as threatening the failure of the Five-Year Plan.

They were provoked by the alleged anti-religious policies of the Soviet Government, the increasing competition and alleged "dumping" of Soviet products in world markets, and the charges leveled at leading political figures in Western Europe during the trial in November of Russian engineers accused of fomenting a counter-revolutionary conspiracy. Russia's apparent alignment with Italy in support of revision of the Versailles Treaty aroused the antagonism of France and her allies and increased the general tension in Europe. Relations with Finland and Poland became seriously strained, and hopes for a permanent settlement of the dispute over the Chinese Eastern Railway proved premature.

RELIGIOUS CONFLICT. Pope Pius XI on Feb. 2, 1930, issued a formal appeal for the support of the Governments and people of Christian nations in protesting against what he called "the horrible and criminal sacrileges" in Russia. He charged the Soviet Government with closing hundreds of churches on the preceding Christmas, forcing church members to work on that day, suppressing Sunday schools, and compelling office employees to sign a declaration of formal apostasy and hatred of God, under pain of deprivation of their ration tickets. The Archbishop of Canterbury and certain other Anglican bishops, the French Protestant Federation, Bishop William T. Manning of the Protestant Episcopal Diocese of New York, and various Evangelical and Jewish organizations joined in formal protests and prayers in behalf of their co-religionists in Russia. In France, Germany, and particularly in Great Britain, powerful pressure was exerted in favor of the severance or modification of diplomatic relations with Russia, but without apparent result.

Denials that Christians or Jews were being persecuted on religious grounds were immediately forthcoming from the Metropolitan Sergius, head of the Russian Orthodox Church; Dr. Joseph A. Rosen, head of the Russian agency of the American Society for Jewish Farm Settlements; and from Soviet officials. Premier MacDonald, declaring the anti-Soviet agitation in Great Britain to be "inspired by politics as much as by religious toleration," instructed Sir Esmond Ovey, British Ambassador to Russia, to investigate the charges. Sir Esmond's report, published toward the end of April, stated that "there is no religious persecution in Russia in the strict sense of the term 'persecution,' and no case has been discovered of a priest or any one else being punished for the practice of religion." The report pointed out, however, that Christianity was being effectively stifled by adverse legislation and social ostracism.

The charges of religious persecution were linked with the Soviet Government's campaign to "collectivize" Russian agriculture, which gained impetus in the fall of 1929. Collectivization, or the pooling of small peasant holdings in large collective farms, was bitterly opposed by the kulaks, or more prosperous peasants. In some sections,

the kulaks fought the movement by arson and the murder of Communist agents. Thousands of peasants slaughtered their livestock, rather than turn the animals over to the collectives. A number of village priests, accused of joining in the anti-Government conspiracies of the kulaks, were executed or jailed.

The tension created both in Russia and the Western countries by the collectivistic campaign was eased when Josef Stalin on March 2 formally deplored excesses committed in the application of the Government's policies. Subsequent decrees gave effect to his demand for moderation on the part of Communist party members in promoting the agricultural and anti-religious policies of the Kremlin. The atheist societies abandoned many of their plans for anti-religious demonstrations at Easter and on April 18 the trade-union leaders announced that the Easter Days (April 19, 20, and 21) would be observed as holidays in all factories and shops in which the five-day week had not been established.

SOVIET "DUMPING." A second crisis in Russia's relations with the capitalist world occurred in September, when large exports of the new Russian wheat harvest lowered the price of that commodity in the world market. Resentment at the Soviet Government's export policy had been accumulating throughout the summer, as increasingly large quantities of low-priced Russian raw materials continued to invade the markets of Europe and America. In the United States, the manganese, pulpwood, and lumber producers had repeatedly protested against competitive imports from Russia (see **FORESTRY** under *Lumber Situation*). On September 19, Secretary of Agriculture Hyde accused the Soviet Government of selling large quantities of wheat short on the Chicago Exchange for the purpose of causing economic distress and political unrest among American farmers. The charge was reiterated throughout Europe that the Soviet Government was dumping its products abroad far below the cost of production in order to ruin the industries of other countries and thus create revolutions. Soviet authorities replied that the first result of such a policy would be to cause economic ruin and political disturbance in Russia. The tendency of impartial observers was to discount the charges of revolutionary motives. The success of the Five-Year Plan, it was pointed out, depended upon large imports of productive machinery and the hiring of hundreds of foreign technicians and engineers. Lacking foreign credits, these could be paid for only by Russian exports and the Government was accordingly compelled to dispose of all products, after meeting the minimum requirements of the Russian population, at whatever price they would bring on foreign markets. Entering markets already glutted with unsold stocks of domestic merchandise and suffering from the world economic depression, the Russian exports precipitated the collapse of various local industries.

At the suggestion of former Premier Herriot, France took the lead in a movement for the economic boycott of Russia. A decree promulgated by the French Cabinet October 3 established Government control of the quantity and price of Russian imports through a licensing system. Belgium, whose flax and match industries had been hard hit by Russian competition, followed suit on October 25. The way for a general economic alliance of Western Europe against Soviet Russia was further prepared by regional conferences in central

Europe, the Balkans, and Scandinavia. A bill to place an embargo on Russian imports was introduced into the United States Congress in December. A financial boycott terminating the short-term credits obtained by Russia in the European money markets also loomed as a possibility.

Germany and Italy, however, refused to fall in line with the boycott movement. On the contrary, the opposition of these powers to French hegemony in Europe as sustained by the Versailles Treaty dictated a course which appeared to be leading toward the formation of an economic and possibly a political entente with Russia (see ITALY, GERMANY, and FRANCE under *History*). In August, Italy and the Soviet Government concluded a trade treaty under which the Italian Government guaranteed 75 per cent of credits advanced on Russian purchases by Italian merchants. Although failing in its major aim of closer economic integration between German and Russian industry, a mixed Russo-German commission early in the year concluded a trade agreement under which the German Government assumed a similar guarantee up to 65 per cent. Litvinov, the Commissar for Foreign Affairs, in pressing his plan for progressive disarmament among the nations at the sessions of the Preparatory Disarmament Commission in Geneva in November, proved to be in full accord with the German thesis on disarmament. Russian and German interests were identical, also, with regard to such other vital issues as the Versailles Treaty, the proposed Pan-European federation, and reparations. Yet the bourgeois and democratic government of Germany remained cool toward proposals for closer cooperation with Soviet Russia and Fascist Italy.

THE MOSCOW TRIAL. Soviet relations with France were further disturbed by accusations leveled at former Premier Poincaré, Foreign Minister Briand, Sir Henri Deterding, Col. T. E. Lawrence and other leading French and British figures during the trial in Moscow in November and December of eight highly-placed Russian engineers. The engineers were charged with conspiring to use their important technical posts to sabotage industry and create unemployment and unrest in order to prepare the ground for an emigré invasion with foreign support. At their trial, the engineers threw themselves upon the mercy of the court and confessed that they had plotted with Russian emigrés in Paris and other European capitals, who were said to have received promises of foreign backing. The foreigners named categorically denied the charges, and the French press renewed its agitation for the severance of diplomatic relations with Russia. In Great Britain, the view was expressed that the trial was arranged by the Soviet Government in an effort to avoid responsibility for the increasing difficulties of the internal economic situation and to spur the Russian masses to new efforts to complete the Five-Year Plan. The Soviet leaders had declared that the contemplated advance in industrial production had been seriously handicapped by the activities of the conspirators. On December 7, the Soviet court sentenced five of the engineers to death and three to ten years' imprisonment each. The following day, it was announced that all five of the death sentences had been commuted to ten years' imprisonment and the ten-year sentences of the other defendants reduced to eight years.

OTHER FOREIGN RELATIONS. War between Russia and Poland seemed fairly imminent in April,

1930, following the discovery of a bomb in the Soviet legation in Warsaw, the appointment of an aggressively anti-Soviet Polish Cabinet, and the espousal of the Pope's anti-Soviet campaign by the Polish Government. In a stern note delivered April 29, Russia accused Poland of deliberately attempting to precipitate war, but on May 1, following Polish explanations, the Soviet Government expressed itself convinced that Poland was not implicated in the attempt on the lives of its legation staff. As in preceding years, the activities of Communists in India, Germany, Finland, France, French Indo-China, China, and Rumania served as a constant irritant to the relations of the Soviet Government with these nations (see each under *History*; also COMMUNISM). A trade treaty was concluded with Great Britain April 6, under which Soviet commercial agents in England were accorded diplomatic immunity while Russia pledged itself not to engage in propaganda hostile to British interests. The Soviet Government refused to accept responsibility for the Communist International, however, and the latter's activities drew forth repeated protests from Great Britain.

Russian policy toward the United States, which had been in general conciliatory due to the desire for American recognition and credits, changed noticeably following the temporary embargo placed on Russian products by the Treasury Department and the none-too-cordial treatment accorded Amtorg officials by the Congressional committee under Representative Fish, appointed to investigate Communist activities in the United States. High Soviet officials gave plain warning that they would transfer their business to other countries if further obstacles were placed in the way of their trade with the United States. That the U. S. State Department had placed a virtual embargo on the export of military airplanes, arms, and ammunition to Russia became known in June when it vetoed plans of a Baltimore airplane factory to sell 20 bombing planes to the Soviet Government at a cost reported at about \$2,000,000.

Tewfik Bey, Turkish Foreign Minister, received an enthusiastic reception upon his visit to Moscow in October. The visit was regarded as significant in view of the apparent rapprochement of Italy and Russia and the fact that commerce between Italy and Russia, in case of a Franco-Italian war, would be dependent upon the friendly attitude of Turkey. See GREECE and TURKEY under *History*.

INTERNAL AFFAIRS. The most significant development in the internal situation in 1930 was the success of Stalin's policy of collectivization (see above under *Production*). The superior production of the collective and state farms, as compared with the individual peasant farms, seemed to refute the contention of Bukharin, Rykov, Tomski, and other Right Wing leaders that the "socialized sector" in farming was being extended too rapidly. This demonstration of the practicability of his programme enabled Stalin to emerge with heightened prestige and power from the biennial Congress of the Communist party, which opened at Moscow July 25. The Government's Five-Year Plan not only received the unqualified approval of the convention, but it was decided to speed it up in order to achieve its objectives in four years instead of five. Rykov and Tomski publicly recanted their "Right heresy" before the convention. The shakeup effected in the ranks of high Govern-

ment officials at the convention (see above under *Government*) further consolidated Stalin's dominance.

Progress in industry was less rapid than in agriculture. Some of the new plants were slow in starting production. The dearth of skilled labor was heavily felt, and the international economic depression as well as the difficulties in foreign trade interposed further obstacles. As the year moved toward a close there were increasing signs of privation and suffering among the industrial population of Russia. This was accompanied by a general slackening in the efficiency of labor, an increasing labor turnover, and a lowering of both the quality of production and the quantity of output per worker, as compared with the control figures of the Five-Year Plan. The commodity scarcity and high prices led to the virtual repudiation of paper money in some sections of the country and a return to barter. Hoarding by the people lowered the quantity of metallic money in circulation.

The Government's determination to force through the Five-Year Plan at whatever odds was evidenced in the increasing activity of the secret police and the drastic punishment meted out to those suspected of sabotage or obstruction. Forty-eight persons, including several high officials, were executed on September 24 and on October 4 the arrest of 300 Social Democrats was reported. Earlier in the year, decrees were issued tightening the discipline of labor; and Communist "labor battalions" were mobilized for service in industries where the output failed to meet the quotas allotted in the Five-Year Plan. A decree of the Soviet Central Executive Committee issued December 17 prohibited the changing of jobs by any employed person except with the formal permission of the authorities. Persons registered in Labor exchanges who refused jobs offered to them were to be stricken off the list, i.e., deprived of the privilege of buying food, clothing, and other necessities, for six months. Engineers and skilled workers were subject to transfer to other vicinities at any time without their consent. Another decree of December 22 revised the entire system of food distribution and provided that only those who worked and gave complete support to the Government might eat.

The difficulties encountered in industrialization emboldened Right and Left opponents of Stalin in November to protest once more at the dictator's policies. Secure in his power at the Communist convention, Stalin had retained Rykov in the Politburo (political bureau) and Tomski and Bukharin in the central committee of the Communist party. On December 19, the long-drawn conflict between Stalin and the leaders of the Right wing reached its climax with the dismissal of Rykov as President of the Council of People's Commissars and his expulsion (on December 21) from the Politburo. The defeat of the Right leaders gave Stalin complete control of the Russian Communist party, which in turn controlled the Soviet Government. Stalin had held no official connection with the Government since his resignation from the obsolete Commissariat of Nationalities in 1923. On December 25, however, he accepted membership in the Council of Labor and Defense, one of the three interlocking directorates of the Soviet Government. Rykov's post as president of the Council of People's Commissars was given to Vyacheslav Molotov, one of Stalin's right-hand men, who had been assistant secretary

of the Central Executive Committee of the Communist party since 1922 and a member of the Political Bureau. Another Stalinite, G. K. Ordzhonikidze, succeeded Rykov on the Political Bureau.

During 1930 some changes of policy affecting internal trade were inaugurated. A credit reform was introduced to simplify the system of credit operations between and among state and coöperative organizations and make the State Bank the focus for financing such operations. The large annual fairs, including that of Nizhni-Novgorod which had a trade turnover of \$150,000,000, were abolished, as outmoded under modern conditions. Under the socialized organization of the country private trade had declined. In retail trade the coöperatives handled nearly 65 per cent of the turnover, private traders about 6 per cent, and the stores of the state trusts the remainder. Wholesale trade was conducted principally by the state trusts and the coöperatives.

During the year both the system of state industrial organizations and the banking credit system were reorganized in the interests of greater simplification and efficiency. The fiscal year was changed to accord with the calendar year instead of ending September 30. The card-ration system was continued in the cities even after the good harvest of 1930 in order to curb speculation and assure an orderly distribution. The powerful labor organizations in the cities were reported to favor it. Though in September, 1928, the Soviet Government announced the extension and liberalization of the policy of granting concessions to foreigners, and opened new fields to such concessionaries in various industries, in building construction, and in municipal public services, the concession steadily yielded place to the "technical assistance contract," under which foreign specialists were engaged to assist in the economic development of the Soviet Union. In the autumn of 1930 there were over 100 of such contracts in operation, nearly half of them with important American corporations and engineering firms. By the end of summer about 800 American engineers were working in the Soviet Union and several hundred American foremen and skilled workers were employed in the new Soviet plants. Though there were 270 foreign applications for concessions in 1928-29, the number in operation did not tend to increase. Only 59 were reported as of October 1, 1929, of which four were American.

LENA GOLDFIELDS CASE. A development which attracted considerable attention in industrial circles was the withdrawal in 1930 of the British Lena Goldfields, Ltd., from the exploitation of rich mineral concessions in Russia obtained in 1925. An arbitration court composed of one Englishman and one German subsequently (September 2) awarded the company damages of \$65,000,000 against the Soviet Government on the ground that it had prevented the company from carrying out the terms of its concessions. The Soviet Government, which had withdrawn its representative from the arbitral commission, refused to recognize the validity of the award. It contended that the termination of the company's activities in Russia while its difficulties with the Government were being arbitrated had ended the jurisdiction of the arbitration commission provided for under the terms of the concession.

Lena Goldfields, Ltd., was one of the largest concessionaires in Russia. Its officials testified that they had invested \$17,000,000 in mining

projects in Siberia and the Urals up to the beginning of 1929, and employed from 14,000 to 15,000 persons. It was charged that with the beginning of the Five-Year Plan in 1929, the Government's conciliatory attitude changed to one of obstruction and hostility which forced the company to abandon the enterprise. Russia charged that the company had violated the concession agreement by failing to maintain the contract-schedule of operations, to invest the amount of outside capital agreed upon, or to pay the Government any share in the profits after 1929.

See **SIBERIA**; **SOVIET CENTRAL ASIA**; **POLAR RESEARCH**; **EXPLORATION**.

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RUSSIAN LITERATURE. See **PHILOLOGY**, **MODERN**, under *Slavic*.

RUTGERS UNIVERSITY. A nonsectarian institution of higher learning in New Brunswick, N. J., founded under the name of Queen's College in 1766. The university consists of the following schools and colleges: Arts and sciences, engineering, agriculture, pharmacy, chemistry, education, and New Jersey College for Women. The registration for the autumn of 1930 was 2859, of whom 1135 were registered at the college for women. Enrollment in the 1930 summer session was 1832. Of the 290 members on the faculty, 174 were professors and 116 instructors. The endowment funds amounted to \$4,350,000, and the income for the year, exclusive of the State agricultural experiment station, amounted to \$2,873,000. Lands, buildings, and endowments had a total valuation of more than \$17,600,000. The library contained 173,000 volumes. In 1930 the trustees established a new school of chemistry, with Dr. William T. Read as dean. Three new dormitories on the Bishop campus were also erected at a cost of \$450,000, and a gymnasium to cost \$650,000 was under construction. Acting President, after the resignation of Dr. John M. Thomas, Philip M. Brett, A.B., LL.B.

RYALL, WILLIAM BOLITHO. See **BOLITHO (RYALL), WILLIAM**.

RYE. The world's rye production in 1930, excepting the Soviet Republics, was a little below the high yields of 1929 and 1925. The production of 29 countries reporting to the International Institute of Agriculture, Rome, was estimated at 992,244,000 bushels, about 1 per cent below the yield in 1929 but over 12 per cent above the average annual yield for the five years 1924-1928. The 1930 rye area was 2.7 per cent above that of the preceding year and 3.4 per cent above the annual average for the five-year period. According to the data available the world's rye production is still below the annual average of the five years 1909-

1913, which was about 1,000,000,000 bushels. The production of the leading countries in 1930, not including the United States, was reported as follows: Germany, 303,445,000 bushels; Poland, 272,430,000 bushels; Czechoslovakia, 68,047,000 bushels; and France, 20,255,000 bushels. For 1928, the last year for which data are available, the Soviet Republics reported a yield of 755,831,000 bushels. Argentina, leading in rye production in South America, reported a yield of 4,401,000 bushels in the crop year 1929-1930. The Canadian production in 1930 was estimated at 22,287,000 bushels, nearly 10,000,000 bushels above the preceding crop.

The Department of Agriculture estimated the 1930 rye crop of the United States at 50,234,000 bushels, an increase of 8,323,000 bushels or nearly 20 per cent above the low yield of 1929 but 1.2 per cent below the average production of the previous 10 years. The area in rye was 3,722,000 acres, compared with 3,331,000 acres in 1929, being nearly 12 per cent more. The average yield, 13.5 bushels per acre, was approximately the same as the annual average for the 10 years 1919-1928. The average farm price on Dec. 1, 1930, was 41.6 cents per bushel compared with 86.4 cents the year before and computed on this basis the value of the crops for the two years was \$129,137,000 and \$166,613,000, respectively.

Among 35 States reporting rye production the yields of the leading States were estimated as follows: North Dakota, 13,134,000 bushels; Minnesota, 7,197,000 bushels; South Dakota, 5,800,000 bushels; Nebraska, 4,995,000 bushels; Wisconsin, 2,960,000 bushels; and Michigan, 2,565,000 bushels. The average yields per acre for these States were 11, 17.3, 14.5, 15, 15.5, and 15 bushels, respectively. The yields were above average in nearly all of the Atlantic and North Central States and below in most of the South Central and Western States. While the rye crop did not suffer extensively from the drought of the year the extremely hot weather caused the production of some shrunken grain.

The exports of rye from the United States for the fiscal year ended June 30, 1930, amounted to 2,538,000 bushels of grain and 10,000 barrels of flour, much below the exports of the year before, and the lowest in 14 years. No imports were recorded. As reported to the Department of Agriculture 4,158,000 acres of rye were sown in the fall of 1930, an increase of 4.1 per cent over the area sown in the fall of 1929.

SAAR BASIN. A section of the German Rhineland, which, under Article 45 of the Versailles Treaty, was awarded to France for exploitation of its coal fields, as compensation for the destruction of the coal fields in northern France by the German armies. Area, 726 square miles; population (1927), 770,030. In 1929, coal production totaled 13,500,000 metric tons (13,106,718 in 1928); pig iron, 2,104,940 tons (1,936,184); steel, 2,208,909 tons (2,073,051). The Saar is administered by a commission appointed by the League of Nations, pending a plebiscite in 1935 to determine its future. In 1930, negotiations for its early return to Germany were under way. See **FRANCE** and **GERMANY** under *History*; **LEAGUE OF NATIONS**.

SAFETY AT SEA. In the annual report of the U. S. Steamboat Inspection Service, made by Supervising Inspector General D. N. Hoover for the fiscal year 1930, attention was called to the increase of its personnel. With the addition of

45 new assistant inspectors to the organization's staff more frequent reinspections of vessels not heretofore properly covered would be made possible. For many years, it was pointed out, excursion and ferry steamers in addition to an annual inspection had been subjected to three separate reinspections. This same system henceforth was to be applied to all passenger vessels both foreign and American.

Pointing out that existing boiler rules were a tentative revision sponsored by the Steamboat Inspection Service, Mr. Hoover declared that these had received general commendation by interests competent to judge. These rules, which were being reviewed by a special committee of eminent engineers, would, when made permanent by law, surpass the marine boiler rules of any other nation, he believed.

The importance of enacting legislation covering motor-boat inspection and officering was again emphasized and it was recommended that the Steamboat Inspection Service be given authority to examine operators of these craft as to their vision, color sense, and knowledge of the rules of the road. No examination of any kind was required for motor-boat operators.

During the fiscal year 1930 officers of the Service inspected nearly 7000 vessels of all types and made 2500 reinspections. In addition they performed various other duties, including the testing of marine boiler plates, and the inspection of new life preservers and various other types of marine apparatus.

In the year ending June 30, 1930, 136 persons lost their lives on American steam vessels. On the basis of the total number of passengers carried by these craft, 317,231,352; this meant that for every life lost, 2,332,583 passengers were safely carried.

There were 143 strandings of large vessels on the coasts of the United States during the period from January, 1927, to March, 1930, according to the U. S. Lighthouse Service. Of these strandings 121, or 85 per cent, were of vessels not equipped with radio compasses, and 22, or 15 per cent, were of vessels having radio compasses. In only four cases did strandings of vessels equipped with radio compasses occur in general regions protected by radio beacons.

During the fiscal year ended June 30, 1930, the U. S. Coast Guard reported that 904 American merchant vessels sustained casualties involving a loss of \$300 or more in the case of each vessel. These 904 vessels were valued at \$202,759,317 and their cargoes at \$60,807,037, the total value of property endangered being \$263,566,354. The losses to vessels amounted to \$21,126,181 and to cargoes \$2,677,060, making the aggregate property loss \$23,803,841. The number of vessels totally lost was 253. Seventy-seven of the vessels involved in disaster foundered, 253 stranded, 241 were in collisions, and 333 sustained miscellaneous casualties, which are classified in the following table under "other causes." These foundering, strandings, collisions, and "other causes" were distributed by coasts and localities as follows: On the Atlantic and Gulf coasts, 288; on the Pacific coast, 244; on the Great Lakes, 93; on the United States rivers, 133; at sea and in foreign waters, 146. A total of 29,304 persons were on board the 904 vessels, 8749 of the number being passengers and 20,555 being members of crews. Of the 29,304 persons on board these vessels, 310 were lost, 233 being members of crews and 77 passengers.

Among the notable accidents at sea recorded during 1930 the following disasters were of chief interest:

January 12. British tug *St. Genny* foundered 80 miles from Ushant, with 23 lives lost.

January 28. Steamer *Edgar F. Coney*, 153 gross tons, with the barge *Pure Detona* in tow, left Sabine Bar bound for Pensacola, Fla. During the night the tug disappeared after hawser had been broken or cast adrift in rough weather. The entire crew of the tug, 14 persons, lost their lives. Only one body was recovered. On January 31 the barge was picked up and towed to Pensacola by the steamer *W. E. Hutton*.

February 11. North German Lloyd liner, *München*, burned at dock in New York after explosion of cargo of chemicals.

February 16. Seagoing barge *Carroll*, one of three barges in tow of the tug *Montrose*, bound from Norfolk, Va., to New York, N. Y., sank during a severe storm south by west of Five Fathom Bank Lightship. The master of the *Carroll* and crew of three were lost.

March 2. Steamer *Scantic* docked at Alabo Warehouse Dock, Mississippi River, New Orleans, La., was destroyed by a fire which started among bales of cotton on the dock. The fire spread to the vessel so quickly that it was impossible for those on board to leave by the gangplank or to lower a life-boat. Four members of the crew and three women and a child, who were visiting the ship, lost their lives. Approximate damage to steamer, \$75,000.

April 2. Ferry boat capsized near Takada, Kyushu Island, Japan, 110 lost.

April 8. H. M. S. *Sepoy* engaged in manœuvres off Hong Kong suffered an explosion of a depth charge, five men being killed and two injured.

April 10. Ellerman liner *City of Peking* struck sunken rock in fog south of Korea, 80 passengers and crew being rescued.

April 24. Freight steamer *Thames*, 560 gross tons, bound from New York, N. Y., to Bridgeport, Conn., caught fire from some unknown cause and, after being beached off Sound Beach, burned to the water's edge. Sixteen of the 26 members of the crew lost their lives.

April 31. Italian oil tanker and Swedish steamer in collision off Beachy Head, England, 18 lives being lost.

May 22. Steamer *Asia* destroyed by fire in harbor of Jeddah, Arabia; 100 lives lost.

June 4. Steamer *Goeraga* sunk off Teneriffe, Colombia; more than 60 lost.

June 9. Steamer *Litung* sunk in Yangtze River, China, after hitting rocks; 100 lost.

June 10. Steamer *Fairfax*, 5649 gross tons, collided with the motor ship *Pinthia*, 1111 gross tons, in the vicinity of No. 4 Gas Buoy, Massachusetts Bay, resulting in an explosion on the *Pinthia* and her immediate sinking with all hands (19) on board. A fire then broke out on the steamer *Fairfax*, as a result of which 14 of her passengers and 17 of her crew were lost.

August 11. Chinese launch exploded on Sikiang; 100 killed.

August 13. Two Chinese steamships in collision off Shantung peninsula, 79 lost.

August 16. British liner *Tahiti* lost propeller in Pacific and foundered; passengers and mails taken off by American liner *Ventura*.

August 18. Ferry boat capsized near Calcutta, India; 32 persons drowned.

August 20. British yacht *Islander* dashed to pieces on Cornish coast in storm, and six drowned.

December 7. The Italian salvage steamer *Artiglio* of Genoa lost by an explosion between islands of Belle Ile and Houat, near Quiberon. Disaster due to explosion of munitions in wreck of steam-ship *Florence* sunk in 1915. *Artiglio* was using explosives to remove the wreck. Captain Bertholotto and all the divers, making a total of 12, were lost.

December 19. Finnish steamers *Arcturus* and *Oberon* in collision in a dense fog. The *Oberon* sank and 24 members of the crew and 18 passengers were lost.

December 30. Steamer *Torefiell* wrecked off coast of Norway; some 24 lost.

SAFETY COUNCIL, NATIONAL; SAFETY, INDUSTRIAL. See NATIONAL SAFETY COUNCIL.

SAGHALIEN. See SAKHALIN.

ST. CHRISTOPHER or ST. KITTS. See LEEWARD ISLANDS.

ST. HELENA. An island of volcanic origin in the South Atlantic, about 1200 miles from the west coast of Africa, belonging to Great Britain. Area, 47 square miles; population, according to the census of 1921, 3747; estimated civil population, Dec. 31, 1928, 3797. Capital and seaport,

Jamestown. The chief occupation is the fibre industry, and fibre and tow are the principal exports. A detachment of the Royal Marine Artillery is stationed on the island, which is also a coaling station for the British navy. Governor in 1930, C. H. Harper.

ST. JOHN'S COLLEGE. A college of liberal arts and sciences for men in Annapolis, Md., founded as King William's School in 1696. The enrollment for the autumn term of 1930 was 242. There were 27 faculty members. The library contained more than 20,000 volumes. Acting President, Robert E. Bacon.

ST. KILDA. A small island of the Scottish Hebrides, abandoned by the 33 remaining inhabitants in August, 1930. The population decreased from 110 in 1851 to 45 in 1928. Sheep raising and fishing were the main occupations of the islanders.

ST. LAWRENCE UNIVERSITY. An institution for the higher education of men and women in Canton, N. Y., founded in 1856. The registration for the autumn term of 1930 was 2875, distributed as follows: College of letters and science, 890; theological school, 29; law school, 1956. The faculty numbered 136 members, including 54 in the college of letters and science, 5 in the theological school, 39 in the law school, and 11 special lecturers. The endowment funds amounted to \$4,059,088, and the income for the year to \$80,324. The library contained 54,000 volumes. During 1930 a dormitory for men, to house 200, was under construction. President, Richard Eddy Sykes, D.D.

ST. LOUIS, MISSOURI. For River des Peres improvement, see RECLAMATION.

ST. LOUIS MUSEUM. See ART MUSEUMS.

ST. LUCIA, lō'shī-ā. A British insular colony in the Windward group of the West Indies. Area, 233 square miles; population in 1928, 56,917. Castries, the chief port and capital, is a naval base and coaling station. The chief products are cacao, sugar, lime juice, hides, logwood, and rum. For 1928, imports totaled £242,053; exports, £197,836; revenue, £85,351; expenditure, £97,235; total shipping, 1,222,306 tons. The island is under an administrator aided by a nominated executive and a partly nominated and partly elected Legislative Council. Administrator and Colonial Secretary in 1930, Charles William Doory.

ST. PIERRE AND MIQUELON, mē-ke-lōn'. Two small groups of islands belonging to France, close to the southern coast of Newfoundland, and named from their two largest islands. Area of St. Pierre group, 10 square miles; of Miquelon group, 83 square miles; total population (1926), 4030. St. Pierre, the capital and chief port, had 3040 inhabitants. The islands are rocky and unsuited to agriculture, their main importance being as a centre for the cod-fishing industry and as a base of operations for liquor-smuggling into the United States. Following the embargo laid by Canada early in 1930 on the exportation of liquor across the American border, the rum-running trade of St. Pierre showed a marked increase. Liquor imports from Canada alone totaled 98,492 gallons in May, 1930, as compared with 16,114 gallons in the same month of 1929. In 1928, all imports totaled 168,557,794 francs; exports, principally dried fish and fish products, 145,788,882 francs. The local budget for 1929 balanced at 11,024,700 francs. The islands are under a governor aided by consultative and municipal councils. The Governor in 1930 was Adrien Juvanon.

ST. THOMAS. See SÃO THOMÉ AND PRINCEPE.

ST. VINCENT. A British insular colony in the Windward group of the West Indies. Area, 150.3 square miles; population in 1928, 51,426. Kingstown, with a population of 3836 in 1921, is the capital. In 1928 there were 1993 births, 1043 deaths, and 139 marriages. The chief products are arrowroot, sugar, cotton, rum, cacao, and spice; the Sea Island cotton is regarded as the best grown in the British Empire. For 1928, imports totaled £192,476; exports, £158,472; revenue, £84,593; expenditure, £60,441; total shipping, 713,613 tons. One-half of the Grenadine Islands are under the administration of the island of St. Vincent and the other half under Grenada (see GRENADA). An administrator and colonial secretary governs the colony, aided by a legislative council consisting of official, elected, and nominated members. Administrator in 1930, Major H. W. Peebles.

SAKHALIN, sā'kū-lyēn'. An island off the eastern coast of Siberia, separated from Japan by the narrow Strait of Soya. The portion south of the 50th parallel of N. latitude belongs to Japan; north of that line lies the Province of Sakhalin, belonging to Russia. Japanese Sakhalin or Karafuto (see KARAFUTO), has an area of about 13,934 square miles and a residential population (1929) of 240,502. The area of the Russian province is 14,088 square miles, with a population estimated at 34,000 in 1915. Valuable forests cover 75 per cent of the entire island. Discovery of additional oil reserves in the Okha region of Russian Sakhalin in 1929 increased the total estimated resources of that region to about 3,000,000 metric tons. Construction of a railroad connecting the oil fields with the port of Baikal was reported to have begun in 1930. The Japanese oil concession in Russian Sakhalin produced 150,000 metric tons of oil in 1929, compared with 133,000 tons in 1928. The Japanese coal concessionaire exported 115,498 tons in 1928-29.

SALVADOR, sālvá-dōr'. A Central American republic on the Pacific coast, bounded on the east by Honduras and on the north by Guatemala. Capital, San Salvador.

AREA AND POPULATION. The area is estimated at 13,176 square miles; the population in 1929 was estimated at 1,722,579. The mestizos, or persons of mixed race, numbered 1,307,200 and the Indians 326,800. San Salvador had a population in 1928 of 89,066. Other large towns were: Santa Ana, 75,796; San Miguel, 38,629; Zacatecoluca, 34,456; and San Vicente, 34,723. Births in 1928 numbered 65,431, of which 38,390 were illegitimate; deaths, 32,985.

EDUCATION. Primary education is free and nominally obligatory for children from 7 to 14 years of age. In 1929, there were 54,673 pupils enrolled in primary schools, 1137 in secondary schools, and 302 in the National University.

PRODUCTION. The coffee crop is the major factor in the national economy, normally furnishing over 90 per cent of the value of all exports. About 80 per cent of the total area is under cultivation. The area planted to coffee in 1929-30 was 203,614 acres, bearing 118,800,000 coffee trees, and the crop was estimated by the Government Statistical Office at 1,320,000 quintals, or 880,000 bags. The average prices received for coffee in 1929-30 were about 40 per cent less than during the previous season, resulting in a serious business depression. Other products are sugar (normal production about 25,000 tons), henequen, maize, cacao, bal-

sam, tobacco, indigo, hides and skins. Limited quantities of gold and silver are mined and new iron and lead mines in the Metapán district were being opened up in 1930. The forests contain valuable dye woods and hard woods. Sugar grinding and coffee cleaning are the chief manufacturing industries. Shoes, textiles, furniture, etc., are produced for the local market.

COMMERCE. Due to the lower price and curtailed shipments of coffee, exports in 1929 declined nearly 25 per cent at \$18,416,000 (\$24,464,000 in 1928), while imports decreased by 7 per cent to \$17,856,000 (\$19,189,000 in 1928). Of the total exports in 1929, coffee shipments were valued at about \$17,000,000. Germany was the principal customer in 1929, taking exports (mostly coffee) valued at \$5,852,000. The United States purchased exports to the value of \$3,830,000 (\$3,201,000 in 1928) and supplied imports valued at \$8,050,000 (\$7,591,000 in 1928). For the year ended June 30, 1930, Salvador's exports to the United States decreased 18.4 per cent to \$3,158,729 and imports from the United States decreased 8.9 per cent to \$6,825,419. Coffee, sugar, henequen, balsam, and indigo were the principal exports.

FINANCE. For the calendar year 1929, actual national revenues totaled 26,147,000 colones (1 colon equals \$0.50 at par), or 601,000 colones more than in 1928. Expenditures increased also to 27,219,000 colones, or 1,852,000 colones above the 1928 figure. The deficit for 1929 was 1,072,000 colones. The budget for the fiscal year ended June 30, 1930, calculated revenues and expenditures at 25,490,000 colones and 25,775,398 colones, respectively. The budget for 1930-31, as passed by the National Assembly, estimated receipts at 24,793,000 colones and expenditures at 25,189,146 colones. According to preliminary figures, the public debt on Jan. 1, 1930, stood at 43,194,000 colones (\$21,597,000), as compared with 45,806,000 colones (\$22,903,000) at the beginning of 1929.

COMMUNICATIONS. Of the 364 miles of railway in operation in 1929, the principal line was the Salvador branch of the International Railways of Central America. This line, 273 miles long, carried 911,969 passengers and 187,000 tons of freight in 1929 and earned gross receipts of \$1,572,000 in 1928. A new line completed during 1929 gave Salvador direct access to the Caribbean through Puerto Barrios, Guatemala. Highway mileage in 1930 was 1605 miles. A total of 682 vessels aggregating 1,533,000 tons called at Salvadorean ports during 1929 (694 vessels of 1,513,250 tons in 1928). An airplane service links San Salvador with Guatemala City and other Central American points.

GOVERNMENT. Executive power is vested by the constitution in a President elected for four years, who acts through a ministry of four members, and legislative power in the Congress of 42 members elected for one year by universal suffrage. The two most important political groups were the Partido Nacional Democrático and Partido Civista, President Romero Bosque and most of the members of the Government belonging to the former group. Neither party had a fixed or distinct programme. President in 1930, Dr. Pio Romero Bosque, who assumed office Mar. 1, 1927; Vice President, Gustavo Vides.

HISTORY. Salvador in 1930 made noteworthy progress in the evolution of its political institutions, under the capable and public-spirited leadership of President Pio Romero Bosque. Hav-

ing definitely broken the power of the Meléndez family, which controlled the Presidency from 1913 to 1927, Dr. Pio Romero Bosque in 1930 made elaborate preparations for the holding in January, 1931, of the first free Presidential election in Salvador's recent history. Of the nine candidates, including a woman fortune-teller and the President's son, who entered the campaign, the strongest appeared to be Señor Arturo Araujo, a wealthy plantation owner with strong labor support; General Gómez Zárate, former Minister of War; and Dr. Enrique Córdoba, representative of the conservative elements. Personalities were the all-important factor in the campaign, there being little difference in the platforms of the candidates. All favored better educational methods, the development of national industries, and improved governmental administration.

The multiplicity of candidacies aroused fears that no candidate would receive the necessary popular majority and that the duty of selecting a President would then fall upon the National Assembly, as provided by the Constitution. President Pio Romero Bosque sought to induce nine rivals to agree upon two candidates to be presented to the people, but his effort failed and three lawyers, two generals, and one farmer were still in the field at the end of the year. To prevent election disorders, the President enjoined strict neutrality upon the army, prohibited the holding of more than one political rally in a locality on the same day, and forbade women and children to participate in political demonstrations. Another achievement of the year was the adoption by the National Assembly in June of a law creating the office of Auditor-General to prevent the possible unauthorized expenditure of funds by the Executive. Dr. Hector Herrera, leader of the reform elements, was appointed Auditor-General. Creation of a national bank, to be known as the Mortgage Bank of El Salvador, was authorized by the National Assembly on Sept. 25, 1930. The capital stock of 10,000,000 colones was to be provided from proceeds of the export duty on coffee shipments.

The economic depression stimulated widespread labor unrest toward the end of the year. Serious riots, in which Communist agitators were reported to have been implicated, occurred in the towns of Santa Tecla and Sonsonate on December 21. In Santa Tecla, where the outbreak was suppressed by the police, there were two killed, 11 wounded, and 300 prisoners taken. The Government abolished its legations in Great Britain, Germany, Spain, and Mexico as an economy measure. This left the legations in Washington and Paris as the only remaining diplomatic posts.

SALVATION ARMY. An international organization with headquarters in London, whose sole purpose is the "salvation of mankind from all forms of spiritual, moral, and temporal distress." The movement was first organized as a mission in the East End of London in 1865 by William Booth, a minister of the New Connexion Methodists. It spread rapidly throughout England and in 1880, as the Salvation Army, was extended to the United States. Incorporation took place in New York City in 1899. The government is military in character and in 1930 was under the command of Gen. Edward J. Higgins. The higher command is divided into territories, each territory usually being a separate country, or colony, led by a commissioner and subdivided

into divisions consisting of a number of corps or posts under the direction of a captain and lieutenant. The United States has four territories, with headquarters in New York City, Chicago, San Francisco, and Atlanta. The Salvation Army is active in 82 countries and colonies, and preaches the Gospel in 72 languages.

The year 1930 marked the Salvation Army's jubilee in the United States. It was celebrated by a national congress which was held in New York City from May 16 to May 23, 4000 delegates being in attendance. The new administration building at 120 West Fourteenth Street, New York City, and the Centennial Memorial Temple were dedicated by Commander Evangeline Booth. See CELEBRATIONS.

The principal international event was a conference of commissioners held in London during November, when General Higgins met in council with 42 of the highest ranking officers. The conference met to consider the best method of putting into effect the pledges made by General Higgins on his election in June, 1929. These pledges were three in number:

1. That all future generals of the Salvation Army should be elected by a representative body, instead of being nominated by their predecessors.
2. That a retiring age should be fixed for the general.
3. That a body of trustees should be appointed to hold the properties of the Salvation Army, instead of these assets being vested, as at present, solely in the general.

The third point does not affect the United States, where all Salvation Army properties are held by a board of trustees appointed under the charter of incorporation. The conference set up the machinery to cover the election of the general, fixing 70 years as the retiring age and appointing a body of seven as trustees. Application was to be made to the British Government for an act of Parliament to legalize these reforms. During the conference there was evidenced a strong body of opinion which desired complete democratization of Salvation Army government. That body proposed to set up a cabinet to advise the general on matters of high policy and administration, with the power of veto under certain circumstances. The proposal was lost, but a compromise was effected by the offer of General Higgins to set up a board of arbitration consisting of five members. Any commissioner or chief secretary, who considered himself aggrieved by any action of the general, would have power to appeal to this board for its decision, which would be final.

In 1930 there were in the service of the Salvation Army throughout the world 25,427 officers and cadets, 9647 persons without rank wholly employed, 144,348 local officers and bandmen, 64,045 songsters, 34,778 corps cadets, and 15,163 corps and outposts in operation. Social institutions and agencies numbered 1526, and day schools 1098. Among the social institutions were: 27 naval and military homes; 148 hotels for men and 32 hotels for women, accommodating 36,143 persons; 6 inebriates' homes with 234 patients; 104 homes housing 5430 children; 23 crèches; 9 industrial schools with 584 pupils; 100 women's industrial homes, accommodating 3527 women; and 90 maternity homes with 3709 patients. The Army also maintained 308 miscellaneous social services, as well as 12 farms, 168 slum posts, 217 homes, elevators, workshops, and woodyards accommodating 7062 persons. In addition to 16 food depots, there were 120 combined shelters for men

and 17 shelters and food depots for women. Through the 137 labor bureaus, 244,949 men were supplied with work. The organization published 128 periodicals, with an average circulation of 1,964,264 copies per issue.

In the United States there were, in 1930, 1763 corps and outposts, 4832 officers and cadets, 13,198 local senior officers and bandmen, and 12,868 local junior officers and bandmen. Converts during the year numbered 104,264. Among the social institutions were 87 men's hotels, 1 women's hotel, and 10 residential hotels for young women, accommodating a total of 7590 persons. Men's industrial homes numbered 111 with accommodation for 4519 persons; children's homes, 10 with accommodation for 852 persons; women's homes and hospitals 43, with accommodation for 2763 persons; and general hospitals and dispensaries, 21 with a total of 63,623 patients. During the year 11,140 families were visited and 82,991 children sheltered, while Thanksgiving and Christmas dinners were distributed to 510,016 persons. In addition, 24,517 prisoners were assisted by the Salvation Army on discharge; 3,325,398 persons were afforded temporary relief outside social service centres and hotels; 34,594 children and 8194 mothers were given summer outings; and 189,372 men and women found employment through the Army's 93 free employment bureaus.

The national headquarters of the Salvation Army in the United States are at 122 West Fourteenth Street, New York City. Evangeline Booth, daughter of the founder, is the commander-in-chief. The territorial commissioners in 1930 were: John McMillan (eastern); William McIntyre (central); Adam Gifford (western); and Alexander M. Damon (southern).

SAMOA. A group of 14 islands in the Pacific Ocean, about 2000 miles south of Hawaii and 4000 miles southwest of San Francisco. Since Feb. 13, 1900, the islands east of 171° W. longitude have belonged to the United States; the islands west of that line belonged to Germany until the outbreak of the World War in 1914, when they were occupied by New Zealanders and later turned over to New Zealand for administration, under a mandate of the League of Nations.

WESTERN SAMOA. The official name applied to the former German Samoan Islands is the Territory of Western Samoa. This territory includes Savaii and Upolu, two of the largest islands, and Apolima and Manono. Area of Savaii, about 660 square miles; Upolu, 550 to 600 square miles. Population, Dec. 31, 1929, 43,736, including 2770 Europeans and half-castes and 39,878 natives Samoans. The principal port is Apia, on the island of Upolu. About 11,400 pupils are instructed in schools conducted by the Government and various missionary groups. The products include copra, cacao, bananas, rubber, sugar, and cardamoms. The imports for 1928 totaled £326,553; exports, £422,175. Revenue for the year ended Mar. 31, 1929, amounted to £141,904; expenditure, £130,445. The general control of the islands is under the New Zealand Ministry of External Affairs, and the local Government is under an administrator. There is a Legislative Council, the membership of which is restricted to British subjects or persons born in Samoa of European descent, and a Native Council which advises the administrator in native affairs. Administrator in 1930, Colonel S. S. Allen, appointed March, 1928.

AMERICAN SAMOA. Tutuila, Tau, and the Manua group comprise the American Samoan group of

islands. The total area is about 60 square miles; the population at the census of 1930 was 10,055, as against 8056 at the census of 1920. The principal port is Pago Pago on the island of Tutuila, the best and safest harbor in the South Seas. In 1930 there were 20 public schools with 2044 pupils and 46 teachers, 41 of whom were Samoans, and four missionary schools with 350 pupils. Production of copra, the sole export, totaled 1687 tons valued at \$147,215 in 1929. The fertile soil produces a variety of fruits. Imports in 1929-30 were valued at \$146,534 and the gross revenues for the year totaled \$133,772. The United States Navy has established a high-powered radio station on the island of Tutuila. The Government is in the hands of the Governor of the United States Naval Station at Pago Pago. The islands are divided into three general administrative districts, corresponding to the former political divisions of Samoa, each administered by a native governor who is appointed by the American governor. At the head of each village is a chief, elected annually, subject to the governor's approval. Governor in 1930, Captain G. S. Lincoln, U. S. N.

HISTORY. Native opposition to the administration of New Zealand's mandate in Western Samoa, which culminated in riots in December, 1929, gradually died down during 1930 as a result of energetic action on the part of the Government. Four Samoan chiefs were sentenced to 17 months' imprisonment at Apia in March for threatening other chiefs who were unwilling to join in resistance to the Government. On March 20, it was reported that all Samoans wanted for various offenses had surrendered in a body and that the majority of the members of the Mau, a native organization opposed to the Government, had returned to their villages from the bush, whence they fled following the outbreak of December. The policy of the Government toward those who recognized its authority was conciliatory and a number of reforms were inaugurated. Nevertheless, secret meetings of the Mau were known to continue.

American Samoa was visited in September by a Congressional committee, charged with the task of drafting an organic act and a bill of rights for the islands. Although the naval administration of the territory was admittedly much more successful than attempts at democratic forms of governments had proven in Western Samoa, it was considered desirable to end the anomaly presented by a democratic republic ruling by undemocratic methods. A section of Samoan opinion was represented as feeling that they could maintain their status quo as a people only under a civil rule in which they could participate, with their own representatives in Congress. A number of Samoan leaders opposed any change. The change to a civil form of government had been recommended by a Naval Governor. The committee consisted of Senators Bingham of Connecticut (chairman) and Robinson of Arkansas, Representatives Kiess of Pennsylvania and Williams of Texas, and three Samoan chiefs. The recommendations of the committee included the extension of a bill of rights and of American citizenship to the natives, without bringing them under the Constitution. An epidemic of dengue fever, introduced from Suva, affected 2135 persons during April, May, and June, 1930.

SAMOS. An island in the Aegean Sea, belonging to Greece. Area, about 181 square miles;

population, according to the census of 1928, 70,497. Capital, Limir Vathy, with a population of 8636. The island was acquired from Turkey as a consequence of the Balkan Wars fought in 1912 and 1913.

SANFORD, EDWARD TERRY. An American jurist, died in Washington, D. C., Mar. 8, 1930. Born in Knoxville, Tenn., July 23, 1865, he was graduated from the University of Tennessee in 1883 and received the LL.B. degree from Harvard University in 1889. On being admitted to the bar in 1888, he began his practice in Knoxville with the Hon. George Andrews and Col Jacob M. Thornburg. He was Assistant Attorney-General of the United States during 1907-08, and from 1908 to 1923 was Federal district judge of the eastern and middle districts of Tennessee. President Harding appointed him an associate justice of the United States Supreme Court in 1923. Among the more widely known opinions which he delivered are the "pocket veto," decision by which the right of the President to block legislation by refusing to return bills was sustained; the Charlotte Anita Whitney case, which upheld the Californian law providing prison penalties for preaching sabotage and terrorism; and the Benjamin Gitlow decision. The LL.D. degree was conferred on Justice Sanford by Harvard University in 1904 and also by the University of Cincinnati in 1908.

SAN FRANCISCO. See BRIDGES; MUNICIPAL OWNERSHIP.

SANFUENTES ANDONAEGUI, JUAN LUIS. A Chilean statesman, died July 16, 1930, in Santiago where he was born Dec. 27, 1858. Admitted to the bar, he practiced law for several years before embarking on his political career. He served as Minister of Finance in 1901, senator in 1902, a member of the Council of State and president of the Senate from 1906 to 1915, and president of the republic from 1915 to 1920. During his administration he stood for strict neutrality, although the German colonists in the southern territory and some of the militarists desired that Chile enter the World War on the side of Germany. He was also an ardent supporter of the League of Nations and was largely responsible for Chile's adherence to that body.

SANITARY DISTRICT OF CHICAGO. See SEWERAGE AND SEWAGE TREATMENT; ILLINOIS under *Political and Other Events*.

SANITARY ENGINEERING. See GARBAGE AND REFUSE DISPOSAL; SEWERAGE AND SEWAGE TREATMENT; WATERWORKS AND WATER PURIFICATION.

SAN MARINO, mā-rō'nō. A republic of Europe, located in the peninsula of Italy. Area, 38 square miles; population, in December, 1928, 13,013. Capital, San Marino (1600 inhabitants). The chief exports are wine, cattle, and the building stone quarried on Mount Titano. The revenue and expenditure for 1928-29 balanced at 4,053,072 lire and the estimates for 1929-30 at 3,592,180 lire (1 lira exchanged at about \$0.052). Politically and economically San Marino is closely allied with Italy, Legislative power is exercised by a council of 60 elected members and executive power by two regents appointed every six months by the council.

SANSKRIT STUDIES. See PHILOLOGY, MODERN.

SANTO DOMINGO. See DOMINICAN REPUBLIC; SPANISH AMERICAN LITERATURE.

SÃO PAULO. See **BRAZIL** under *History*.

SÃO THOMÉ, soun tō-mā', and **PRINCEIPE**, prēn' thē-pā. Two islands in the Gulf of Guinea, about 125 miles from the coast of Africa, constituting a province of Portugal. Area 360 square miles; population in 1921, 52,150 for São Thomé and 6905 for Príncipe. Europeans numbered 1115. Cacao, cinchona, coffee, and rubber are the chief exports. In 1928-29, revenue totaled 11,984,664 escudos and expenditure, 11,962,954 escudos. Imports for 1928 totaled 40,768,815 and exports, 71,585,431 escudos (1 escudo exchanged at \$0.0447 in 1929.) Governor in 1930, Eugenio de Barros Soares Branco. See **PORTUGAL** under *History*.

SARAWAK, sä-rä-wā'k. An independent state, comprising the northwestern part of the island of Borneo; under the protection of Great Britain. Area, about 42,000 square miles (coast line 400 miles). Population estimated at 600,000, made up of Malays, Dyaks, Kayans, Chinese, etc. Kuching is the capital, with a population of about 25,000. There are large resources of coal, and an oil field has been opened up in the Baram region. The chief exports are petroleum products, plantation rubber, and sago flour. Imports in 1927 totaled 25,664,546 Straits dollars (1 dollar equald \$0.56 in 1927); exports 49,786,143 Straits dollars. In the same year revenues were 6,243,065 Straits dollars and expenditures 5,764,318 Straits dollars. The region was acquired by Sir James Brooke in 1842 from the Sultan of Brunei. Rajah in 1930, Sir Charles Vyner Brooke, grandnephew of Sir James.

SASKATCHEWAN. One of the Prairie Provinces of Canada, situated between Alberta on the west and Manitoba on the east. Area, 251,700 square miles; population, according to the census of 1926, 821,042; estimated June 1, 1930, 882,000. Capital, Regina, with a population in 1926, of 37,329. Other cities are Saskatoon, 31,234, a gain of 25 per cent over 1921; Moosejaw, 19,039; Prince Albert, 7873. Births in 1928 totaled 21,100; deaths, 6138; marriages, 6687. The total enrollment in the public schools in 1928 was 223,049. The University of Saskatchewan is at Saskatoon. Agriculture is the basic industry, yielding an estimated gross income in 1928 of \$392,602,000. The acreage planted to field crops in 1929 was 22,420,232 and the value of the yield, \$247,374,000 (\$348,586,000 in 1928). Mineral production (1929) was valued at \$1,935,676, the output of coal being 577,820 tons. The total value of the fisheries in 1928 was \$563,533. Compared with the other Provinces, forest resources are limited; the value of timber production in 1927 was \$2,387,260. There were 737 industrial establishments in 1928, employing 6173 persons, and with a gross production valued at \$59,125,280. For the fiscal year ended Apr. 30, 1930, revenues totaled \$16,561,526 and expenditures, \$17,079,704. The funded debt increased by \$11,174,305. There were 7687 miles of steam railway in 1928.

Executive power is vested in a lieutenant-governor and a legislative assembly of 63 members elected for five years. In 1930, the government coalition included 24 Conservatives, 5 Progressives, and 6 Independents, with 28 Liberals forming the Opposition. In the Dominion general election of July 28, 1930, the Province returned 12 Liberals, 7 Conservatives, and 2 Progressives to the House of Commons at Ottawa. Lieutenant-Governor in 1930, H. W. Newlands; Premier,

President of the Council, and Minister of Education, J. T. M. Anderson. See article on **CANADA**.

SAULT STE. MARIE, CANALS AT. In 1930 the 16,818 vessels passing through the United States and Canadian canals at Sault Ste. Marie, Michigan, and Ontario, had a total registered tonnage of 54,828,769, as compared with 19,794 vessels of 68,239,570 tons in 1929. These consisted in 1930 of 14,661 steamers, 1014 sailing vessels, and 1143 unregistered vessels, as compared with 18,036 steamers, 1217 sailing vessels, and 541 unregistered vessels in 1929. Through the United States canal, there were 13,863 vessel passages with a registered tonnage of 51,348,738, and through the Canadian canal, 2955 vessel passages with a registered tonnage of 3,480,031. Lockages in 1930 numbered 12,661, as compared with 14,585 in 1929. The number of passengers showed a decrease, the totals for 1929 and 1930 being 54,415 and 45,303, respectively.

The total freight passing through the canals aggregated 72,897,752 short tons or a decrease of 19,724,265 tons. Of the total freight tonnage, 57,066,516 were east-bound and 15,831,236 were west-bound. The leading items of east-bound freight carried through the United States canal were wheat, 228,740,322 bushels; grain, other than wheat, 46,425,496 bushels; and iron ore, 46,980,851 short tons, which together with the tonnage carried through the Canadian canal brought the totals up to 243,927,016 bushels, 55,433,921 bushels, and 46,990,351 tons, respectively.

Among the leading articles of west-bound traffic were 13,256,786 short tons of soft coal, of which 13,180,726 tons were carried through the United States canal and 76,060 tons through the Canadian canal. The total tonnage of hard coal was 801,925, of which 773,462 tons went through the United States canal and 28,463 tons through the Canadian canal.

SAVINGS BANKS. See **BANKS AND BANKING**.

SAXONY. The name Saxony is applied to three divisions of the former German Empire; the Republic of Saxony (formerly the Kingdom of Saxony); the former Grand Duchy of Saxony (now a part of Thuringia); and the Province of Saxony in Prussia.

REPUBLIC OF SAXONY. The third largest state of the German Republic; proclaimed a republic on Nov. 9, 1918. Area, 5786 square miles; population, according to the census of 1925, 4,994,281. The capital, Dresden, had a population in 1925 of 619,157. The largest city is Leipzig, with a population of 679,159. The other cities with over 100,000 in 1925 were Chemnitz, 335,982, and Plauen, 111,436. In 1928 the movement of population was: Births, 84,735; deaths, 54,987; marriages, 51,023. On May 1, 1927, there were 2129 public elementary schools with 16,977 teachers and 507,234 pupils. In 1929 the area under cultivation was 2,491,435 acres. Wheat, rye, barley, oats, potatoes, and hay are the chief crops. Livestock at the end of 1929 included 161,324 horses, 693,090 cattle, and 676,987 swine.

Textile manufacturing is the chief industry, followed by mining and metal working. In industry Saxony is rivaled only by the chief industrial provinces of Prussia. The coal output in 1928 was 4,042,000 metric tons and the lignite production, 11,937,000 metric tons. In 1928-29, 143 breweries produced 89,567,444 gallons of beer. For the fiscal year 1929-30, revenue totaled

406,971,769 marks and expenditure (ordinary and extraordinary) totaled 484,247,591 marks.

The German Social-Democrats held 33 of the 96 seats in the Diet elected May 12, 1929. Premier in 1930, Herr Brüner (German People's party), appointed June 25, 1929.

SCABIES ERADICATION. See VETERINARY MEDICINE.

SCALE. See ENTOMOLOGY, ECONOMIC.

SCANDINAVIAN LITERATURE. This review includes the late books of 1929 in addition to the books of 1930, and is divided into Danish, Norwegian, and Swedish literature.

DANISH. Poetry. Hans Povlsen, the gifted prose-writer, surprised the critics with *I Himmerlands Dale* (In the Valleys of Himmerland), a volume of lyrics of extraordinary power. *Aske og Gløder* (Ashes and Burning Coals) by Olaf Gynt is expressive of deep emotion and shows great promise.

Fiction. In *Midt i en Jærntid* (Right in an Iron Age), which gives a cross-section of Danish life during the World War, Martin Andersen-Nexø shows himself more coldly intellectual than in his earlier works. Nevertheless, there are parts of the book in which pure sentiment shines through. Gunnar Gunnarsson's *Svarifugl* (Black-bird), a crime novel, is written in the usual melancholy vein of the author; yet it has in it that elevating and reconciling element also often found in his works—the idea that in the face of death differences of human fortunes disappear. Edvard Egeberg's *Mørk Tid* (Dark Times), an historical novel from the seventeenth century, has for its background the Torstensson wars in Jutland. In spite of the cruelty and misery that it portrays, the book leaves with one the feeling that things are essentially right. *Skærsilden* (Purgatory) by Johannes Buchholtz is the story of a young man who forever vacillates between two women. Marcus Lauesen's *En Mand gaar bort fra Vejen* (A Man Strays from the Road) suggests the influence of Pär Lagerkvist. The hero's straying is caused by his removal from his original environment. The characters are well defined and clearly drawn. Of collections of short stories may be mentioned Helge Rode's *Den Rejsende* (The Traveler), Aage Madelung's *Med Stav i Hånd* (Staff in Hand), and Edith Rode's *Afrodite smiler* (Aphrodite Smiles).

Literary Criticism, etc. In *Et Portræt* (A Portrait), a picture of Georg Brandes as a man, Henri Nathansen displays the same ability to analyze character that distinguished his novel, *Af Hugo Davids Liv*. Edvard Lehmann's *Grundtvig* is the first study that in a thorough and authoritative manner treats the different aspects of the great theologian's activities.

NORWEGIAN. Poetry. In *Norge i våre hjerter* (Norway in Our Hearts) Nordal Grieg aims to express the sentiments of the different classes in Norway. These poems are characterized not so much by technical perfection as by genuine feeling. Aase Kristoffersen's *Fiskerim* (Fishermen's Rimes) and Rudolf Nilsen's posthumous volume *Hverdagen* (Weekday) were well received.

Fiction. In *Våre gjerninger* (Our Actions), a psychological novel, Peter Egge shows how human lives are often changed by a single act. Olav Duun's *Medmenneste* (Fellow Men) treats the relationship between goodness and strength. Goodness without strength—this seems to be

the author's thesis—is impotent; and yet, this same goodness which is effective when constructively active in the service of humanity ceases to be good and hence loses its power as soon as it engages in destructive combat with evil. Sigurd Christiansen's *Riket* (The Kingdom) is the last part of a trilogy, the earlier parts being *Inngangen* and *Sverdene*. Its characters are strongly religious and resemble those of the earlier volumes in their conviction that man's inner life is the essential thing, while the external life is a matter of indifference.

Ronald Fangen's *Nogen unge mennesker* (Some Young People) touches the problems that for the last fifteen years have been occupying youth. Throughout we sense the author's conviction that in suffering lies not only life's riddle but also the solution of this riddle, that suffering is the bridge between man and God. *Folk ved sjøen* (People by the Sea) is somewhat different from most of Johan Bojer's works. Without any central theme, or even a definite plot, it impresses one as a collection of events or situations. In this book Bojer gives us less of himself and more of reality than usual. In *En fremmed i hans hus* (A Stranger in His House) Katharina Gjesdahl expresses the idea, not entirely new with her, that a marriage in which one side is very strong and overpowering is not an ideal one. Knut Hamsun again turned to his own youth for some of the material of *August*, a sequel of *Landstrykere*. In his usual manner he inveighs against the tendency in modern civilization known as "Americanism." Hans E. Kinck's posthumous volume, *Torvet i Cirta* (The Market Place in Cirta), contains two short stories. These express Kinck's pessimistic view of the political and literary world which he considers possessed with inordinate passion for fame.

Literary Criticism. Vetli Vislie's *Asmund Vinje*, written in Landsmål, combines the objective impartiality of a critic with the appreciation and understanding of a poet who interprets a fellow craftsman.

SWEDISH. Poetry. Albert Henning's *Den oroliga lågan* (The Restless Flame) shows a fine sensitiveness to nature. In *Jordens oro* (Earth's Restlessness) Bengt Nyström proved himself a master of the elegiac style. These poems have many characteristics that suggest Runeberg. Bertil Malmberg, whose earlier poems were written in an idealistic vein under the influence of Schiller, turned to a more realistic manner and a more pessimistic tone in *Vinden* (The Wind).

Fiction. Swedish literature sustained a great loss in the death of Birger Mörner. Rudolf Värnlund's *Det druckna kvarteret* (The Intoxicated Quarter) gives a realistic picture of a group of dissipated Stockholmers. Olle Hedberg's *Rymmare och fastlagare* (Fugitives and Captors) pictures the unsuccessful attempt of a young boy to get away from his environment. In *Resan till Rom* (The Journey to Rome), a volume of short stories, we find Hjalmar Söderberg in his usual rôle of the inimitable raconteur. In this volume, as in several others, he shows the immense influence exercised on human lives by little mistakes and misunderstandings. Other volumes of short stories deserving mention are Hjalmar Bergman's *Kärlek genom ett fönster* (Love through a Window), Erik Wilhelm

Olson's *Black botten* (Muddy Bottom), and Astrid Värings' *Vddeld* (Fire by Accident).

HISTORY AND CRITICISM. *Furstar och rebeller* (Princes and Rebels), a collection of biographical sketches in which Fredrik Böök brings his critical acumen to bear on the latest historical researches, shows several characters and events in an entirely new light. Gösta Attorps' *Pelle Molin* is not only a distinctive and valuable contribution to Molin criticism, but also a very readable work. See also **PHILOLOGY**, **MODERN**.

SCAWTITE. See **MINERALOGY**.

SCHILDKRAUT, shilt'krout, RUDOLF. A Jewish actor, died in Hollywood, Calif., July 15, 1930. He was born in Istanbul (Constantinople) in 1862, and attended the Vienna Conservatory of Music, studying under Mitterwurzer, but later chose the stage as his career. In 1893 he appeared at the Raimund Theatre in Vienna and after 1898 attracted much attention by his work in comedy at the Karl Theatre. Afterward he created a number of his more serious rôles, including several in Shakespearean dramas, in Hamburg and Berlin. In 1911 he came to the United States appearing for two years at the Irving Place Theatre in New York in German repertory and at several Yiddish theatres. He then returned to Germany, but came back to the United States again in 1920, making his English-speaking début in 1922 at the Provincetown Theatre in *The God of Vengeance*. Since 1926 he had been acting in motion pictures in Hollywood. He built up a repertoire both varied and extensive, including Shakespeare, Hauptmann, Sudermann, Shaw, Pinero, Oscar Wilde, and others. His interpretations of Skylock and Mephistopheles (in Reinhardt's production of Goethe's *Faust*) were considered masterpieces of histrionic art.

SCHOLA CANTORUM. See **MUSIC**.

SCHOOLS. See **EDUCATION IN THE UNITED STATES**; **UNIVERSITIES AND COLLEGES**.

SCIENCES, NATURAL ACADEMY OF. See **NATURAL ACADEMY OF SCIENCES**.

SCIENTISTS, CHRISTIAN. See **CHRISTIAN SCIENTISTS**.

SCOTLAND. See **GREAT BRITAIN**.

SCOTLAND, CHURCH OF. See **PRESBYTERIAN CHURCH**.

SCOTT-MONCRIEFF, CHARLES KENNETH. A British translator, died in Rome, Italy, Feb. 28, 1930. He was born in Lanark Co., Scotland, Sept. 25, 1889, and was graduated from Winchester College in 1908. He later attended Edinburgh University where he received the M.A. degree in 1914 and was Patterson bursar in Anglo-Saxon, 1913-15. During the World War he was a captain in the 3rd regiment of the King's Own Scottish Borderers. In 1920 he was appointed private secretary to Lord Northcliffe and in 1921 joined the editorial staff of the *London Times*. He resigned in 1923 to devote his entire time to translating, gaining recognition as an artist in that form of interpretation. His publications include authorized translations of the works of Marcel Proust, Stendhal, and Pirandello; also various volumes translated from Latin, Old English, and Old French, such as *Letters of Abelard and Héloïse*, *Beowulf*, and *The Song of Roland*.

SCRIBNER, CHARLES. An American publisher, died Apr. 19, 1930, in New York City where he was born Oct. 18, 1854. On graduation from Princeton in 1875 he became identified with the publishing house which his father had founded in 1846, the firm assuming the name of Charles Scribner's

Sons in 1879. After the death of his brother, J. Blair Scribner, in the latter year he assumed the presidency and founded *Scribner's Magazine* in 1887. He was also active in the organization of the American Publishers' Association, of which he was the first president.

SCULPTURE. Sculpture, always far behind other arts in America, added little to its development in a season meagre in all respects. As usual the exhibitions of sculpture alone were few. One of the better shows was the comprehensive exhibition of modern sculpture held at the Brooklyn Museum from the middle of May through the summer. It was principally but not entirely American—Hungarian, Russian, Italian, Mexican, and French sculptors being represented. There were in all 100 artists and 500 pieces of sculpture. The exhibition included memorial showings of the work of Charles Grafly and Charles Cary Rumsey.

The Sixth National Biennial Exhibition of Sculpture in the Open Air was held in Rittenhouse Square, Philadelphia. More than 150 pieces were shown and an unusual effect was gained by flood-lighting at night. The prizes were awarded as follows: The Fairmount Park Art Association Prize of \$1000 for the best outdoor decoration group to Oronzio Maldarelli for *Resignation*; the Art Alliance Prize of \$500 for a single figure suitable for the front of the Art Alliance building to Carl Milles for *Orpheus*; the Art Alliance Prize of \$500 to Arthur Lee of New York for *Rhythm*; the gold medal of the Garden Club of America to Albert Henry Atkinson of Boston for *Spirit of the Sea*.

Other exhibitions were a rather lively modern show at the Grand Central Galleries, New York, in February, and in the autumn a very interesting exhibition of 24 sculptured portraits ranging from early Egyptian and Chinese to modern French.

BIBLIOGRAPHY. Publications on sculpture during the year included the following: A. M. Rindge, *Sculpture*, "The contemporary point of view about the art of Sculpture"; A. H. Martinie, *La Sculpture* (L'Art Français depuis Vingt Ans); W. Ormsby Gore, *Florentine Sculptors of the Fifteenth Century*.

SEAGER, HENRY ROGERS. An American economist and educator, died in Kiev, Russia, Aug. 23, 1930. He was born in Lansing, Mich., July 21, 1870, and was graduated from the University of Michigan in 1890 and received the Ph.D. degree at the University of Pennsylvania in 1894. He later studied at the Johns Hopkins University and the Universities of Halle, Berlin, and Vienna. He was assistant professor of political economy at the University of Pennsylvania from 1896 to 1902, when he went to Columbia University. In 1905 he became full professor and soon was regarded as a leading authority on labor, trust, and insurance problems. He was made a member of several commissions, both State and national, to investigate labor conditions. During 1917-19 he was secretary of the Shipbuilding Labor Adjustment Board in Washington, and during 1919-20 executive secretary of the second Industrial Conference. At the time of his death he was traveling in Russia with a group of American economists engaged in investigating the five-year economic programme launched by the Soviet Government. He was president of the American Association for Labor Legislation from 1911 to 1913 and of the American Economic Association in 1922. In

addition to serving on the board of editors of the *Political Science Quarterly*, he wrote: *Introduction to Economics* (1904); *Economics, Briefer Course* (1909); *Social Insurance* (1910); *Principles of Economics* (1913); *History of the Ship-building Labor Adjustment Board, Washington, 1917-19* (1921); *Practical Problems in Economics* (1923); and *Trust and Corporation Problems* (1929).

SEA LAW. See INTERNATIONAL LAW.

SEAL FISHERIES. See ALASKA.

SEAPLANE. See AERONAUTICS.

SECURITIES. See FINANCIAL REVIEW.

SEGRAVE, SIR HENRY O'NEAL DE HANE. A British motorist and sportsman, died on Lake Windermere, June 13, 1930, when the motor boat, *Miss England II*, in which he was racing capsized. He was born in Baltimore, Md., Dec. 22, 1896, and was educated at Eton and Sandhurst. He served during the World War with the 2nd Warwickshire Regiment and the Royal Air Force, and in 1917 acted as private secretary to the Chief of Air Staff. At the close of the War he took up motor-racing as a hobby, winning many prizes for his international victories on both the road and track. The Sunbeam car which he drove at Daytona Beach, Fla., in 1927 made an average speed record of 203.79 miles per hour. In 1929 he raised this record on the same course, in the *Golden Arrow*, to an average speed of 231.36 miles per hour. He was rewarded with knighthood on his return to England for this feat. He met his death while practicing for the Harmsworth Trophy race to be held in Detroit in August, 1930, breaking the world's motor-boat speed record at more than 100 miles per hour. He was the author of *The Lure of Speed*.

SEISMOLOGY. Though earthquakes cannot be prevented, nor even successfully predicted, the knowledge to be obtained from a full and careful study of their phenomena and their effects will materially help the engineer to prevent serious damage by earthquakes. Because of the great difficulty of determining with certainty exactly what goes on near the epicentre in severe quakes, however, the observation and study of natural seismic phenomena is now being supplemented by elaborate experimental investigations with shaking platforms; in this way, e.g., valuable information may be obtained as to the stresses set up in engineering structures by movements resembling those that take place during quakes.

The Pasadena Seismological Laboratory and its six associated stations, established under the auspices of the Advisory Committee on Seismology formed in 1921 by the Carnegie Institution, have recorded 4800 local earthquake shocks in southern California during four years. The points of origin of nearly 4000 of these shocks were determined; the disturbances were found to originate mostly on known active geological faults, along which crustal adjustments and displacements were still taking place.

The earth movements which occur during quakes were being extensively investigated in Japan. A resurvey of the region shaken by the Japanese quake of 1923 had shown that the base line of the former triangulation was increased in length by 10 inches; many displacements of stations amounting to several feet were found, the maximum displacement being 12½ feet. Elevation and depression, amounting in some places to as much as 5 or 6 feet, took place over large areas. Imamura investigated the topographic

changes which accompanied 26 different quakes in Japan; in 12 of these, the changes were determined very accurately by one or more series of precise levels. Elevations of the land were in most cases confined to Tertiary or more recent formations, and depressions to pre-Tertiary; most of the changes were due to discontinuous tilting of mosaic blocks of the crust, but some were caused by rotational movements about vertical axes or by bodily vertical displacements.

Turner found that earthquakes with very deep foci seem to be confined to an area which covers the greater part of the Pacific Ocean.

An examination, by C. Davison, of the records of the earthquakes that had occurred during the last few centuries, showed that on the average about 14,000 or 15,000 people perish annually as a result of quakes.

BIBLIOGRAPHY. Many elaborate and important investigations of particular earthquakes, numerous contributions to the mathematical theory of the propagation of earthquake waves, studies of the interpretation of seismograms, etc., may be found in the *Bulletin of the Earthquake Research Institute of Japan*, and the *Bulletin of the Seismological Society of America*. The results of the seismological work done by the U. S. Coast and Geodetic Survey are summarized in periodical reports issued by this Survey; consult, in particular, *Special Publication 168*, "Progress of Seismological Investigations in the United States, July 1, 1927 to Jan. 1, 1930." See EARTHQUAKES and ITALY and JAPAN under *History*.

SELANGOR. See FEDERATED MALAY STATES.

SELIGMANN COLLECTION. See ART SALES.

SENEGAL, sē'negal'. A colony belonging to France on the west coast of Africa, under the Government of French West Africa (see FRENCH WEST AFRICA). Total area, 74,112 square miles; population in 1926, 1,318,287. Capital, St. Louis, with a population in 1926 of 19,746 (Europeans, 1038). Other important towns are Dakar, the seat of the Governor-General of West Africa and a fortified naval station; population, 1926, 33,697 (Europeans, 2939); and Rufisque, population, 8953 (Europeans, 799).

Cotton, peanuts, gum arabic, hides, and rubber, are produced for export. Total exports in 1928 amounted to 760,214,982 francs, of which 593,234,000 francs represented peanut shipments, and total imports to 885,017,452 francs (1 franc exchanged at \$0.0392). The local budget for 1929 was 134,442,000 francs. Dakar, Rufisque, and St. Louis are connected by a railway 165 miles in length, and there is another between Thiès and Kayes, a distance of 435 miles. Dakar is the only coaling station on the French West African coast. The administration is in the hands of a lieutenant-governor, assisted by a council of French citizens and representatives of the native chiefs. The colony sends one deputy to the French Parliament.

SERBIA. A former Balkan kingdom which was proclaimed in December, 1918, a part of the new unitary Kingdom of the Serbs, Croats, and Slovenes, later (1929) officially named Yugoslavia. In the new state Serbia was divided into two provinces, North Serbia, with an area of 19,286 square miles and a population, at the census of 1921, of 2,655,078, and South Serbia, with an area of 17,651 square miles and a population of 1,474,560. The former capital of Serbia (Belgrade) became the capital of Yugoslavia. It had a population in 1929 of 225,000. This admin-

istrative framework was radically altered in 1929 by a royal decree. See **JUGOSLAVIA**.

SESQUICENTENNIAL CELEBRATIONS.

See **CELEBRATIONS**.

SEVENTH DAY ADVENTISTS. See **ADVENTISTS**.

SEVILLE EXPOSITION. See **EXPOSITIONS**.

SEWAGE TREATMENT. See **SEWERAGE AND SEWAGE TREATMENT**.

SEWERAGE AND SEWAGE TREATMENT. The protracted litigation over the diversion of water from Lake Michigan to dilute the sewage of Chicago and convey it through the Chicago Drainage Canal and into the Mississippi River system was brought to a close by a decree of the United States Supreme Court early in the year putting into specific terms its decision of the previous year. The decree restricts diversion to 6500 cubic feet a second from July 1, 1930, to Dec. 31, 1935, then to 5000 feet until Dec. 31, 1938, and after that to 1500 feet, in addition to the water pumped from the lake for the domestic supply of the city. The Lake States, other than Illinois and Indiana, sought to have all diversion stopped on the ground of interference with navigation. The decision necessitated early completion of a programme of construction of sewage-treatment works by the Sanitary District of Chicago in progress for many years and partly executed in 1930. On July 1, the Sanitary District submitted the first of the semi-annual reports on progress, as required by the court decree. Works completed were capable of treating, to the extent required by the decree, the sewage of 1,144,000 people. An additional large new plant, known as the West Side, was put in partial use on June 3. The entire plant here was to have a daily capacity of 480,000,000 gallons, the treatment being sedimentation and sludge digestion in three groups of Imhoff tanks. For further details of the Chicago Sanitary District litigation and treatment works see earlier **YEAR BOOKS**.

Large sewerage and sewage-treatment projects were recommended for Buffalo, N. Y., and for Atlanta, Ga. The Buffalo project included intercepting sewers, two sewage-treatment plants and storm-relief sewers, at an estimated cost of \$23,000,000, and was advised in a report based on joint studies by city and consulting engineers. Of the two sewage-works one would employ sedimentation followed by the activated-sludge process, with the resulting sludge dried in glass-covered sand beds. The other works would rely on either sedimentation or fine screening, with chlorination in either case. The intercepting sewers would be able to serve a population of 1,000,000 in 1980, while the treatment works would be able to serve 720,000 people in 1945. The Atlanta project also included intercepting sewers, sewage-works and storm-relief sewers. These would serve a proposed metropolitan sewerage district of 175 square miles, at an estimated cost of nearly \$14,000,000. One of three outgrown sewage-works would be retained and two new ones would be built, all three plants to include sedimentation tanks, trickling filters and separate sludge-digestion tanks.

Preliminary work, mostly planning, continued on the 180,000,000-gallon activated-sludge plant on Ward's Island, in the East River, New York City, where sewage of a part of the city will be treated.

At San Antonio, Texas, a 30,000,000-gallon activated-sludge plant was under construction, with hope for completion by April, 1931. Sewage com-

ing to the plant would pass through a Venturi meter, revolving screens, grit chambers, pre-settling tanks, activation tanks, where compressed air will be diffused upward with a spiral-flow motion through the partly clarified sewage. The air will keep the sludge of finely divided solids of the sewage in motion, and constantly supplied with oxygen for activation. Next the sewage will go to final settling tanks. The excess sludge will be passed to heated digestion tanks, where its volume will be reduced by the production and elimination of gas. Finally the sludge will go to lagoons where it will lose moisture by evaporation from the surface and seepage into the earth. The screenings removed in the operations would be incinerated. Since 1901 the sewage of San Antonio has been conveyed to a 900-acre reservoir, from which it has been drawn for irrigating land. Growth of population has increased the volume of sewage beyond the capacity of the land. It was hoped that the utilization of the sewage on land, after treatment, might be continued. The plant outlined was designed to serve an ultimate population of 400,000.

Standard forms for reporting the operation of sewage-treatment works to facilitate comparisons of results and costs in different cities and from year to year in the same city, all to the end that efficiencies may be kept at a maximum, were proposed at the 1930 convention of the American Society of Municipal Improvements by its committee on sewerage and sanitation. Because of the many processes of treatment used singly or in combination nine forms were proposed, with a tenth and simpler form for small places. The nine heads proposed, of which some are for processes or partial processes and some for results of treatment, are: (1) Clarification; (2) biologic filters; (3) activated sludge; (4) clarified sewage; (5) contact area in settling chambers; (6) filter effluent; (7) fresh sludge; (8) gas; (9) activated-sludge plant effluent.

A new British work was Adams, *Modern Sewage Disposal and Hygienics* (London).

SEX. See **ZOOLOGY**.

SHAKESPEARE STUDIES. See **LITERATURE, ENGLISH AND AMERICAN**, under *Criticism and Literary History*; **PHILOLOGY, MODERN**.

SHANDON, IGNATIUS JOHN O'BRIEN, FIRST BARON. An Irish peer and former Lord Chancellor of Ireland, died in London, Sept. 10, 1930. He was born in Cork, July 30, 1857, and attended the Catholic University of Ireland. He was admitted to the Irish bar in 1881 and to the Inner Bar in 1899, serving as bench of King's Inns in 1907 and as sergeant-at-law in 1910. In 1911 he was appointed Solicitor-General for Ireland by the Liberal Government during Lord Asquith's premiership, and the following year succeeded Redmond Barry as Attorney-General for Ireland. In 1913 he became Lord Chancellor of Ireland, retaining that office until 1918 in spite of several changes of government during the turbulent war years. In 1923 he was called to the bar of the Middle Temple. He was created a baronet in 1916 and a baron in 1918.

SHANTUNG, shǎn'tōng. One of the 30 provinces of China. Area, 55,970 square miles; population, estimated at 30,803,245. See **CHINA**.

SHEEP. See **LIVESTOCK**; **VETERINARY MEDICINE**.

SHIP, NAVAL. See **NAVAL PROGRESS**.

SHIPBUILDING. The total output of mercantile shipbuilding launched in 1930, according

to the annual summary of the mercantile shipbuilding of the world, compiled by *Lloyd's Register of Shipping*, was 2,889,472 tons, as against 2,793,210 tons in 1929. These figures, as usual, did not include warships, or the tonnage launched in Russia, concerning which complete information was not available, and took into account only merchant vessels of 100 tons gross and upwards, whether they were completed during the year or were under construction at its close.

The vessels launched in 1930 included 47 craft of 362,195 tons, which were to be fitted with steam turbines, including 7 vessels of 62,034 tons with final electric drive, and 16 vessels of 71,649 tons, having a combination of steam reciprocating engines and turbines, including one vessel of 5698 tons fitted with auxiliary electric drive. It was interesting to note that the tonnage of vessels launched during 1930 fitted with internal combustion engines amounted to 1,582,994 tons, as compared with 1,270,000 tons launched in 1929, the 1930 total exceeding by over 330,000 tons the world's output of steam tonnage. In 1929 the motor tonnage equaled 84.4 per cent of the steam tonnage. Of the total steam tonnage—1,252,000 tons—launched in 1930, about 552,000 tons refers to oil-burning steamers, and the fact developed that less than one-quarter of the world's output for the year depended exclusively upon coal for propulsion.

Of the 1084 vessels launched during the year, classified on a basis of size, 120 were between 4000 and 6000 tons; 155 between 6000 and 10,000 tons; 23 between 10,000 and 15,000 tons; and 7 were over 15,000 tons each. The four largest vessels launched during the year were as follows:

| | Tons | Built in |
|---|--------|---------------|
| Turbine S. S. <i>Empress of Britain</i> | 42,000 | Scotland |
| Turbine S. S. <i>L'Atlantique</i> | 40,945 | France |
| Turbo-electric <i>President Hoover</i> | 21,900 | United States |
| Motorship <i>Warwick Castle</i> | 21,000 | Ireland |

In 1930, excluding vessels of less than 1000 tons, 119 tankers of 889,865 tons were launched, of which 101 vessels of 778,854 tons were motorships. As usual, Great Britain and Ireland led in the output of shipping during the year, the following countries registering the largest tonnage of ships launched:

| | Tons |
|---------------------------|-----------|
| Great Britain and Ireland | 1,478,563 |
| United States of America | 246,687 |
| Germany | 245,557 |
| Holland | 153,072 |
| Japan | 151,272 |
| Denmark | 137,230 |
| Sweden | 131,781 |

The table on page 712 from *Lloyd's Register of Shipping* indicates the fluctuation in the yearly totals for world tonnage launched for the years 1913-1930. During the period 1926-30 the average tonnage launched annually in the world was about 20,000 tons less than the average tonnage for the five pre-war years, 1909-13. The following paragraphs give items of interest in regard to the tonnage launched in various countries during 1930.

GREAT BRITAIN AND IRELAND. The output of Great Britain and Ireland in 1930, 1,478,563 tons, though 44,060 tons less than for 1929, represented 51.2 per cent of the world's output for the year. The tonnage launched in England and Wales amounted to 727,381 tons; in Scotland 581,686

tons, and in Ireland 169,496 tons. Distributed by leading shipbuilding centres, the output was as follows: the Clyde, 508,289 tons; the Tyne, 323,750 tons; the Wear, 173,306 tons; Belfast, 168,606 tons; and the Tees, 111,416 tons. Of the total tonnage launched, 827,988 tons were for registration in Great Britain and Ireland, and 650,575 tons for owners in other countries, including 301,224 tons for Norway. The proportion for foreign owners—44 per cent—was the highest ever recorded, exceeding 40 per cent attained in 1908, and comparing with 17.1 per cent in 1929, and an average of over 22 per cent in the pre-war period—1909-1913.

During the year nine vessels of 10,000 tons and upward were launched, the largest of which was the quadruple screw turbine steamer, *Empress of Britain* (about 42,000 tons), which was the largest vessel launched in the world during 1930. The motorship, *Warwick Castle*, of about 21,000 tons, and the *Reina del Pacifico*, of 17,300 tons, were the two next largest craft. Excluding vessels of less than 1000 tons, 77 tankers of 550,475 tons, of which 68 of 510,791 tons were motorships, were launched during the year. There were 18 vessels, the total tonnage, 119,121 tons, fitted with steam turbines, two of which, 11,845 tons, had electric drive. In addition, nine vessels of 53,145 tons were launched with a combination of reciprocating engines and low pressure steam turbines, including one having auxiliary electric drive. There were launched during the year 141 motorships of 759,282 tons, exceeding by 47,000 tons the steam tonnage launched in Great Britain. Seventy-six of the motorships were between 6000 and 10,000 tons each; 7 over 10,000 tons, of which the largest, the *Warwick Castle* (about 21,000 tons) was the largest motorship launched in the world during the year.

GERMANY. During 1930, 92 vessels of 245,557 tons were launched, or a decrease of 3520 tons from 1929. There were 8 vessels of 55,883 tons fitted with steam turbines, and 6 vessels of 16,904 tons with a combination of reciprocating steam engines and low pressure turbines. There were 31 motorships of 117,205 tons, the largest of which were the *Monte Pascoal* and *Monte Rosa*, of about 14,000 tons each. Nine tankers of 86,977 tons were launched, one of which was a steamer. Six vessels launched in Germany exceeded 10,000 tons each, and 48 of 124,178 tons, or over 50 per cent of the total output, were intended for other countries, including three vessels of 35,470 tons for Danzig, and 19 of 34,598 tons for France.

HOLLAND. The total tonnage launched in Holland during 1930 was 153,072 tons, or 33,445 less than in 1929, excluding, of course, vessels for river navigation which amounted to a considerable tonnage. Of the 12 vessels of over 6000 tons each launched, all motorships, three exceeded 10,000 tons each, the largest being the *Dempo* of about 16,000 tons. There were 51 vessels of 128,195 tons to be fitted with internal combustion engines, a tonnage representing 83¾ per cent of the total output. Four tankers, of which three were motorships of 18,093 tons, and one a steamer of 5209 tons, represented the craft of over 1000 tons built for this purpose.

JAPAN. This country, with an output of 151,272 tons, showed a decrease of 13,185 tons from 1929, but the list included several notable craft, among 28 motorships of 123,894 tons. These were the *Yasukuni Maru* of 11,930 tons, the *Hiye Maru* of 11,622 tons, and the *Heian Maru* of about 11,000

tons, together with 8 others exceeding 6000 tons each. The motorship tonnage accounted for nearly 82 per cent of the total output of the year.

DENMARK. This country, with 137,230 tons launched in 1930, had not only 25,734 tons more than in the previous year, but with a single exception, 1928, when 138,712 tons were launched, a record output. The motorship tonnage amounted to 120,262 tons, including 16 vessels ranging from 4500 tons to 7300 tons and one of 9850 tons, which was the largest vessel launched during the year. Practically one-half of the tonnage launched was for Norwegian owners.

SWEDEN. The year 1930 recorded the highest output ever reached—namely, 131,781 tons, an increase of 24,535 tons over 1929. There were 21 motorships of 119,417 tons, or over 90 per cent of the total launched. Of these 11 were between 6000

and 10,000 tons. Nine tankers, all with internal combustion engines, amounted to 69,082 tons. Fifteen of the motorships of 86,813 tons were built for Norwegian owners.

FRANCE. An output for the year of 100,917 tons was comparable with 81,607 tons for 1929, and included 20,167 tons of motorships, of which the *Georges Philippiar* of 16,990 tons was the largest. There were four other craft exceeding 7500 tons, of which the turbine steamer, *L'Atlantique*, of 40,945 tons, was the largest vessel launched outside the United Kingdom during the year.

ITALY. With 87,709 tons, there was an increase of 16,212 tons over 1929, which included 15 vessels fitted with internal combustion engines amounting to 71,361 tons. The quadruple screw motor vessel, *Victoria*, of 13,500 tons, was the largest vessel launched from Italian shipyards

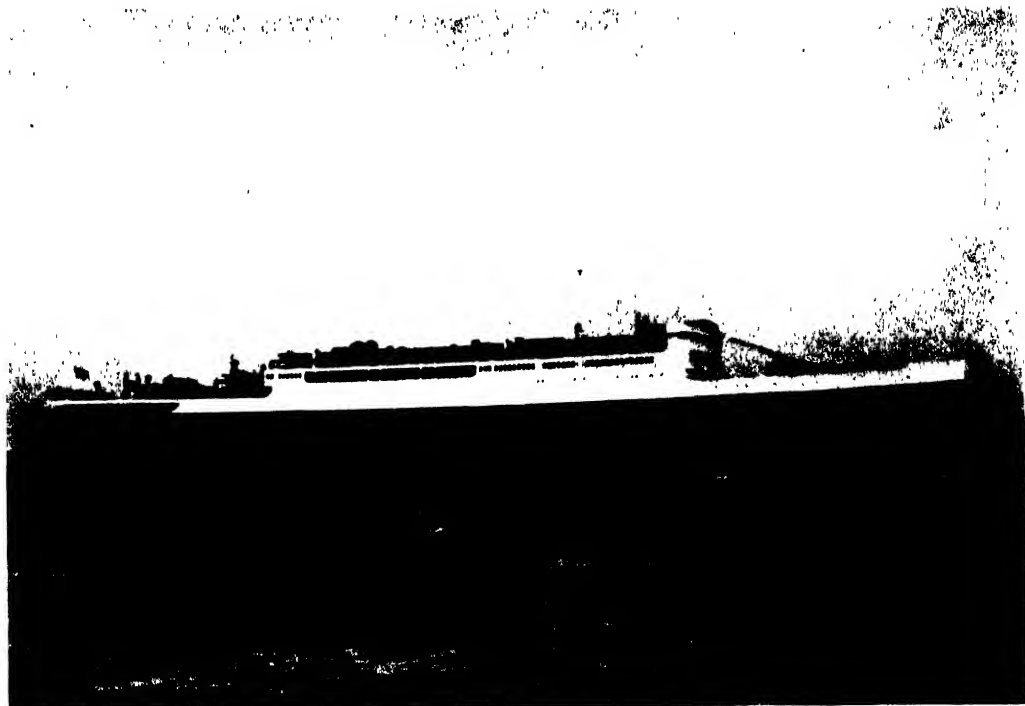
TABLE SHOWING THE NUMBER AND GROSS TONNAGE OF MERCHANT VESSELS OF 100 TONS GROSS AND UPWARDS LAUNCHED IN THE VARIOUS COUNTRIES OF THE WORLD DURING THE YEARS 1913-1930—LLOYD'S REGISTER OF SHIPPING

| Year | Austria-Hungary | | Belgium | | British Dominions Coasts | | Canadian Lake Ports | | Denmark | | France | |
|------|-----------------|--------|------------|--------|-----------------------------|---------|------------------------|--------|---------|---------|--------|---------|
| | No. | Tons | No. | Tons | No. | Tons | No. | Tons | No. | Tons | No. | Tons |
| 1913 | 17 | 61,757 | 54 | 30,181 | 77 | 26,744 | 14 | 21,595 | 31 | 40,932 | 89 | 176,095 |
| 1914 | 11 | 34,835 | 8 | 17,145 | 58 | 22,288 | 22 | 25,246 | 25 | 32,815 | 93 | 114,052 |
| 1915 | .. | (s) | No Returns | | 27 | 13,289 | 4 | 8,725 | 23 | 45,198 | 6 | 25,402 |
| 1916 | .. | (s) | No Returns | | 36 | 22,577 | 4 | 8,994 | 28 | 35,277 | 9 | 42,752 |
| 1917 | .. | (s) | No Returns | | 80 | 66,475 | 25 | 27,996 | 23 | 20,445 | 6 | 18,828 |
| 1918 | .. | (s) | No Returns | | 184 | 230,514 | 22 | 49,890 | 13 | 26,150 | 3 | 13,175 |
| 1919 | .. | | 2 | 2,433 | 235 | 298,495 | 28 | 60,233 | 46 | 37,766 | 84 | 32,633 |
| 1920 | .. | | 5 | 8,371 | 90 | 174,557 | 13 | 29,087 | 30 | 60,669 | 50 | 93,449 |
| 1921 | .. | | 3 | 17,909 | 49 | 118,303 | 5 | 11,372 | 37 | 77,238 | 65 | 210,663 |
| 1922 | .. | | 4 | 7,497 | 37 | 53,847 | 2 | 9,418 | 23 | 41,016 | 62 | 184,509 |
| 1923 | .. | | 5 | 1,102 | 41 | 37,072 | 3 | 4,191 | 24 | 49,479 | 27 | 96,644 |
| 1924 | .. | | 2 | 3,997 | 29 | 29,815 | 2 | 15,064 | 33 | 63,937 | 26 | 79,685 |
| 1925 | .. | | 3 | 4,206 | 47 | 32,220 | 4 | 13,858 | 21 | 73,268 | 35 | 75,569 |
| 1926 | .. | | 8 | 8,627 | 39 | 22,842 | 3 | 10,836 | 25 | 72,108 | 34 | 121,342 |
| 1927 | .. | | 8 | 4,693 | 24 | 20,119 | 5 | 10,131 | 20 | 72,038 | 22 | 44,315 |
| 1928 | .. | | 3 | 16,243 | 47 | 22,959 | 1 | 784 | 21 | 138,712 | 20 | 81,416 |
| 1929 | .. | | 4 | 8,361 | 47 | 21,327 | 3 | 11,814 | 34 | 111,496 | 16 | 81,607 |
| 1930 | .. | | 5 | 12,265 | 77 | 43,292 | 2 | 458 | 38 | 137,230 | 18 | 100,917 |

| Year | Germany | | Great Britain and Ireland | | Holland | | Italy | | Japan | | Norway | |
|------|---------|---------|------------------------------|-----------|---------|---------|-------|---------|-------|---------|--------|--------|
| | No. | Tons | No. | Tons | No. | Tons | No. | Tons | No. | Tons | No. | Tons |
| 1913 | 162 | 465,226 | 688 | 1,932,153 | 95 | 104,296 | 38 | 50,356 | 152 | 64,664 | 74 | 50,637 |
| 1914 | 89 | 387,192 | 656 | 1,683,553 | 130 | 118,153 | 47 | 42,981 | 32 | 85,861 | 61 | 54,204 |
| 1915 | ... | (s) | 927 | 2,659,919 | 120 | 113,075 | 30 | 22,132 | 26 | 49,408 | 59 | 62,070 |
| 1916 | ... | (s) | 306 | 608,235 | 201 | 180,197 | 10 | 50,654 | 55 | 145,624 | 52 | 42,458 |
| 1917 | ... | (s) | 286 | 1,162,896 | 146 | 143,779 | 11 | 38,906 | 104 | 350,141 | 44 | 46,103 |
| 1918 | ... | (s) | 301 | 1,348,120 | 74 | 74,026 | 15 | 60,791 | 198 | 489,924 | 51 | 47,723 |
| 1919 | ... | (s) | 612 | 1,620,442 | 100 | 137,086 | 32 | 82,713 | 133 | 611,883 | 82 | 57,578 |
| 1920 | ... | (s) | 618 | 2,055,624 | 99 | 183,149 | 62 | 133,190 | 140 | 456,642 | 30 | 38,855 |
| 1921 | 242 | 509,064 | 420 | 1,538,052 | 98 | 232,402 | 66 | 170,948 | 43 | 227,425 | 85 | 51,458 |
| 1922 | 187 | 525,829 | 235 | 1,031,081 | 60 | 163,182 | 42 | 101,177 | 49 | 83,419 | 23 | 32,391 |
| 1923 | 109 | 345,062 | 222 | 645,651 | 35 | 65,632 | 21 | 66,523 | 44 | 72,475 | 48 | 42,619 |
| 1924 | 108 | 175,113 | 494 | 1,439,885 | 41 | 63,627 | 19 | 82,526 | 31 | 72,757 | 34 | 25,139 |
| 1925 | 121 | 406,374 | 342 | 1,084,633 | 47 | 78,823 | 31 | 142,046 | 23 | 55,784 | 48 | 28,805 |
| 1926 | 60 | 180,548 | 197 | 639,568 | 47 | 93,671 | 27 | 220,021 | 26 | 52,405 | 25 | 9,237 |
| 1927 | 105 | 289,622 | 371 | 1,225,873 | 68 | 119,790 | 25 | 101,076 | 19 | 42,359 | 12 | 5,363 |
| 1928 | 81 | 376,416 | 420 | 1,445,920 | 74 | 166,754 | 29 | 58,640 | 37 | 103,668 | 12 | 10,401 |
| 1929 | 85 | 249,077 | 489 | 1,522,623 | 77 | 186,517 | 32 | 71,497 | 40 | 164,457 | 51 | 39,604 |
| 1930 | 92 | 245,557 | 481 | 1,478,563 | 74 | 153,072 | 36 | 87,709 | 37 | 151,272 | 53 | 53,843 |

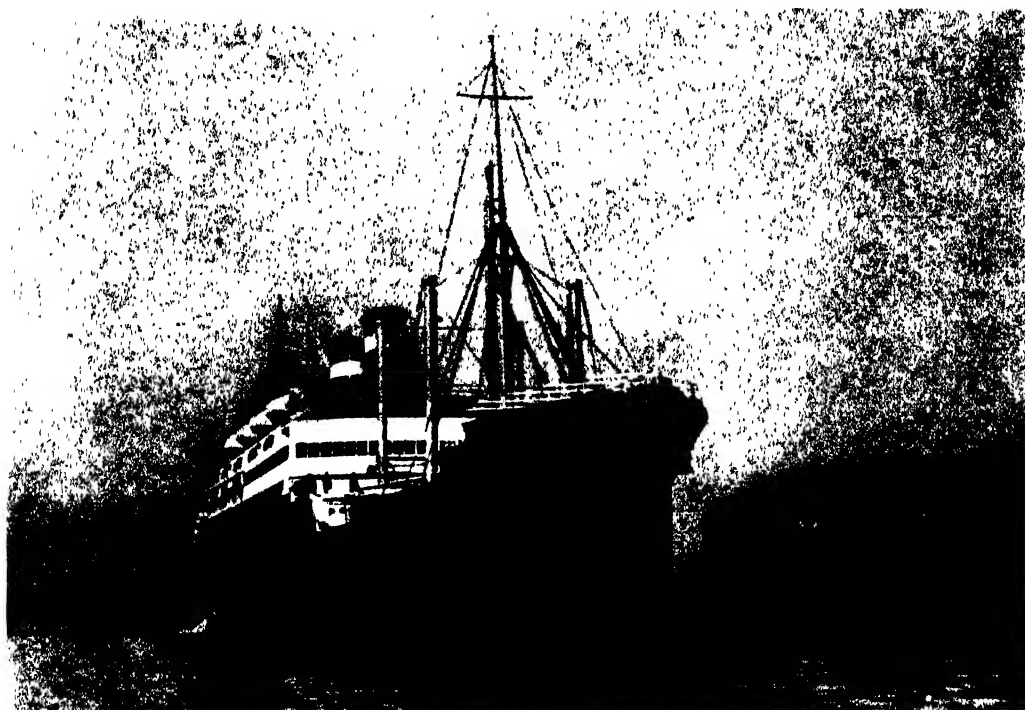
| Year | Spain | | Sweden | | United States Coast | | Great Lakes | | Other Countries | | Total | |
|------|-------|--------|--------|---------|------------------------|-----------|-------------|---------|-----------------|--------|-------|-----------|
| | No. | Tons | No. | Tons | No. | Tons | No. | Tons | No. | Tons | No. | Tons |
| 1913 | 12 | 8,488 | 25 | 18,524 | 182 | 228,232 | 23 | 48,216 | 17 | 4,786 | 1,750 | 3,332,882 |
| 1914 | 5 | 5,168 | 26 | 15,163 | 84 | 162,937 | 10 | 37,825 | 22 | 18,840 | 1,319 | 2,852,753 |
| 1915 | 5 | 12,765 | 27 | 20,319 | 76 | 157,167 | 8 | 20,293 | 5 | 876 | 743 | 1,201,683 |
| 1916 | 6 | 10,847 | 34 | 26,789 | 167 | 384,899 | 44 | 119,848 | 12 | 3,449 | 964 | 1,688,080 |
| 1917 | 10 | 22,777 | 34 | 26,760 | 266 | 821,115 | 60 | 176,804 | 17 | 9,761 | 1,112 | 2,937,786 |
| 1918 | 18 | 17,389 | 36 | 39,583 | 741 | 2,602,153 | 188 | 430,877 | 22 | 17,089 | 1,866 | 5,447,444 |
| 1919 | 41 | 52,609 | 53 | 50,971 | 852 | 3,579,826 | 199 | 495,559 | 34 | 34,322 | 2,483 | 7,144,549 |
| 1920 | 13 | 45,960 | 46 | 63,823 | 467 | 2,348,725 | 42 | 127,528 | 34 | 42,047 | 1,759 | 5,861,666 |
| 1921 | 11 | 47,256 | 27 | 65,911 | 187 | 1,004,093 | 7 | 11,284 | 78 | 68,465 | 1,379 | 4,956,843 |
| 1922 | 2 | 7,776 | 14 | 30,098 | 55 | 97,181 | 4 | 21,977 | 53 | 77,318 | 852 | 2,467,084 |
| 1923 | 7 | 4,488 | 10 | 20,118 | 69 | 95,491 | 14 | 76,326 | 22 | 19,308 | 701 | 1,643,181 |
| 1924 | 2 | 3,859 | 12 | 31,211 | 71 | 90,155 | 8 | 49,308 | 12 | 21,673 | 924 | 2,247,751 |
| 1925 | 1 | 127 | 17 | 53,750 | 94 | 78,766 | 7 | 50,010 | 14 | 15,165 | 855 | 2,193,404 |
| 1926 | 6 | 25,671 | 14 | 53,518 | 78 | 115,217 | 5 | 85,396 | 11 | 18,970 | 600 | 1,674,977 |
| 1927 | 5 | 22,899 | 18 | 67,361 | 58 | 124,270 | 8 | 54,948 | 34 | 80,802 | 802 | 2,285,679 |
| 1928 | 7 | 11,852 | 20 | 106,912 | 57 | 86,092 | 6 | 5,265 | 24 | 67,260 | 869 | 2,699,239 |
| 1929 | 8 | 37,023 | 29 | 107,246 | 59 | 100,682 | 4 | 25,431 | 34 | 54,498 | 1,012 | 2,793,210 |
| 1930 | 18 | 25,213 | 31 | 131,781 | 92 | 214,012 | 8 | 32,675 | 27 | 21,618 | 1,084 | 2,889,472 |

* Returns are not available as regards Germany and Austria-Hungary for the war period (1914-18) nor as regards Germany for 1919 and 1920.



From General Electric Co.

STEAMSHIP "PRESIDENT HOOVER" OF DOLLAR LINE AFTER LAUNCHING
Turbine-Electric Equipment Includes 213,250 Horse Power Motors



From General Electric Co.

STEAMSHIP "SANTA CLARA" OF GRACE LINE
Supplied with Turbine-Electric Drive
AMERICAN STEAMSHIPS OF 1930

during the year, and there was launched in addition, a tanker, the *J. A. Mowinkel*, of 11,330 tons.

UNITED STATES. *Lloyd's Register* reported for 1930, 246,687 tons, as against 126,063 in 1929, or

of 10,724,030 gross tons on June 30, 1929. The accompanying table is an analysis of the ownership of American seagoing tonnage in 1930 compared with the previous year.

UNITED STATES MERCHANT MARINE

| Ownership and date | Steel | | Wood | | Total | |
|---|--------|------------|--------|------------|--------|------------|
| | Number | Gross tons | Number | Gross tons | Number | Gross tons |
| Private ownership (500 gross tons and over): | | | | | | |
| July 1, 1929 | 1,433 | 7,018,726 | 520 | 643,770 | 1,953 | 7,662,496 |
| July 1, 1930 | 1,449 | 7,207,405 | 482 | 610,961 | 1,931 | 7,818,366 |
| U. S. Shipping Board (1,000 gross tons and over): | | | | | | |
| July 1, 1929 | 628 | 3,315,692 | ... | ..... | 628 | 3,315,692 |
| July 1, 1930 | 478 | 2,663,879 | ... | ..... | 478 | 2,663,879 |
| Total, 1929 | 2,061 | 10,334,418 | 520 | 643,770 | 2,581 | 10,978,188 |
| Total, 1930 | 1,927 | 9,871,284 | 482 | 610,961 | 2,409 | 10,482,245 |

17.5 per cent of the total output outside of Great Britain and Ireland, and the highest recorded since 1921. Of the tonnage launched, 81 vessels of 208,361 tons were built on the Atlantic Coast, 8 vessels of 32,675 tons on the Great Lakes, and 10 vessels of 5266 tons on the Pacific Coast. The largest vessel launched during 1930 was the *President Hoover*, a turbo-electric vessel of about 21,900 tons for the Dollar Line built at Newport News. There were 13 other vessels of over 8000 tons launched. Twelve turbine steamers of 110,395 tons were included in the 1930 output, and four vessels of 28,289 tons, in which electric drive was employed. Internal combustion engine tonnage accounted for 71,854 tons, while 13 oil tankers of 104,674 tons were launched, seven of which, of 55,563 tons, were motorships.

SHIPMAN, THE RT. REV. HERBERT, Protestant Episcopal Suffragan Bishop of the Diocese of New York, died in New York City, Mar. 23, 1930. He was born in Lexington, Ky., Aug. 3, 1869, and was graduated from Columbia University in 1890 and from the General Theological Seminary in 1894, in which year he was ordained a deacon in the Protestant Episcopal Church and a year later was advanced to the priesthood. The first period of his ministry was spent as assistant rector of Christ Church in New York City, of which his father was rector. In 1896 he was appointed chaplain of the U. S. Military Academy at West Point, an office which he held for nine years. After leaving West Point he became assistant rector of the Church of the Heavenly Rest in New York City and as rector from 1907 to 1921. During the World War he was chaplain of the 104th Field Artillery and served in France as senior chaplain of the 1st Army Corps, taking part in the Meuse and Argonne offensives. He was chosen Suffragan Bishop of the Diocese of New York in 1921. His ministry had been marked by a keen interest in social service work, and after his election as bishop he devoted particular attention to the religious needs of the large metropolitan Negro population, and also the outlying rural parishes. The D.D. degree was conferred on him by George Washington University in 1918 and the S.T.D. degree by Columbia University in 1922.

SHIPPING. The U. S. Commissioner of Navigation, in his annual report for the fiscal year ending June 30, 1930, stated that on that date the merchant marine of the United States, including all kinds of documented craft, comprised 25,214 vessels of 16,067,725 gross tons, of which 2105 seagoing vessels of 10,233,125 gross tons were of 1000 tons or over, as compared with 2256 vessels

The Commissioner of Navigation also stated in his report that since June 1, 1921, the coasting trade of the United States, exclusive of the trade on the Great Lakes, had increased 4,953,981 gross tons. This growth could be compared with a decrease of 2,526,063 gross tons in the total seagoing tonnage during the same nine years.

During the fiscal year 1930, 1020 vessels of 254,296 gross tons were built and documented in the United States, and on July 1, 1930, there were building or under contract to build in American shipyards 291 vessels of 486,602 gross tons. In 1929 corresponding figures were 808 vessels of 128,076 gross tons built, and 218 vessels of 169,862 gross tons under contract. In the 1930 new tonnage were included 2 steel passenger vessels of 29,892 gross tons, 7 steel cargo vessels of 48,427 gross tons, 2 steel steam ferries of 6654 gross tons, 2 steel passenger motorships of 9527 gross tons, 1 steel cargo motorship of 1605 gross tons, and 6 steel motorship tankers of 39,981 gross tons, aggregating 136,086 gross tons.

On June 30, 1930, the laid-up seagoing tonnage of the United States aggregated 541 vessels of 2,096,179 gross tons, as against 569 vessels of 2,232,449 gross tons on June 30, 1929.

INTERNATIONAL CONVENTION ON LOAD LINES. The International Convention on Load Lines met in London from May 20 to July 5, 1930, when a comprehensive convention was signed by the United States and the following other maritime countries: Germany, Australia, Belgium, Canada, Chile, Cuba, Denmark, Free City of Danzig, Spain, Irish Free State, Finland, France, Great Britain and Northern Ireland, Greece, India, Iceland, Italy, Japan, Latvia, Mexico, Norway, New Zealand, Paraguay, Netherlands, Peru, Poland, Portugal, Sweden, and the Government of the Union of Socialist Soviet Republics. The work of this convention must be considered very largely as supplemental to the Convention of 1929 on Safety of Life at Sea, held in London, at which on May 31 an international convention was signed by the United States and 17 foreign maritime nations. This convention, discussed in the *YEAR BOOK* for 1929, page 740, subsequently was ratified by a number of countries.

The U. S. Commissioner of Navigation, in his report for 1930, stated that the conventions of 1929 and 1930 were undoubtedly the most important and effective steps ever taken by maritime nations to promote safety of life at sea, and he expressed the hope that the United States Senate would consent to their ratification.

On Sept. 2, 1930, the Act to Establish Load Lines for American Vessels approved Mar. 2, 1929,

WORLD TONNAGE

[Number, gross tonnage, and description of vessels of 100 gross tons and upward belonging to each of the several countries of the world, as recorded in Lloyd's Register, 1930-31]

| Flag | Steam and motor vessels | | Grand total including sailing vessels | |
|---------------------------------|-------------------------|------------|---------------------------------------|------------|
| | No. | Gross tons | No. | Gross tons |
| American (U.S.): | | | | |
| Sea | 2,857 | 10,645,730 | 8,580 | 11,888,967 |
| Northern Lakes | 542 | 2,457,569 | 575 | 2,558,479 |
| Philippine Islands | 118 | 98,962 | 118 | 98,962 |
| Total | 3,517 | 13,202,261 | 4,223 | 14,045,808 |
| British: | | | | |
| Great Britain and Ireland | 7,856 | 20,321,920 | 8,238 | 20,438,444 |
| Australia and New Zealand | 603 | 677,981 | 614 | 684,899 |
| Canada— | | | | |
| Coast | 629 | 919,464 | 811 | 1,009,851 |
| Lakes | 115 | 315,249 | 118 | 321,950 |
| Hong Kong | 121 | 286,845 | 121 | 286,845 |
| India and Ceylon | 147 | 182,313 | 195 | 195,378 |
| Other dominions | 490 | 406,838 | 657 | 444,247 |
| Total | 9,961 | 23,110,110 | 10,754 | 23,381,614 |
| Argentinian | 292 | 297,564 | 335 | 323,025 |
| Belgian | 238 | 546,002 | 243 | 553,037 |
| Brazilian | 346 | 543,613 | 388 | 558,777 |
| Chilean | 120 | 184,973 | 131 | 193,131 |
| Chinese | 210 | 314,817 | 216 | 319,315 |
| Danish | 643 | 1,071,521 | 705 | 1,088,006 |
| Danzig | 36 | 134,961 | 36 | 134,961 |
| Dutch | 1,381 | 3,079,000 | 1,401 | 3,086,315 |
| Estonian | 79 | 60,982 | 126 | 72,089 |
| Finnish | 244 | 243,112 | 355 | 313,143 |
| French | 1,501 | 3,470,591 | 1,651 | 3,530,879 |
| German | 2,138 | 4,199,096 | 2,157 | 4,229,235 |
| Greek | 546 | 1,390,899 | 546 | 1,390,899 |
| Honduran | 35 | 98,439 | 37 | 98,786 |
| Italian | 1,105 | 3,261,922 | 1,380 | 3,331,226 |
| Japanese | 2,060 | 4,316,804 | 2,060 | 4,316,804 |
| Latvian | 114 | 193,669 | 125 | 195,527 |
| Mexican | 41 | 45,809 | 48 | 48,675 |
| Norwegian | 1,905 | 3,663,237 | 1,916 | 3,668,289 |
| Panaman | 28 | 74,697 | 30 | 75,497 |
| Peruvian | 24 | 44,754 | 39 | 64,345 |
| Poland | 29 | 52,325 | 30 | 52,688 |
| Portuguese | 174 | 238,669 | 272 | 265,265 |
| Rumanian | 35 | 68,650 | 35 | 68,650 |
| Russian (Soviet Union) | 344 | 529,095 | 347 | 532,096 |
| Spanish | 795 | 1,207,093 | 891 | 1,231,737 |
| Swedish | 1,306 | 1,594,313 | 1,417 | 1,623,938 |
| Turkish | 190 | 177,199 | 190 | 177,199 |
| Venezuelan | 38 | 57,999 | 45 | 62,026 |
| Yugoslav | 161 | 302,481 | 161 | 302,481 |
| Other countries | 386 | 212,250 | 386 | 230,004 |
| Country not stated | 24 | 34,897 | 37 | 42,177 |
| Total | 29,996 | 68,023,804 | 32,713 | 69,607,644 |

NOTE.—A considerable number of vessels which are not yet completed appear in this table. Steamers of less than 100 tons gross and sailing vessels of less than 100 tons net are not included. Vessels trading on the Caspian Sea and wood or composite vessels trading on the Great Lakes of North America are not included. In the absence of satisfactory information, the records of most of the sailing vessels belonging to Greece, Turkey, and southern Russia are omitted from this table. Japanese sailing vessels are not reported in Lloyd's Register and therefore do not appear in this table. Under the heading "Country not stated" are included all vessels entered in Lloyd's Register without record of flag because definite information had not been received at the time of going to press, and under "Other countries" are grouped the figures for a number of countries because the tonnage owned by each country is comparatively small and therefore is not shown separately.

became effective, and the U. S. Bureau of Navigation, through a load-line division, conducted a survey with a view to learning the commercial practices of different types of ships engaged in various trades that experience had demonstrated might be followed with safety to life and property. As a result of this study, regulations were prepared for the establishment of load lines for American vessels of 250 gross tons and over, en-

gaged in foreign trade (the Great Lakes excepted). In these regulations the conclusions of the International Convention on Load Lines signed in London on July 5, 1930, already referred to, were freely adopted where they were applicable to the American vessels subject to the act.

The importance of the transportation of petroleum and its product is revealed by the fact that in 1930 over 10 per cent of the World tonnage was enrolled in this field. On June 30, 1930, there were 2,668,441 gross tons of tankers under the British flag compared with 2,484,126 gross tons under the United States flag. The total figures for the World tonnage were 7,753,059, from which it can readily be seen that two-thirds of all the World tonnage are owned by Great Britain and the United States together. If the tankers owned in the United States and operated under foreign flags should be added to the American flag fleet, it would be found that America possessed the greatest tonnage of this class in the World. As showing the immense impetus which this branch of shipping has received, it may be stated that on June 30, 1914, just prior to the outbreak of the World War, the United States had only 150,685 gross tons and Great Britain 837,410 tons, the total World tonnage on that date being 1,441,196 tons. While the World fleet increased over 500 per cent since 1914 and the British fleet increased over 300 per cent, the American fleet increased over 1600 per cent in this period of sixteen years. In the World tonnage figures for tankers Norway is third, possessing nearly one million tons, followed by Italy with about 300,000 tons, then the Dutch, the French, and the Germans, in that order. The total cargo capacity of the entire fleet of American tankers is 1,219,306,000 gallons or approximately a capacity of 10 gallons for every man, woman and child in the United States.

During the year there was a world-wide decline in overseas trade, which was indicated by a recession in freights, and in an increase in the idle shipping for the various countries of the world. According to *Commerce Reports* at the end of the year, there were about 8,276,000 gross tons

IDLE STEAM AND MOTOR SHIPPING OF THE PRINCIPAL MARITIME COUNTRIES

[In thousands of gross tons]

| Country | Jan. 1 1927 | Jan. 1 1928 | Jan. 1 1929 | Jan. 1 1930 | Dec. 31 1930 |
|---|-------------|-------------|-------------|-------------|--------------|
| Idle in home country: | | | | | |
| United States | | | | | |
| Shipping Board .. | 2,336 | 2,371 | 2,160 | 1,531 | 1,452 |
| Shipping Board tankers | 56 | 41 | 31 | 6 | 6 |
| Privately-owned .. | 457 | 544 | 608 | 447 | 1,105 |
| Government-owned, other than United States Shipping Board | 27 | 22 | 22 | 22 | 11 |
| Total | 2,876 | 2,978 | 2,816 | 2,006 | 2,574 |
| Great Britain and Ireland | 529 | 539 | 467 | 521 | 1,966 |
| Italy | 128 | 276 | 261 | 180 | 653 |
| France | 118 | 80 | 192 | 91 | 219 |
| Greece | 106 | 77 | 74 | 87 | 223 |
| Australia | 71 | 93 | 41 | 90 | 171 |
| Japan | 48 | 85 | 53 | 80 | 343 |
| Spain | 35 | 43 | 22 | 22 | 120 |
| Belgium | 14 | 1 | 4 | 14 | 77 |
| Norway | 37 | 93 | 20 | 12 | 595 |
| Germany | ... | ... | ... | 8 | 484 |
| Netherlands | 3 | 16 | ... | 4 | 324 |
| Sweden | 9 | 35 | 2 | 3 | 131 |
| Denmark | 20 | 26 | ... | ... | 91 |
| Idle in foreign countries * | 100 | 65 | 76 | 90 | 305 |
| Grand total ... | 4,094 | 4,407 | 3,968 | 3,218 | 8,276 |

* Refers mainly to countries listed above.

of shipping laid up, or an increase of 5,058,000 tons over January 1. As the accompanying table indicates, Great Britain suffered most with approximately 1,445,000 tons idle, while the United States had an increase principally of privately owned shipping. Germany also suffered in what was beginning to be a promising carrying trade.

From all of the leading commercial countries of the world, reports came of the decline in overseas trade, which was particularly noticeable in considering the statistics of the Panama and Suez Canals (q.v.). In the case of Great Britain, the British Board of Trade, in its index figures for the year, placed the total imports in 1930 at 108.1, as compared with 110.9 in the previous year; the exports of imported merchandise at 81.1, as compared with 84.8; and the British exports at 88.7, as compared with 108.3. Net imports fell from 114.0 in 1929 to 111.4 in 1930. Further statistics, as far as available, are given in sections under *Commerce* under the various countries.

SHIPWRECKS. See **SAFETY AT SEA.**

SHOES. SHOE INDUSTRY. See **BOOTS AND SHOES.**

SHOOTING. The Argentine Challenge Cup, emblematic of the world's championship in rifle-team shooting, passed into the hands of the United States team at Antwerp, Belgium, in 1930, after having been held by Switzerland continuously since 1924. Individual winners in the international events were: Standing position, Pattersen, Denmark; kneeling position, Dr. Emmett Swanson, Minneapolis, U. S. A.; prone position, Lindgren, Finland; all-round, Oksa, Finland.

A total of 3500 marksmen competed in the United States national rifle championship matches held at Camp Perry, Ohio. The U. S. Marine Corps team, with a score of 2805 out of a possible 3000, won the team title, while individual honors were awarded Sergeant Salvatore Bartletti of the 113th N. J. Infantry, who scored 290 out of 300. Sergeant R. L. Speers, of Fort Crook, Nebr., won the President's Cup. The King's Prize for the rifle-shooting championship of the British Empire was won for the first time by a woman—Miss Marjorie Foster, who scored 280 out of a possible 300 at Bisley, England. In the national pistol-shooting events at Camp Perry, the individual championship was won by Marine Sergeant H. M. Bailey of Waterboro, S. C., with a score of 262 out of 300, and the team championship by the U. S. Marines, who scored 1304 out of a possible 1500.

The outstanding event of the trapshooting season was the winning of the Grand American Handicap at Vandalia, O., in August by Alfred Ruffus King Jr., 14 years old, of Wichita Falls, Tex. Gus Payne, of Cleveland, retained his North American amateur title. The women's North American title was won by Mrs. J. A. Murphy of Freehold, N. J., the North American professional title by Howard Benson of Pontiac, Mich., and the United States amateur championship by S. M. Crothers, of Chestnut Hill, Pa.

SIAM, si-ám. An independent monarchy in southeastern Asia, bounded on the east, north, and west by French Indo-China, Burma, and the Bay of Bengal and on the south by the Federated Malay States and the Gulf of Siam. Capital, Bangkok; reigning King in 1930, Prajadhipok, of Sukhodaya.

AREA AND POPULATION. With an area of 200,149 square miles, Siam supported a population of

11,506,207 (preliminary figure) at the census of 1929, as compared with 9,207,355 in 1920. There were some 8,000,000 of the Thai people, or original Siamese, about 500,000 Chinese, and a considerable Malay element in the south. Migration statistics for the five years ending in 1928 showed arrivals of 182,699 at Bangkok and on the southern frontier and departures of 127,832. Bangkok, the chief port and principal city, had 550,000 inhabitants in 1927. The population is mainly Buddhist in religion.

EDUCATION. About 50 per cent of the population are said to be literate. Education is supervised by a Cabinet official. In 1927-28, there were 534,474 pupils in the primary schools, 13,934 in secondary schools, and 1321 in special schools. Private and missionary schools enrolled 32,555 pupils in 1926-27. Over 90 per cent of the local schools, and 60 per cent of the Government schools are located in Buddhist temples.

PRODUCTION. Of the 7,296,000 acres (6 per cent of the total area) devoted to the principal crops in 1927-28, nearly 90 per cent was under rice cultivation. The 1928-29 rice crop totaled 3,851,350 metric tons, or 15 per cent less than in 1927-28 and 26 per cent less than the record 1926-27 harvest. The poor rice crop and the practical closing of the Chinese market for rice as a result of disorders there resulted in a serious business depression in 1929, which continued during 1930. Corn, sesame, peas, cotton, tobacco, pepper, and rubber are other crops. Livestock in 1928 included 4,256,000 cattle, 4,440,000 buffaloes, 9200 domesticated elephants, and 283,000 horses. Fishing, the extraction of teakwood, mining, and rice milling are other leading industries. A total of 142,535 teak logs passed through the Government revenue station in 1929. Exports of stick-lac for the fiscal year ended Mar. 31, 1929, totaled 7,658,000 pounds, or 77 per cent more than in 1927-28. Tin is the principal mineral produced, the output in 1929 being 8027 tons (7938 in 1928). Tungsten, lignite, iron, antimony, copper, zinc, and coal are other minerals found. Of nearly 300 rice mills in the country, about 80 are in Bangkok. Sawmills, tanneries, and small factories for the manufacture of bricks, soap, tobacco, etc., are located principally in Bangkok also.

COMMERCE. For the fiscal year ended Mar. 30, 1930, exports totaled 219,800,000 bahts (about \$96,712,000), as against 252,500,000 bahts (about \$111,100,000) in 1928-29. Imports increased to 206,700,000 bahts (about \$90,950,000) from 180,800,000 bahts (\$79,550,000) in the previous year. The baht equaled \$0.4424 at par. In 1928-29, 37 per cent of the exports went to Singapore and 24.5 per cent to Hong Kong, mainly for transshipment. Of the imports, 18 per cent were from the United Kingdom, 14.6 per cent from Hong Kong, 10.9 per cent from Singapore, and 4.9 per cent from Japan. The chief exports in 1928-29 were: Rice, \$77,696,000; tin ore, \$8,861,000; teakwood, \$4,973,000. Cotton piece goods, cigarettes, iron and steel, gunny bags, machinery, kerosene, medicines and drugs, sugar, and silk piece goods were the leading imports.

FINANCE In the budget for 1929-30, revenues were calculated at 106,440,000 bahts and expenditures at 106,267,000 bahts, as compared with estimated revenues of 100,628,000 bahts and expenditures of 99,982,000 bahts in 1928-29. Actual returns for 1927-28 showed receipts of 117,442,000 bahts and expenditures of 117,391,000 bahts. The

public debt on Mar. 31, 1930, stood at £11,385,000 (\$55,405,000) and was floated entirely in London.

COMMUNICATIONS. The Siamese railways, for the most part government-owned and operated, form one of the most efficient systems in the Far East. In 1928, there were 1739 miles of railway line on which 6,683,000 passengers and 1,379,000 tons of freight were carried, with gross receipts of 20,585,000 bahts. There were 654 miles of unsurfaced highways in 1930. The telegraph and telephone systems, also government-owned, had a combined total of 4304 miles of line and 8236 miles of wire in 1928. At Bangkok, which handles 85 per cent of the foreign trade, a total of 1075 vessels of 1,151,880 net registered tons entered and 1079 vessels of 1,158,309 tons cleared during the year 1928-29.

GOVERNMENT. Executive power is vested in the King, who is assisted by a consultative council of four elder statesmen of the royal household, and by an advisory cabinet council consisting of the ministers of state and other high officials. The cabinet council functions as the legislative arm of the government. King Prajadhipok, who was born Nov. 8, 1893, succeeded to the throne on the death of his brother, Rama VI, on Nov. 26, 1925.

SIBERIA. A vast area of northern Asia, forming part of the Union of Soviet Socialist Republics and divided administratively as follows:

SIBERIA: ADMINISTRATIVE UNITS

| | Area sq. km. | Population 1926 |
|------------------------------|-----------------|--------------------|
| Far Eastern Area | 2,846,323 | 1,805,837 |
| Yakutsk Republic | 3,769,000 | 236,728 |
| Buriat-Mongol Republic | 419,000 | 484,363 |
| Ural Area * | 1,655,700 | 6,791,875 |
| Total | 8,690,023 | 9,318,803 |

* Includes a small section of European Russia.

About 90 per cent of the population is engaged in agriculture and stock raising, with mining, lumbering, hunting, and fishing as other important occupations. Siberia is one of the world's most important sources of furs and its vast mineral and forest resources remain for the most part untouched.

The FAR EASTERN REGION accounts for 40 per cent of the mining and manufacturing output. Its largest city and port, Vladivostok, with a population of 110,000, has the largest trade of any Soviet port. While over 60 per cent of the Far Eastern Region remains unsurveyed, more than 700 deposits of coal, oil, gold, iron, copper, silver, lead, zinc, manganese, sulphur, tungsten, platinum, and other metals and precious stones have been found in the prospected sections (see SAKHALIN). There are about 200,000,000 acres of commercial timber in the region. Fishing, wood working, and flour milling are the chief industries. Railways are fairly well developed and many navigable rivers serve as means of transportation.

The adjoining YAKUTSK REPUBLIC on the west has about 625,000,000 acres of forest area. Hunting and gold mining are the two leading industries. Yakutsk, the chief city (population, 10,513), is linked with Irkutsk by air line. A severe climate and lack of railways retard its economic development. Cattle breeding is the chief occupation of the people of the BURIAT-MONGOL REPUBLIC, to the south of the Yakutsk Republic. In 1926 there were 801,400 cattle in the region. Leather

and glass industries are maintained, chiefly in Verkhneudinsk, the largest town (population, 29,271).

The SIBERIAN AREA proper is the most important section agriculturally, producing about 17 per cent of the grain as well as 15 per cent of the fur output of the whole of Soviet Russia. It extends from Mongolia to the Arctic between the Yakutsk Republic on the east and the Ural Area on the west. The capital, Novo-Sibirsk, has 120,701 inhabitants. Other large cities of the region are Omsk (161,475), Irkutsk (98,979), and Tomsk (92,485). The area under cultivation in 1929 was about 20,000,000 acres, or 13 per cent higher than in 1913; large quantities of wheat are exported annually. The Kusnetsk Basin in the Siberian Area is estimated to contain 388,000,000,000 metric tons of coal and the Cheremkhov and Minusinsk Basins hold other rich deposits. The extensive iron-ore deposits of Telbes are in the Kusnetsk Basin. Copper and other non-ferrous ores are widely distributed.

Sverdlovsk, with a population of 135,494, is the leading city of the URAL AREA. Perm, with 119,420 inhabitants, ranks next in size. Wheat, oats, rye, and barley are grown in fertile valleys of the Ural foothills. Iron, manganese, coal, graphite, and gold are the principal minerals extracted and a considerable metallurgical and chemical industry has developed. The Trans-Siberian Railway, which extends 4491 miles from Sverdlovsk to Vladivostok, is Siberia's main transportation line. See RUSSIA.

SIERRA LEONE, sē-ēr'ra lē-ō'nē. A British colony and protectorate on the west coast of Africa; bounded by French Guinea on the north and Liberia on the southeast. The approximate area of the colony is 4000 square miles and the population, according to the census of 1921, 85,163, of whom 1161 were Europeans. The chief city is Freetown, with a population in 1921 of 44,142. Freetown is the chief seaport in West Africa, being a coaling station and the headquarters of the British Imperial forces in West Africa. Vessels entered and cleared in the foreign trade in 1928 aggregated 4,774,831 tons. The total exports in 1928 amounted to £1,829,093; imports, £2,054,507; revenue, £826,318; expenditure, £815,373; public debt (Dec. 31, 1928), £1,787,673. The total railway mileage open was 339 miles.

The adjoining protectorate has an area of 27,000 square miles; population, according to the census of 1921, 1,456,148, of whom 1,450,903 were natives. The chief exports are palm kernels, kola nuts, palm oil, and ginger. It is divided into three provinces, with a European commissioner at the head of each. The governor and commander-in-chief of the colony is also governor of the protectorate. He is assisted by an executive and legislative council. Governor and Commander-in-Chief in 1930, Brig.-Gen. Sir J. A. Byrne, succeeded by A. W. Hodson, former Governor of the Falkland Islands. For settlement of boundary dispute with Liberia, see LIBERIA.

SILESIA, sl-lē'sha. The term applied to (1) a province of Czechoslovakia, including the former Austrian crownland of Silesia and a small section of Germany ceded by the Versailles Treaty; area, 1708 square miles; estimated population Jan. 1, 1929, 735,532, (2) a county of Poland, including 1241 square miles detached from German Upper Silesia following a plebiscite in 1921 and Teschen Silesia, detached from Austria, by the Versailles Treaty; total area, 1633 square

miles; population at the census of 1921, 1,124,967, and (3) the two Prussian provinces of Lower Silesia and Upper Silesia, the respective areas of which on Apr. 1, 1925, were 10,276 and 3746 square miles; respective populations on the same date, 3,132,328 and 1,379,278.

SILESIA, UPPER. For Polish-German riots in 1930, see **POLAND** and **GERMANY** under *History*.

SILK, ARTIFICIAL. See **RAYON**.

SILK. The 1930 raw-silk crop of the world was considerably below that of 1929 which as indicated in the accompanying table was the largest on record.

the leading producer, with the United States second with 50,400,000 ounces, and Canada third with 26,200,000 ounces. This production compared with 260,900,000 ounces for 1929 by the same authority, or 261,715,021 ounces according to the annual report of the Director of the Mint. This report of the world's production is summarized in the table below.

It will be recalled that the major part of the silver produced comes as a by-product of the metallurgy of copper and zinc. Production does not depend entirely on the price of the metal.

The position of silver in world markets depends

WORLD RAW-SILK PRODUCTION

[Including tussah silk]

[Compiled by the Statistical Bureau of the Silk Association of America]

| | 1929-30 * Pounds | 1928-29 Pounds | 1927-28 Pounds | 1926-27 Pounds | 1925-26 Pounds |
|--|---------------------|-------------------|-------------------|-------------------|-------------------|
| Europe | 11,243,000 | 11,287,300 | 11,034,000 | 9,215,000 | 10,449,000 |
| Italy | 10,648,000 | 10,661,000 | 10,201,000 | 8,499,000 | 9,656,000 |
| France | 430,000 | 452,000 | 650,000 | 529,000 | 573,000 |
| Spain | 165,000 | 174,000 | 183,000 | 187,000 | 220,000 |
| Levant | 2,601,000 | 2,601,000 | 2,293,000 | 2,359,000 | 2,524,000 |
| Asia: Total quantity exported ^b | 85,221,000 | 93,673,000 | 87,270,000 | 84,887,000 | 72,874,000 |
| China, Shanghai | 13,755,000 | 13,194,000 | 12,313,000 | 10,825,000 | 10,394,000 |
| China, Canton | 6,243,000 | 6,162,000 | 5,809,000 | 7,055,000 | 5,302,000 |
| Japan | 65,036,000 | 74,075,000 | 68,839,000 | 66,193,000 | 56,978,000 |
| India | 187,000 | 242,000 | 309,000 | 264,000 | 200,000 |
| Total, pounds | 99,065,000 | 107,473,000 | 100,597,000 | 95,911,000 | 85,847,000 |
| Tussah | 1,060,000 | 958,000 | 970,000 | 1,400,000 | 2,205,000 |
| Grand total, pounds | 100,125,000 | 108,431,000 | 101,567,000 | 97,311,000 | 88,052,000 |

* Estimated.

^b The total production of raw silk in Asia is an unknown quantity, therefore experts' figures have been used.

^c Excludes tussah silk.

The exports from Canton and Shanghai during the season 1929-30 were 21,000,000 pounds. The Japan crop was estimated at 93,400,000.

In 1930, raw silk again figured as the largest single commodity in dollar value imported into the United States, comprising 8.6 per cent of the total value of merchandise imported as against 9.7 per cent in 1929. During the year there was 73,733,278 pounds of raw silk imported, representing a total value of \$262,912,729. This compared with 87,067,949 pounds in 1929, representing a value of \$427,126,383. There was, therefore, a decrease in 1930 of 15.3 per cent in poundage and of 38.5 per cent in value. The average value per pound was \$3.57 in 1930, against \$4.91 in 1929.

SILVAIN, EUGENE. A French actor, died in Marseilles, Aug. 21, 1930. He was born in Bourg, Jan. 17, 1851. Making his debut at the Comédie Française in 1878, he appeared for almost 50 years on that stage, and in 1925 was awarded the title of honorary dean. His classical repertoire included: *Polyeucte*, *Le Cid*, *Phèdre*, *Mithridate*, and *Le Misanthrope*. He also appeared in such contemporary French plays as *Les Burgraves*, *Le Père Lebonnard*, *Grisélidis*, *Par le Glaive*, and *La Femme de Tabarin*. His wife, LOUISE SILVAIN, also a member of the Comédie Française, died in Paris on Oct. 20, 1930.

SILVER. During 1930 the output of silver suffered a marked decline due to falling prices for the metal, which made low records for all time. Opening on January 2 at 46½ cents an ounce in New York, and 25½ d. in London, silver closed at 30¾ cents in New York on December 30, and 14½ d. in London on December 31. Many of the mines were forced by low prices to shut down their production which, for the total world, was estimated by Handy and Harman of New York City at 243,700,000 fine ounces, of which Mexico was

WORLD SILVER PRODUCTION, 1929

| | Ounces | Value |
|---------------------------------------|-------------|---------------|
| United States | 61,233,321 | \$ 32,840,042 |
| Canada | 23,143,261 | 12,411,962 |
| Mexico | 108,700,372 | 58,297,097 |
| Total for North America .. | 193,076,954 | \$103,549,101 |
| Central America and West Indies | 2,796,890 | \$ 1,500,000 |
| South America | 27,952,164 | 14,991,025 |
| Europe | 11,290,118 | 6,055,003 |
| Asia | 14,852,257 | 7,965,417 |
| Oceania | 10,434,022 | 5,595,871 |
| Africa | 1,312,616 | 703,969 |
| Total for world | 261,715,021 | \$140,360,386 |

in large measure on political and economic conditions in China, which is the world's chief consumer, and which was suffering from civil war, crop failures, tax uncertainties, trade dues, and other manifestations of unsettled and revolutionary conditions. As a result, large quantities of silver flowed to Shanghai for safekeeping, so that the stocks on hand at that city increased from 107,900,000 ounces on Jan. 1, 1928, to 192,400,000 ounces on Jan. 1, 1930, and to 216,200,000 ounces on Nov. 15, 1930. In India an import duty was fixed on silver and also an excise tax on new silver mined in that dominion. Here, also, the Government policy figured and contributed to world conditions. In France the Government was accumulating silver to replace badly worn paper notes with silver coins, having in its vaults more than enough silver to meet the coinage needs. French Indo-China was also a factor, due to its sale of silver, practically disposing of all of its silver stock in 1929 and 1930. Mexico forbade the

importation of silver coin and suffered greatly by the low price of the metal. In the United States there was a 10 per cent price reduction made by manufacturers of silver wear, and the total production for the year was 48,637,798 ounces valued at \$18,725,552, as compared with 61,233,321 ounces valued at \$32,840,042 in 1929.

The U. S. Bureau of the Mint, with the cooperation of the Bureau of Mines, made the accompanying preliminary estimate of refinery production of silver in the United States during the calendar year 1930:

PRODUCTION OF SILVER IN THE UNITED STATES IN 1930

[Arrivals at United States Mints and Assay Offices and at private refineries]

| State | Ounces | Value * |
|--------------------------|------------|--------------|
| Alaska | 405,336 | \$ 156,054 |
| Alabama ..... | ..... | ..... |
| Arizona | 5,191,474 | 1,998,718 |
| California | 1,484,458 | 571,516 |
| Colorado | 4,435,121 | 1,707,522 |
| Georgia | 23 | 9 |
| Idaho | 9,354,950 | 3,601,656 |
| Illinois | 1,780 | 685 |
| Maine | 8,614 | 1,391 |
| Michigan | 10,060 | 3,873 |
| Missouri | 240,800 | 92,708 |
| Montana | 8,001,479 | 3,080,569 |
| Nevada | 4,051,643 | 1,559,883 |
| New Mexico | 1,026,774 | 395,308 |
| North Carolina | 53 | 20 |
| Oregon | 10,018 | 3,855 |
| Pennsylvania | 4,762 | 1,833 |
| South Dakota | 104,184 | 40,111 |
| Tennessee | 116,775 | 44,958 |
| Texas | 484,447 | 186,512 |
| Utah | 13,550,755 | 5,217,041 |
| Vermont | 4,512 | 1,787 |
| Washington | 87,461 | 14,423 |
| Wyoming | 216 | 83 |
| Philippine Islands | 117,108 | 45,087 |
| Total | 48,637,798 | \$18,725,552 |

* Value at 38.5¢ per ounce, the average New York price of bar silver.

Comparison with 1929 production indicates a decrease in 1930 of 12,690,070 ounces of silver. Comparison with the year of largest production, 1915, when silver amounted to 74,961,075 ounces, gives a reduction of 26,323,277 ounces of silver.

SILVERMAN, JOSEPH. An American rabbi, died in New York City, July 26, 1930. He was born in Cincinnati, Ohio, Aug. 25, 1860, and was graduated from the University of Cincinnati in 1883. Ordained a rabbi the following year, he successively served as minister of Temple Emanu-El in Dallas, Texas (1884-85); Congregation Benai Israel in Galveston, Texas (1885-88); and Temple Emanu-El in New York City (1888-1922). During 1900-03 he was president of the Central Conference of American Rabbis, and during 1917-19 president of the Eastern Council of Reform Rabbis. He was a member of the Mohawk Peace Conference during 1911-13, and vice president of the International Peace Forum and associate editor of the *Peace Forum Magazine* in 1913. He was also a member of the national executive committee of the Zionist Organization of America and was active in the movement sponsored by that society to establish a Jewish homeland in Palestine. The D.D. degree was conferred on him by the Hebrew Union College in 1884 and the D.H.L. degree by New York University in 1924. Besides pamphlets on various theological and Jewish subjects, he was the author of *Catechism on Judaism* (1886) and was for a number of years corresponding editor for the *Jewish Encyclopædia*.

SIMMONS COLLEGE. A nonsectarian college for women in Boston, Mass., founded in 1899. The enrollment on Nov. 1, 1930, was 1542, distributed among the following schools: Household economics, 270; secretarial studies, 505; library science, 244; general science, 82; social work, 189; store-service education, 62; public-health nursing, 176; landscape architecture, 7; physical education, 7. There was an enrollment of 208 in the 1930 summer session. The faculty numbered 140. The productive funds of the institution amounted to \$3,351,969 and the income for the year was \$541,010. The library contained 49,829 volumes. President, Henry Lefavour, Ph.D., LL.D.

SIMON REPORTS. See **INDIA** under *History*.

SINGAPORE. See **STRAITS SETTLEMENTS**.

SINGAPORE NAVAL BASE. See **GREAT BRITAIN** under *History*.

SINGING. See **MUSIC**.

SINGLETON, ESTHER. An American author, died in Stonington, Conn., July 2, 1930. She was born in Baltimore, Md., but had resided in New York City since 1887. For several years she was employed on the editorial staffs of various works of reference, and at the time of her death was editor of *The Antiquarian*, with which she had been connected since 1923. She was the author of more than 50 volumes covering a wide variety of subjects. Among these are: *Turrets, Towers, and Temples* (1898); *The Furniture of Our Forefathers* (2 vols., 1900); *Romantic Castles and Palaces* (1901); *Famous Paintings* (1902); *Social New York under the Georges* (1902); *Great Events of the World's History* (5 vols., 1903); *The Story of the Universe* (4 vols., 1905); *The Wild Flower Fairy Book* (1905); *Historic Buildings of America* (1906); *Landmarks of American History* (1907); *A Guide to the Modern Operas* (1909); *Dutch New York* (1909); *Modern Pictures* (1911); *How to Visit the English Cathedrals* (1912); *A Daughter of the Revolution* (a novel, 1915); *The Orchestra and Its Instruments* (1917); *The Shakespeare Garden* (1922); *The Collecting of Antiques* (1926); *Dolls* (1928); and *Old World Masters in New World Galleries* (1929).

SINTERING. See **METALLURGY**.

SKATING. The world's championship figure-skating competition, held in New York City in 1930, was marked by the sensational performance of Sonja Heinie, 19-year-old Norwegian girl, who won the singles championship for the fourth consecutive year. The men's figure-skating title was annexed by Karl Shafer, of Austria, and the championship for paired skating, by M. and Mme. Pierre Brunet, of France. In the American championship figure-skating contests held in Providence, R. I., in March, Miss Maribel Vinson, of Boston, repeated her victory of 1929 and 1928 in the women's field. The men's title was retained by Roger K. Turner, also of Boston, and the pairs championship was awarded to Miss Beatrix Loughran and Sherwin C. Badger, of New York City.

The men's North American outdoor speed-skating title was won by Jack Shea, of Dartmouth College, the 1929 champion, who defeated Irving Jaffee, of New York, and Ross Robinson, of Toronto. Mrs. Leila Brooks Potter, of Toronto, captured the women's title in the same event, and broke two world's records. The women's American outdoor title again went to Miss Loretta Neitzel, of Detroit, the competition being held at

Skytop, Pa. Among the eight new records accepted by the Amateur Skating Union of the United States were Shea's mark of 23½ seconds for one-sixth of a mile and Robinson's time of 8 min. 19¾ sec. for three miles.

SKILLERN, ROSS HALL. An American surgeon, died Sept. 20, 1930, in Philadelphia, Pa., where he was born Nov. 13, 1875. He was graduated from the University of Pennsylvania with the A.B. degree in 1894 and with the M.D. degree in 1897. In 1900 he became laryngologist at the Rush Hospital in Philadelphia, which position he retained until 1913. He was professor of laryngology at the Medico-Chirurgical College from 1912 to 1918 and at the post-graduate school of medicine of the University of Pennsylvania from 1917 until his death. During the World War as major in the Medical Department, U. S. A., he was in charge of the division of head surgery at the base hospital, Camp Sheridan, Ala. (1917-18), and later lieutenant colonel in command of base hospital 89 at Meaves sur Loire, France, (1918-19). He was president of the Philadelphia Laryngological Society during 1912-14, chairman of the section on laryngology and otology of the American Medical Association during 1920-21, president of the American Academy of Ophthalmology and Oto-Laryngology during 1926-27, and president of the American Laryngological, Rhinological, and Otological Society during 1929-30. He was also a member of the American Board of Examiners in Oto-Laryngology and a fellow of the American College of Surgeons. The Sc.D. degree was conferred on him by Ursinus College in 1925. He was the author of *Accessory Sinuses of the Nose* (4 edits., 1916-23).

SLATTERY, THE RT. REV. CHARLES LEWIS. Protestant Episcopal Bishop of the Diocese of Massachusetts, died in Boston, Mass., Mar. 12, 1930. He was born in Pittsburgh, Pa., Dec. 9, 1867, and was graduated from Harvard University in 1891 and from the Episcopal Theological School in Cambridge in 1894. After ordination as deacon in 1894 and as priest in 1895, he was appointed a master at Groton School, serving at the same time as rector of St. Andrew's Church, Ayer, Mass. In 1896 he became dean of the Cathedral of Our Merciful Saviour in Faribault, Minn., where he remained until 1907, when he became rector of Christ Church in Springfield, Mass. Three years later he was chosen rector of Grace Church in New York City. He was lecturer at the Berkeley Divinity School during 1909-10; Paddock lecturer at the General Theological Seminary during 1911-12; West lecturer at Stanford University in 1915; and member of the board of preachers at Harvard University during 1920-27. In 1922 he was elected Bishop Coadjutor of the Diocese of Massachusetts and succeeded to the bishopric in 1926 on the resignation of the Rt. Rev. William Lawrence. He served as general chairman of the Church Congress in the United States and was chairman of the Commission for Revision and Enrichment of the Book of Common Prayer. The D.D. degree was conferred on him by the University of the South in 1917, Trinity College (Conn.) in 1922, and Harvard University in 1923. In addition to being an executive of unusual ability he was a prolific and scholarly writer. His more important works include: *The Master of the World—A Study of Christ* (1906); *Life beyond Life—A Study of Immortality* (1907); *The Historic Ministry and the Present Christ* (1908); *Present-Day Preaching* (1909); *The Authority of Reli-*

gious Experience (1912); *The Light Within* (1915); *Why Men Pray* (1916); *The Gift of Immortality* (1916); *A Churchman's Reading* (1917); *With God in the War* (1918); *A Study of the Lord's Prayer* (1920); *The Ministry* (1921); *The Holy Communion* (1922); *In Times of Sorrow—A Book of Consolation* (1927); *Words from His Throne—A Story of the Cross* (1927); and *Following Christ* (1928).

SLAVERY. See LIBERIA; PERSIA; ETHIOPIA; LEAGUE OF NATIONS.

SLAVIC STUDIES. See PHILOLOGY, MODERN.

SLIVINSKI, slé-vin'skê, JOSEPH. A Polish pianist, died Mar. 5, 1930, in Warsaw, where he was born Dec. 15, 1865. He studied at the Warsaw Conservatory under Strobl, in Vienna with Leschetizky, and in St. Petersburg (Leningrad) with Rubinstein. He made his début in 1890, but his reputation was not established until his London appearance two years later. In 1894 he appeared in New York City. He became well known for his technique, for his mastery of intricate phrasing, and especially for his poetic interpretation.

SLOVENES. See JUGOSLAVIA and ITALY under *History*.

SMELTING. See METALLURGY.

SMITH, FREDERICK EDWIN. See BIRKENHEAD, FREDERICK EDWIN SMITH, FIRST EARL OF.

SMITH, JUSTIN HARVEY. An American historian, died in Brooklyn, N. Y., Mar. 21, 1930. He was born in Boscawen, N. H., Jan. 13, 1857, and was graduated from Dartmouth College in 1877. From 1879 to 1881, he was a student at the Union Theological Seminary and in the latter year also received the degree M.A. from Dartmouth. The next nine years he spent in the publishing business in New York City, being placed in 1890 in charge of the editorial department of Ginn & Co. In 1899 he went to Dartmouth as professor of modern history, occupying this chair until 1908, when he retired to devote his time to writing and travel. From 1896 to 1906 he was a member of the visiting committee on Romance philology of Harvard University. In 1920 he received the Pulitzer Prize for the best book on American history published during the previous year, his prize-winning work being a two-volume history, *The War with Mexico*. Three years later, he won the first Loubat Prize for the best book in English published during the previous five years on the history, geography, archaeology, ethnology, philology, or numismatics of North America. Among his other books are: *The Troubadours at Home* (2 vols., 1899); *Arnold's March from Cambridge to Quebec* (1903); *A Tale of Two Worlds and Five Centuries* (1903); *Our Struggle for the Fourteenth Colony—Canada and the American Revolution* (2 vols., 1907); and *The Annexation of Texas* (1911). He edited *The Historic Book* (1903) and *Letters of Santa Anna* (1919).

SMITH COLLEGE. A nonsectarian college for women in Northampton, Mass., founded in 1871. The enrollment for the autumn of 1930 was 2091, including 96 graduate students, 6 non-collegiate students, and 46 juniors studying in France. The registration in the 1930 summer session was 176, schools in music, Italian, and social studies being conducted. There were 238 faculty members. The productive funds amounted to \$6,227,769, and the income from funds was \$306,084. The library contained a collection of 177,450 volumes. The president during 1930 was William Allan Neilson, Ph.D., LL.D., L.H.D., Litt.D.

SMITH-DORRIEN, GEN. SIR HORACE LOCKWOOD. A British military leader, died in London Aug. 12, 1930. He was born May 26, 1858, and attended Harrow. Entering the 95th Derby Regiment in 1876, he served with distinction, between 1879 and 1880, in the Zulu War, the Egyptian War, the Nile expedition, the Sudan campaign, and with the Sudan Frontier Field Force. Thereafter, until 1898, when he accompanied another Nile expedition, he served in various parts of India, taking part in the Chitral Relief Force in 1895 and in the Tiran campaign in 1897. In 1900, as major general, he commanded a brigade and a division in the Boer War. He was adjutant general in India during 1901-03 and commander of the 4th (Quetta) Division there during 1903-07. In 1907 he became commander-in-chief at Aldershot and in 1912, having attained the rank of general, was given the Southern command. On the outbreak of the World War in 1914 he assumed command of the 2d Army corps, and later of the 2d Army, in the British Expeditionary Force sent to France. He led his troops with great skill and energy, both in meeting the onset of the Germans, who outnumbered the British four to one, and in conducting the retreat from Mons. On the second day of the retreat (August 26) he gave battle at Le Cateau, an action which was severely criticized at the time but which was subsequently recognized as a strategic feat in having saved the other divisions of the British Army from disaster. In December, 1915, he was made commander-in-chief of the expedition against German East Africa, but shortly after beginning his campaign he was obliged to resign on account of illness and was succeeded by Gen. Jan Christian Smuts. He later served as governor and commander-in-chief of Gibraltar from 1918 until his retirement in 1923. He was created a knight of the Distinguished Service Order in 1886, a knight commander of the Bath in 1904, a knight of the Grand Cross of the Bath in 1913, and a knight of the Grand Cross of St. Michael and St. George in 1915. He also was made aide-de-camp general to the King in 1910 and was elected a grand officer of the French Legion of Honor. His memoirs were published in 1925 under the title, *Memories of Forty-eight Years' Service*.

SMITHSONIAN INSTITUTION. An organization founded in 1846 according to the terms of the will of James Smithson of England, who, in 1826, bequeathed his property to the United States of America "to found at Washington, under the name of the Smithsonian Institution, an establishment for the increase and diffusion of knowledge among men." In receiving the property and accepting the trust, Congress determined that the Federal government was without authority to administer the trust directly and, therefore, constituted an "establishment" whose statutory members are the President, the Vice President, the Chief Justice, and the heads of the executive departments. The affairs of the institution are administered by a board of regents, whose membership consists of the Vice President, the Chief Justice, three members of the Senate, and three members of the House of Representatives, together with six other persons, other than members of Congress, two to be residents of the city of Washington and the other four of different States. The chancellor of the institution in 1930 was Chief Justice Charles Evans Hughes.

The enterprises supported wholly by Congressional appropriations but administered by the

Smithsonian Institution include the National Museum, the National Gallery of Art, the Bureau of American Ethnology, the International Exchange Service, the National Zoological Park, the Astrophysical Observatory, and the U. S. Regional Bureau of the International Catalogue of Scientific Literature. It also administers the Freer Gallery of Art.

Among the events of unusual importance to the institution in 1930 was the authorization by Congress of an appropriation for the construction of wings on the natural history building at a cost not to exceed \$6,500,000; the construction and equipment of laboratories for physical, chemical, and biological investigations in the new division of radiation and organisms, for the study of the relation of radiation to plant and animal life; and the fifth and sixth awards of the Langley Gold Medal for Aerodromics to Charles Matthew Manly and to Admiral Richard Evelyn Byrd, U. S. N. There was also under construction in the National Zoological Park a new reptile house, authorized by Congress and embodying the most modern ideas as to the exhibition of reptiles.

The institution and the government bureaus under its direction published during 1930, 95 volumes and pamphlets, of which 168,663 copies were distributed to libraries, educational institutions, and individuals. The unrestricted income of the institution, averaging about \$75,000, was derived from interest on its endowment funds, which in 1930 amounted to a little more than \$1,100,000. Secretary, Dr. C. G. Abbot; assistant secretary, Dr. Alexander Wetmore.

SNUFF. See TOBACCO.

SOCCER. Uruguay won the world's soccer title for the third consecutive year in 1930, defeating Argentina 4 to 2 in the final at Montevideo, Uruguay, on July 30. Thirteen teams from Europe and North, Central, and South America competed in the tournament. The United States entry was eliminated by Argentina in the semi-finals. In the United States, both the national and Eastern championships were captured by Fall River, which defeated Cleveland at the Polo Grounds, New York, by 7 to 2, and in Cleveland, by 2 to 1. Fall River, however, was twice defeated by the Glasgow (Scotland) Rangers, who on an invasion of the United States met the best teams in the country without suffering a single setback. The Kilmarnock eleven of Scotland, Hungary's national team, and a Mexico City club also toured the United States. A number of American teams visited foreign countries, Hakoah touring South America and Fall River central Europe. The American intercollegiate championship remained undecided, with Harvard, Yale, and Pennsylvania as the leading contenders. The English soccer championship was won by the Arsenal eleven, which defeated Huddersfield Town, 2 to 0, before 100,000 spectators in Wembley Stadium. The Glasgow Rangers defeated the Patrick Thistle eleven, 2 to 1, for the Scottish Cup. Linfield won the Irish Cup and Cardiff captured the Welsh Cup.

SOCIAL ECONOMICS. See CHILD LABOR; CO-OPERATION; LABOR LEGISLATION; MATERNITY PROTECTION; MINIMUM WAGE; OLD AGE PENSIONS; STRIKES AND LOCKOUTS; WOMEN IN INDUSTRY, ETC.; also LITERATURE, ENGLISH AND AMERICAN.

SOCIAL INSURANCE. See MATERNITY PROTECTION; OLD AGE PENSIONS; UNEMPLOYMENT; WELFARE WORK; WORKMEN'S COMPENSATION.

SOCIALISM. The Socialist party, in many congressional districts in the United States, particularly in the eastern industrial areas, conducted a spirited campaign, and the attention given to socialistic doctrines by the public press indicated that there was a renewed interest in the party's work on the part of the American people. The Socialist congressional candidates were pledged to the support of a programme that frankly applied itself to the many pressing problems confronting the American electorate. This programme included the following fourteen major planks: 1. Unemployment relief. This programme is outlined in the article on UNEMPLOYMENT. 2. Social insurance. The Socialist party favored the establishment of a social-insurance code to cope with the problems of sickness, maternity, accident, invalidity, old age and death, to be administered on a nation-wide basis. 3. Labor legislation. The Socialist party's labor programme included the passage of legislation to prohibit the misuse of the injunction; laws declaring yellow-dog contracts illegal; the refusal on the part of the government to award contracts for public works to companies which did not recognize trade unions; the 5-day week; the abolition of convict contract labor; the extension of workmen's compensation legislation to cover occupational diseases; the abolition of interstate detective agencies engaged in industrial work. 4. Taxation. The Socialist party advocated the increase of taxation on high-income levels and of corporation taxes and of inheritance taxes. It also proposed the appropriation by taxation of the annual rental value of all land held for speculation. 5. Nationalization. The Socialist party favored the immediate nationalization of banks, insurance companies, railroads, coal mines, water-power sites, and interstate power systems. 6. Farm relief. The Socialist party favored the acquisition by cooperative societies and by Federal, State, and municipal governments of grain elevators, flour mills, creameries, implement factories, stock yards, storage warehouses and other distributing agencies. It also proposed a governmental insurance programme against losses due to hail, drought, cyclone, and flood. 7. Civil liberties. The Socialist party favored the repeal of the espionage law and of criminal syndicalist laws and the releasing of all political prisoners. 8. Negroes. The Socialist party advocated the passage of legislation making the participation in lynching a felony, calling for the government to deny financial support to Jim Crow schools and for the rigid enforcement of the thirteenth, fourteenth, and fifteenth amendments. 9. Prohibition. The Socialist party favored the resubmission of the whole question of prohibition amendment to the citizens of the United States on the basis of a national referendum. 10. Tariff. The Socialist party favored the immediate repeal of the Hawley-Smoot tariff and the enactment of a bill for the progressive reduction of protective duties. 11. Militarism. The Socialist party advocated the rapid reduction of the naval and military establishments and the ultimate abolition of naval and military armaments. 12. International relations. The Socialist party advocated the abandonment of military intervention in Central America; that all private loans and investments of American citizens in foreign countries should be made on the risk of bond holders and investors; the cancellation of all war debts due to the United States; the revision of the

Treaty of Versailles; adherence of the United States to the International Labor Office and the World Court; the recognition of the Russian government; the writing of international treaties for the arbitration of all international disputes. 13. Colonial affairs. The Socialist party pledged itself to support the extension of the bill of rights to all the territories and dependencies; Philippine independence; autonomy for Porto Rico; a civil government for the Virgin Islands. 14. Political democracy. On this point the Socialist party platform read:

The immediate calling of a national constitution convention for the purpose of coordinating the functions of government, eliminating needless offices and office holders, and making government responsive to popular majorities. A modernized constitution should provide among other things for the election of the president and vice president by the direct popular vote of the people, for the reduction of the representation in Congress of those States where large sections of the citizens are disenfranchised by force or fraud, proportional representation, and for the extension of the powers of Congress to enact labor and social legislation.

American Socialists were availing themselves of the discontent in American labor ranks, due to the continued depression and heavy unemployment, to make vigorous campaigns for congressional seats in the fall elections. New York City particularly was the seat of great activity, and under the stimulus of Norman Thomas, who had made an excellent run for the New York mayoralty in the election of 1929, an intelligent canvass was conducted. Mr. Thomas ran in the sixth congressional district of Brooklyn with a programme that advocated unemployment insurance; increase of income and inheritance taxes; public ownership and operation of public utilities; and a referendum of prohibition. Heywood Broun, a well-known newspaper columnist, made an equally spirited campaign in the seventeenth congressional district of Manhattan. Considerable intelligent New York opinion, including a number of New York newspapers, supported the candidacy of these two men.

ELECTION RESULTS. The returns of the New York elections indicated that there had been polled for the Socialist candidate for governor, Louis Waldman, at least 175,000 votes, which was a gain of 75,000 votes over the number cast in 1928. Socialist candidates for Congress received 127,481 votes in 1930 as against 66,844 votes cast in 1928 for the same offices. None of the four Socialist Congressional candidates who were thought to have a chance of winning was successful, though the votes polled for them made very respectable figures. Norman Thomas, Jacob Panken, B. Charney Vladeck, and Heywood Broun each at least doubled the total of votes cast for the Socialist nominees in the same districts in the previous election. In the municipal elections of Milwaukee, Wis., and Reading, Pa., the Socialists received large votes, too.

GREAT BRITAIN. At the British Labor party's annual conference, held in Wales October 6-10, considerable pessimism was expressed by the party leaders concerning the near future career of Labor in Great Britain. Miss Susan Lawrence, Parliamentary Secretary of the Ministry on Health, delivered the keynote address and pointed out that many of the Labor government's difficulties, because it was a minority government, grew out of the fact that it was forced to deal with doubtful and uncertain allies. One of the most significant promises made to the conference was

the statement by Arthur Henderson, the Foreign Secretary, that the MacDonald government would make an effort to repeal the trades dispute act of 1927 which makes general or sympathetic strikes criminal. In his address before the second session of the conference, Mr. MacDonald made a spirited defense of his government and committed the Labor party to continued opposition to the high-tariff programme of the Conservative party.

The MacDonald government again triumphed over the left wing, led by James Maxton, when a resolution of a lack of confidence of the government's unemployment programme was voted down, the vote being 1,803,000 against and 334,000 for the left wing resolution. The government group triumphed on a second test vote when a resolution calling on the Labor party to consider the secret memorandum on unemployment drafted by Sir Oswald Mosley was rejected. It will be recalled that Sir Oswald Mosley resigned from the MacDonald cabinet earlier in the year as a result of his disagreement with the government's unemployment policies. The vote on this particular resolution was 1,251,000 for the government and 1,046,000 against it. Mr. MacDonald, in outlining the theory of his government, pointed out in reply to the criticisms of the left wingers that: "The problem we have to face as a government in the Commons is how to transform capitalism into socialism and how to remold the forces of society itself so that the social body shall be transformed from a materialistic selfish individualistic conception of capitalism into the coöperative social and human influence of socialism."

The radicals continued their attack at the third meeting when they presented a resolution instructing the MacDonald government to disarm the country regardless of what other nations might do. This resolution, like the others, was defeated. However, the left wingers did triumph when their resolution calling for a 60-year minimum instead of a 65-year minimum for eligibility for old-age pensions was passed. One of the sensations of the conference was the defeat of J. H. Thomas, Minister of Dominions, for reelection to the national executive committee of the Labor party. This was interpreted as an official censure on Mr. Thomas's failure as Lord Privy Seal to present an adequate programme for coping with the unemployment problem. The conference elected Sir Oswald Mosley to membership on the executive committee, thus heightening the rebuke administered to Mr. Thomas. See *GREAT BRITAIN under History*.

For developments in the Socialist movement in Germany, Denmark, Norway, Sweden, and other European countries see articles on each under *History*. Also see *COMMUNISM*.

SOCIAL LEGISLATION. See *OLD AGE PENSIONS*.

SOCIAL PROGRESS. **INTERNATIONAL ASSOCIATION FOR.** An international association, of which the Association for Labor Legislation is the American section, created in 1925 by amalgamating three former allied organizations, the International Association for Labor Legislation, the International Social Insurance Committee, and the International Association on Unemployment. Meetings of technical sections of the association were held at Liège, Belgium, July 4-6, to make preliminary studies of the international aspects of migration and the social and economic signifi-

cance of high wages, for the forthcoming general assembly in 1931. The association publishes a periodical, entitled *L'Avenir du Travail*, edited by the general secretary, A. Boissard, at the international headquarters maintained at Basel, Switzerland.

SOCIAL PSYCHOLOGY. See *PSYCHOLOGY*. **SOCIAL SCIENCE,** INSTITUTE FOR RESEARCH IN. See *NORTH CAROLINA, THE UNIVERSITY OF*.

SOCIAL SCIENCE AND SOCIAL WORK. See *CHILD WELFARE; WELFARE WORK*.

SOCIAL STATISTICS. See *WELFARE WORK*.

SOCIETY ISLANDS. See *OCEANIA, FRENCH ESTABLISHMENTS IN*.

SOCIOLOGY. See *ANTHROPOLOGY; LITERATURE, ENGLISH AND AMERICAN*.

SOILS. Land reclamation, soil classification, valuation and adaptation, soil erosion and moisture conservation, soil fertility, fertilizing value of minor soil constituents, soil technology, soil reaction, the relation of soil colloids to soil dynamics, and soil microbiology were among the topics receiving special consideration by soil investigators.

The trend toward more discriminating use of soils in the United States continued, and the bringing of new land under cultivation, especially that of a marginal or submarginal character, was still being discouraged. Additional areas formerly adapted to commercial crop production, chiefly in the cotton and wheat belts, sank below the economic margin through soil depletion or erosion, flood injury, or recognition of the limits of their economical adaptability. Gradual farm abandonment continued in extensive areas that have become submarginal, especially where farm taxes continued to rise. Interest continued to grow in the possibility of aiding the stabilization of agriculture by public purchases of submarginal lands and their conversion to timber growing. In connection with the retrenchment programme for agriculture there was also a growing tendency toward the readjustment of land utilization practices, based upon land classification and values and the principles of efficient crop adaptation, to eliminate the so-called high-cost acres and to concentrate agricultural effort on the more productive land. *The Report of the Secretary of Agriculture* for 1930 contained the following statement:

Readjustments in acreage are necessary as a corrective of low prices. . . . Wise acreage adjustments can help to decrease the unit cost, as well as the volume of production, and thus to widen the favorable margin, when any exists, between costs and prices, or to decrease that margin when it is unfavorable. . . . In the case of a widely distributed crop like wheat, acreage readjustment would affect lands varying much in productivity. On some farms, where wheat is a rotation crop, it might be retained at a cost of production that would be prohibitive in a cash-wheat area. Everywhere, however, the general principle of the readjustment process would be the same. In each region or locality it would transfer the highest-cost acres to other uses and thus tend to reduce average costs of production. . . .

The United States has more than half a billion acres that could be devoted to timber growing without detriment to farm development. Much of this land may become a neglected waste of small value unless our public reforestation programme is greatly enlarged. Some abandoned farm land is growing up to brush and timber of low utility. . . . Public reforestation . . . is necessary to promote timber production, to protect stream sources, to check erosion, to provide recreational facilities, and to utilize land resources that would otherwise produce little or nothing.

Farm land values, although not regionally uniform in the extent or direction of their movement, continued to decline in the United States as a

whole, the average decline in value per acre being approximately the same as during the previous year.

The soil survey continued to furnish a valuable basis for the classification, selection, and economic adaptation of soil types. This practice continued to be world wide and the United States retained the lead in such work. During the year the Department of Agriculture conducted soil survey work in 83 separate areas distributed over 31 States and one insular territorial possession. Detailed surveys aggregating 24,561 square miles and reconnaissance to the extent of 9077 square miles were covered during the year, bringing the total acreage for the detailed survey to over 511,000,000 and the reconnaissance survey to over 389,500,000, according to the *Report of the Chief of the Bureau of Chemistry and Soils* for 1930.

At the present time and in the immediate future this information has peculiar value because of the readjustment which is taking place in agriculture, calling for better land classification and adaptation. Considerable progress was made by the several State organizations coöperating with the Department of Agriculture in the proper correlation and classification of soils, and many of these are establishing projects looking to proper classification with special emphasis on soil profiles. Continued progress was also made in the classification of muck and peat soils. Actual examination was made of the distinctive characteristics of important peat soils in Florida, North Carolina, Maine, California, and Washington. Major importance is now attached to nine peat areas including those in New England, the Atlantic Coastal region, Florida and the Gulf States, the Great Lakes region, the Mississippi River Valley, the Columbia River and northern Pacific Coast region, the California and southern Pacific Coast region, the mountain Alaskan and Alpine-boreal regions, and the tropical peat regions. New interest in soil survey and mapping developed in connection with soil-erosion and moisture-conservation investigations, and soil-profile studies and soil-reaction determinations to show the correlation between reaction and soil type were continued.

Soil impairment by erosion and run-off continued to be recognized as one of the most important problems confronting American agriculture. The Department of Agriculture continued the installation of erosion experimental stations in the defined major soil regions where erosion and water losses are serious agricultural problems. Efforts were continued to secure accurate quantitative measurements of the effects of soil washing and the run-off of rainfall for definite, extensive, and important soil types existing under varying conditions of slope, crop use, and crop treatment. Measurements also continued of the rate of erosion, amount of water storage, and comparative crop values under opposite conditions of eroded and uneroded soil, with various tillage practices and on different soil types. The reconnaissance erosion survey of the United States was continued, as well as detailed erosion surveys of all experimental stations. Laboratory studies of the measurable physical and chemical properties of soils of relatively high and low erosivity were continued. Certain important soil types of the United States have been found to possess characteristics similar to certain tropical soils of lateritic character which resist washing to a marked extent and absorb most of the regional

rainfall. The plastic clays exhibit properties opposite to those of the lateritic group. It has been shown that the properties of major importance in soil erosion are the dispersability of the colloid material and the moisture equivalent of the soil.

The demand continued for more accurate and specific information regarding the fertilizer requirements of crops on soils of known character, and soil fertility studies continued to concentrate in that direction with considerable expansion in connection with the development of more reliable experimental technique. The further development of the newer concentrated fertilizers continued to require some modification of this work with reference not only to character and amount of application, but also to method of placement. Additional evidence was obtained of the crop-producing and economic value of these materials, but the necessity was emphasized for exercising the utmost precaution in placing and distributing concentrated fertilizers on soil types of a sandy nature. The evidence continued to accumulate that small applications of manganese salts are beneficial to certain crops such as tomatoes in some soils of the Atlantic and Gulf Coastal Plains. On other soil types salts of some of the less abundant constituents of soils, boron especially, gave crop responses indicative of unusual functions in connection with crop growth and development depending somewhat on the manner and amount of the application. It appears that where the concentration of boron in the soil solution is not above one or two parts per million, it is not injurious to most crop plants and may be beneficial. Experiments with other rare elements, such as copper, iron, and zinc, which appear to be essential to such crops as strawberries in certain soils were continued.

The relation of soil reaction to crop production continued to receive much attention, with particular reference to its influence on the prevalence and severity of certain crop diseases and on crop yields. The investigations of cotton-root rot were continued and yielded some prospects of indirect control of the disease by the use of suitable chemical fertilizers, especially those containing the higher proportions of phosphorus and some nitrogen, according to the Bureau of Chemistry and Soils. Deep subsoiling appeared also to lessen or retard root rot. Work also was continued on the adjustment of soil reaction to retard diseases of tobacco. In this connection seasonal fluctuations of the soil reaction sufficient to affect tobacco yields were demonstrated by the Connecticut Tobacco Experiment Station.

Additional important information was developed during the year, especially at the State agricultural experiment stations, relating to the functions and behavior of soil colloids with particular reference to base exchange phenomena and the availability of soil nutrients to plants. According to the Bureau of Chemistry and Soils, acid anions are actually absorbed by soil colloids, this being in general more marked in lateritic soils than in the less completely decomposed materials of other soil types. The possibility of the fractionation of soil colloids in such a way as to reveal differences in origin and composition was also developed. Different colloids were also found to vary quite widely in their retarding effect upon phosphorous assimilation by plants, this being more or less closely associated with their silicasesquioxide ratio. Information continued to accumulate regarding the causes of unproductive-

ness of certain soil types of known infertility, this apparently being due in many cases to lack of essential nutritive elements, or the presence of toxic substances.

Soil microbiology continued to be an important subject for research. Information relating to nitrogen fixation and transformation in soils continued to accumulate, especially at the State agricultural experiment stations. The Bureau of Chemistry and Soils demonstrated the possibility of regenerating the productivity of conspicuous types of depleted acid soil by fertilizer treatment and proper stimulation of the soil organisms. The so-called slime molds, not hitherto recognized in general agricultural work were also found to be present and active in the decomposition of plant residues in soil. Studies of soil fungi were continued.

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SOLAR PHENOMENA. See ASTRONOMY; PHYSICS.

SOLOMON ISLANDS. See NEW GUINEA.

SOMALIA. See ITALIAN SOMALILAND.

SOMALI COAST. See FRENCH SOMALI COAST.

SOMALILAND, ITALIAN. See ITALIAN SOMALILAND.

SOMALILAND, sō-mā'lē-lānd, PROTECTORATE. A British territory on the African coast of the Gulf of Aden, bounded by Italian Somaliland, Abyssinia, and the French Somali Coast. Area about 68,000 square miles; population estimated at 344,700, mostly Mohammedan and entirely nomadic except for permanent settlements on the coast. The capital and chief port is Berbera, with about 30,000 inhabitants. Stock raising is the main occupation in the interior. The principal imports are dates, sugar, textiles, rice, and specie; the principal exports, hides and skins, gums and resins, cattle and sheep, and glue. Imports for 1928 totaled £635,908; exports, £564,470; revenue, £157,487; expenditure, £198,628; military grant-in-aid, £24,500. Highways open in 1928 totaled 940 miles. There are no railways. The government is under the British Colonial Office, which is represented by a local governor and commander-in-chief. Governor in 1930, Sir H. B. Kittermaster, appointed Jan. 26, 1926.

SONG RECITALS. See MUSIC.

SOUND MOTION PICTURES. See PHOTOGRAPHY; MOTION PICTURES.

SOUND STUDIES. See PHYSICS.

SOUSMANITE. See MINERALOGY.

SOUTH, UNIVERSITY OF THE. A Protestant Episcopal institution for the higher education of men in Sewanee, Tenn., founded in 1857. The enrollment for the autumn term of 1930 was 273, of whom 253 were registered in the college and 22 in the theological school. There were 37 students registered in the summer quarter, 17 of whom returned for the autumn session. The faculty had 32 members, exclusive of student assistants. The income from productive funds was \$68,400, while the receipts from all sources totaled \$348,600. The library contained 43,903 volumes. President, Benjamin Ficklin Finney, LL.D.

SOUTH AFRICA, UNION OF. A self-governing dominion of the British Empire, comprising the provinces of the Cape of Good Hope, the Transvaal, Natal, and the Orange Free State; constituted a legislative union by the South African Act of September, 1909. Capital, Pretoria; seat of the legislature, Cape Town.

AREA AND POPULATION. Total area, 471,917 square miles; divided as follows: Cape of Good Hope, 276,536; Natal, 35,284; Transvaal, 110,450; Orange Free State, 49,047. Total population, according to the census of 1921, 6,927,403, distributed as follows: Cape of Good Hope, 2,781,542; Natal, 1,429,398; Transvaal, 2,087,636; Orange Free State, 628,827. The total European population of the Union of South Africa, at the census of 1926, was 1,676,660, of which 706,137 were in Cape Province, 158,916 in Natal, 608,622 in the Transvaal, and 202,985 in the Orange Free State.

The estimated total population (1929) was 7,895,000, of which 1,768,000 were Europeans and 6,127,000 non-Europeans (5,358,000 natives, 186,000 Asiatics, and 583,000 mixed and other colored persons). Of about 180,000 Indians in the country, approximately 150,000 lived in Natal. Births among the European population from 1925 to 1929 averaged 44,621 annually and deaths 16,508. In 1929, immigrants numbered 8839 (7896 Europeans) and emigrants 5047 (3597 Europeans). The estimated populations of the principal cities in 1929, with census figures for 1921 in parentheses, were: Johannesburg, 325,400 (288,131); Cape Town, 258,300 (212,997); Durban, 113,600 (151,642); Pretoria, 73,100 (74,052); Port Elizabeth, 60,000 (52,298); Benoni, 48,600 (47,041). The capitals of the respective Provinces are: Cape of Good Hope, Cape Town; Transvaal, Pretoria; Natal, Pietermaritzburg; Orange Free State, Bloemfontein (46,400 inhabitants in 1929).

EDUCATION. In 1928, there were 666,739 pupils in 8651 state and state-aided schools (other than schools of higher education), including 342,033 Europeans and 324,706 non-Europeans. Teachers in these schools numbered 24,484, and the state expenditure was £7,570,490. The enrollment in the 10 universities in the Dominion aggregated 7273; the principal institutions were the University of Cape Town, University of Stellenbosch, University of Witwatersrand, and Transvaal University College, Pretoria.

PRODUCTION. Of about 10,000,000 acres of arable land in the Union in 1929, about 60 per cent was devoted to cereals, with corn the dominant crop. Fruits, tobacco, cotton, and sugar cane are other important crops. Production of the chief crops in 1929-30, with comparative figures for 1928-29 in parentheses, was: Wheat, 10,697,000 bushels (6,930,000); barley, 1,725,000 bushels (994,000); oats, 9,773,000 bushels (7,598,000); corn, 90,583,

000 bushels (65,946,000); potatoes, 6,840,000 bushels (5,068,000); sugar, about 298,000 short tons; tobacco, 13,250,000 pounds (15,800,000); Kafir corn, 115,000 short tons (144,000); cotton, 5,100,000 pounds (3,900,000); wine, 17,351,000 gallons in 1928-29; peanuts, 23,030,000 pounds (20,930,000). Livestock in 1928 included 42,500,000 sheep, 10,478,000 cattle, 7,455,000 goats, and 833,000 swine. Wool production for the 1929-30 season, not including pulled wool, was 244,372,000 pounds (223,811,000 pounds in 1928-29); mohair, 10,000,000 pounds.

The value of mineral production in 1929 increased to \$294,907,000 from \$284,870,000 in 1928. The Union is the leading gold-producing country of the world. In 1929, the gold output reached the record total of 10,412,000 fine ounces, as compared with 10,354,264 ounces in 1928. In 1930, the gold output was 10,710,895 ounces (see GOLD). Production of other leading minerals in 1929, with comparative figures for 1928, was: Diamonds, 3,661,000 carats (4,373,000 carats in 1928); platinum, 21,608 troy ounces (17,828); coal, 13,913,000 short tons (13,404,000); asbestos, 33,035 short tons (24,054); copper, 9807 short tons (9803); tin, 2006 short tons (1992); silver (in gold bullion only), 1,032,000 fine ounces (1,031,000). The decline in the production of alluvial diamonds was due chiefly to the restriction of operations in the Namaqualand state mines. The newly-established diamond-cutting industry consisted in January, 1930, of 26 establishments, with 35 licensed cutters and 358 apprentices (see DIAMONDS). A Government steel plant, under construction in 1930, was expected to stimulate coke production. Construction of a railway for the exploitation of large manganese deposits at Post-mashburg was completed in June, 1930, and daily production of the mines was reported to be nearly 1000 tons.

The expansion of manufacturing industries continued in 1929, particularly the clothing, cigarette, and fertilizer industries. In 1927-28 factories employed 207,736 employees and 849,443 motive horse power; the value of production totaled \$520,628,000, of which \$250,727,000 was added in process of manufacture.

COMMERCE. Foreign trade showed a considerable decline in 1930. Preliminary figures placed imports at £64,089,842, as compared with £83,449,000 in 1929, a decrease of 20 per cent; exports totaled £74,540,696, exclusive of diamonds, or 8 per cent less than the 1929 figure of £80,943,000. Despite a larger volume of exports than in 1929, price declines in corn, wool, and other leading products caused the aggregate value to fall below the previous year's level. In 1928, imports were valued at £79,088,000 and exports at £72,611,000. Re-exports amounted to £4,305,457 in 1929 and £3,496,186 in 1928. The United Kingdom in 1929 supplied 42 per cent of all imports and purchased 68.8 per cent of all exports; the United States furnished 18.9 per cent of the imports and took 2 per cent of the exports; and Germany supplied 6.3 per cent and took 5.3 per cent. The chief exports, in order of value, were: Gold bars, \$174,630,000; wool, \$70,067,000; diamonds, \$52,320,000; hides and skins, \$14,907,000; corn \$11,249,000. The principal imports were automobiles and chassis, cotton piece goods, apparel, gasoline, wood and wood manufactures, electrical machinery, and apparatus.

FINANCE. The first deficit in the ordinary budget since 1923-24 was forecast for the fiscal

year ending Mar. 31, 1931, by the Union Minister of Finance in his annual budget address in June, 1930. To offset the anticipated shrinkage in revenues due to depressed business conditions, the income-tax rebate of 20 per cent, inaugurated in 1927, was abolished Apr. 1, 1930, and the £450,000 surplus resulting from financial operations in 1929-30 was carried over to the 1930-31 ordinary account. Even with these measures, revenues were expected to total some £500,000 less than the appropriations for the year of £30,218,000. Capital expenditures from loan funds in 1930-31 were estimated at £10,811,000.

In 1929-30, ordinary revenue, as distinguished from loan and railway accounts, totaled £30,633,000 and expenditure £30,184,000. Customs duties were £250,000 greater than anticipated and income-tax receipts were £250,000 above estimates, but receipts from the diamond export duty and from the Government's property interest in the Premier and Namaqualand diamond mines declined considerably, as a result of stagnation in the American market. Due to a decline in the movement of agricultural produce in the last quarter and to the competition of private motorbus lines, the separate railways and harbors budget for 1929-30 showed a deficit of £289,504 on total expenditures of £31,205,941. The railways and harbors budget for 1930-31 calculated expenditures at £31,940,000. The gross public debt on Mar. 31, 1929, was £244,045,000 and the net debt, £227,699,000 (\$1,108,097,000).

COMMUNICATIONS. In the fiscal year, 1928-29, there were 13,008 miles of railway line, of which all except about 400 miles were operated by the state. Passengers carried during the year numbered 81,995,000; freight, 22,038,000 short tons; gross receipts, £26,091,000. Highways in 1930 extended 85,598 miles, of which 58,899 miles were unimproved earth, 25,986 miles improved earth, and 680 miles macadam. In the same year, 593 miles were under construction, to be completed in 1931. Motorbus lines, inaugurated in 1924 by the Railway Administration as an adjunct to the railways, in 1930 covered a total of 12,000 miles. Fifty-one new routes covering a distance of 2300 miles were opened during 1929. An air-mail line connecting Cape Town, Port Elizabeth, Durban, and Johannesburg was inaugurated in 1929. Port Elizabeth, Lourenço Marques, and East London were joined in the Union's long-distance telephone system during 1930. Vessels in the foreign trade entering the ports in 1929 numbered 1468, of 5,233,000 net registered tons; vessels clearing, 1465, of 5,246,000 net registered tons.

GOVERNMENT. The executive power is vested in the governor-general, appointed by the Crown, who acts through an executive council of ministers, each in charge of a department. Legislative power rests in a parliament, consisting of a senate of 40 members, of whom eight are nominated by the governor-general-in-council and 32 by the Provinces (eight each), and a house of assembly of 148 members, distributed among the Provinces as follows: Cape of Good Hope, 58; Transvaal, 55; Natal, 17; and Orange Free State, 18; the basis of suffrage being the same as that existing in each Province at the time of the formation of the Union. The executive council in 1930 was composed as follows: Prime Minister and Minister of Native Affairs, General J. B. M. Hertzog; Interior, Health, and Education, Dr. D. F. Malan; Mines and Industries, A. P. J. Fourie; Railways and Harbors, C. W. Malan; Finance, N. C. Hav-

enga; Justice, O. Pirow; Defense and Labor, Col. F. H. P. Creswell; Agriculture, Gen. J. C. G. Kemp; Lands, P. G. W. Grobler; Posts and Telegraphs and Public Works, H. W. Sampson; Native Affairs, E. G. Jansen; Secretary to the Prime Minister and Secretary for External Affairs, Dr. H. D. J. Bodenstein.

The composition of the Assembly, following the elections of June, 1929, was: Nationalists, 78; South African party, 61; Labor (Creswell), 5; Labor (National Council), 3; Independent, 1. Governor-General, Commander-in-Chief, and High Commissioner for South Africa in 1930, the Earl of Athlone. It was announced that he would be succeeded in January, 1931, as Governor-General and Commander-in-Chief by the Earl of Clarendon, former Parliamentary Under-Secretary of State for Dominion Affairs. The high commissionership was made a separate post, to which Sir Herbert Stanley, Governor of Ceylon, was appointed, effective March, 1931.

HISTORY

The native problem and the question of South Africa's status within the Empire were the two all-important issues in the parliamentary elections of June, 1929, won by General Hertzog's Nationalist party (see 1929 YEAR BOOK). Both issues remained in the foreground of South African politics during 1930, but the approaching crisis in the racial struggle tended to subordinate the problem of Imperial relationships.

The Nationalist Government, which drew its main support from the Afrikaners, sought to insure the continuance of white domination by forcible repression of native demands for political, economic, and social equality. The South African party, largely British in composition although led by Gen. Jan Christiaan Smuts, a Boer, favored a policy of conciliation. The aftermath of the Nationalist victory in 1929 was marked by increasing native unrest, the refusal of many natives to pay the poll tax, and a number of outbreaks. Native resentment was fanned by the passage early in 1930 of a bill giving the Minister of Justice absolute powers in dealing with the native agitation. The Minister had demanded exceptional powers on the ground that Communists were stirring up the Negroes against the Government. This the leaders of the African National Congress, which sponsored the native movement, denied. Strong opposition to the "riotous assemblies" bill by the Opposition parties rendered the position of the Government delicate and on March 21 Premier Hertzog, in an effort to conciliate the Opposition, appointed a commission to inquire into the economic and social conditions of the natives. On May 5, rioting broke out in the native compound at Worcester, 60 miles from Cape Town, in which five natives were killed and three policemen and 17 natives injured. At the end of the year, considerable sections of the native population were reported in a dangerous state of agitation.

The declaration of the complete autonomy of the British Dominions by the Imperial Conference of 1926 had to a considerable extent checked the movement for a South African republic. Extreme Nationalists increasingly complained that Premier Hertzog and other party leaders had accepted the status of South Africa within the Empire. The republican issue was resuscitated by a section of the Nationalists headed by Dr. Colin F. Steyn, former Mayor of Bloemfontein, at a meeting in that city July 2, 1930, attended by

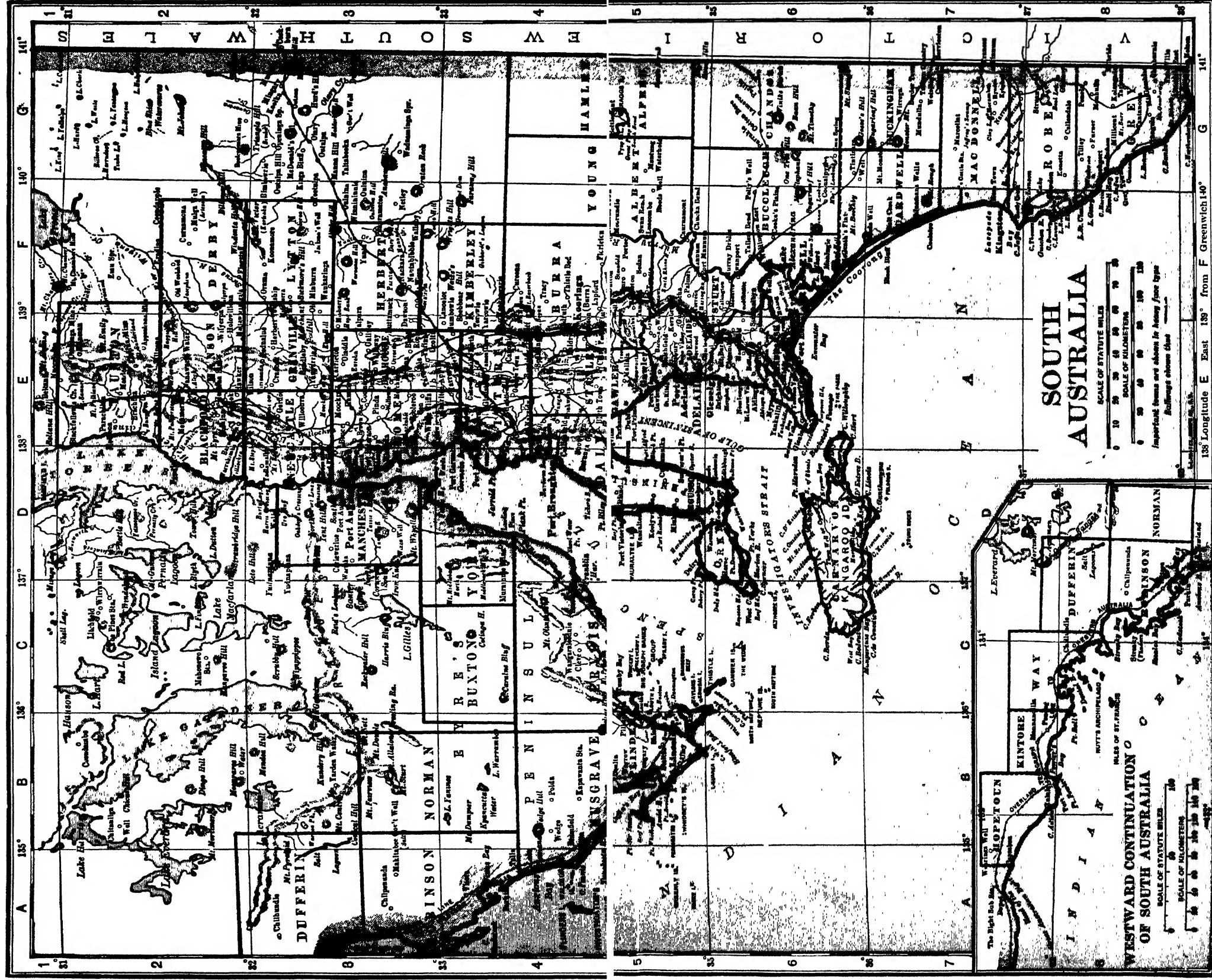
delegates from three of the four Provinces. A resolution was adopted to arrange for a national conference "with the object of establishing a league within the Nationalist party in order to reestablish the original ideals of the party."

The national sensitiveness with regard to the Dominion's coequal status within the Empire was emphasized by the action of the South African Assembly in approving on May 22, 1930, the recommendations of the Imperial Conference of 1926. The Assembly resolved that the approval of the recommendations "must not be taken as derogating from the right of any member of the British Commonwealth of Nations to withdraw therefrom." Premier Hertzog pressed for formal recognition of the right of secession at the Imperial Conference of 1930, although declaring he had no intention of advocating South Africa's withdrawal from the Empire. Formal recognition was not forthcoming, it being the consensus of the conference that the right of withdrawal was implicit in the statute extending autonomy to the Dominions adopted in 1926. This tacit understanding and the assurance given by J. H. Thomas, the British Secretary of State for Dominions, that any Dominion might secede at any time "if it were foolish enough to do so" appeared to satisfy Premier Hertzog and his associates of the Nationalist party (see GREAT BRITAIN under History).

General Hertzog created consternation among the Afrikaner republicans by delivering a series of anti-republican speeches upon his return from the Imperial Conference. He declared that the constitutional issue had been satisfactorily settled and that unity of the white population would henceforth be his primary objective. He issued a warning on December 3, however, that the refusal of Great Britain to grant tariff preferences to the Dominions at the Imperial Conference, if persisted in, would force South Africa to revise her economic policy with regard to Imperial preferences.

Two Provincial elections during the year resulted in gains for General Smuts's South African party. The Nationalists won by a narrow margin in the Transvaal on March 28, capturing 28 seats, as against 25 won by the Opposition party. In Natal, on June 13, the South African party captured all 25 seats in the Provincial Council, in which it had previously held all except five.

The South African Assembly on March 4 passed an alien quota bill, restricting to 50 the number of immigrants to be admitted annually from any country except 12 of the Northern European countries, the British Commonwealths, and the United States. The measure operated to check immigration from southern and eastern Europe and the Near East, and particularly that of Jews from Palestine (see JEWS). A bill, introduced by Premier Hertzog, to extend the suffrage to women of European descent, was passed by the South African Assembly April 11 by a majority of 39. Party lines disintegrated completely in the vote on the measure. In September, Premier Hertzog headed the South African delegation to the League of Nations Assembly at Geneva. Ralph J. Totten, the first Minister of the United States to the Union of South Africa, presented his credentials to the Governor General on September 8. South Africa sent a Minister to the United States in 1929. Consult John Kirk, *Economic Aspects of Native Segregation in South Africa* (London, 1929).



SOUTH AMERICA. See under the various South American countries. See also **EXPLORATIONS.**

SOUTH AMERICAN LITERATURES. See **SPANISH AMERICAN LITERATURES.**

SOUTH AUSTRALIA. A state of the Australian Commonwealth, occupying the south central part of the continent. Area, 380,070 square miles; population, 495,160 at the census of 1921, as compared with an estimate of 580,249 on March 31, 1930. Adelaide, the capital and largest city, had 324,898 inhabitants (with suburbs) on Jan. 1, 1930. The total estimated population increase fell to 923 in 1929 from 3577 in 1928, due to depressed economic conditions. Births in 1929 totaled 10,665; deaths, 5039; marriages, 3719; the excess of emigration over immigration, 4703 (2684 in 1928).

Education is free, secular, and compulsory. In 1928 there were 1093 State schools, with 98,862 pupils, and 184 private schools, with 15,857 pupils. There is a State university at Adelaide. The value of all production in 1927-28 was about £39,098,244, distributed as follows: Manufactures, £13,135,489 (£12,568,377 in 1928-29); crops, £12,865,099; pastoral, £7,236,615; dairying, £1,984,513; minerals, £1,188,522 (£1,302,805 in 1928-29); fisheries and game, forestry, poultry, etc., £2,088,000. Wheat is the principal crop, the yield from 3,645,764 acres in 1929-30 being estimated at 23,345,093 bushels (26,826,094 bushels in 1928-29). Barley, oats, hay, and grapes, are other crops, the wine output in 1928-29 totaling 14,828,968 gallons (10,000,000 in 1929-30). Live-stock in the State in 1929 included 7,079,947 sheep (6,200,000 estimated for 1930), 263,016 cattle, 205,865 horses, and 62,723 swine. Wool production for 1928-29 was estimated at 74,616,004 pounds (78,369,918 pounds in 1927-28); butter, 11,315,714 pounds; cheese, 2,975,095 pounds; bacon and ham, 5,110,352 pounds. The principal minerals are iron, copper, gypsum, phosphate rock, and salt.

Preliminary figures for 1929-30 placed the value of direct overseas imports at £9,367,348 (£11,305,866 in 1928-29) and of direct overseas exports at £14,998,975 (£14,811,542 in 1928-29). Wool, wheat, flour, copper, meats, butter, honey, wine, fruits, and hides and skins are the chief exports. There were 2542 miles of State-owned railways in operation in 1928-29. The total mileage, including State, Federal, and private railways lines, was 3738 miles. Highways extended about 40,000 miles. For the fiscal year 1929-30, State financial operations resulted in a deficit of £1,625,472. Ordinary revenues in 1928-29 totaled £10,840,914 and expenditures were £11,771,772. The gross State debt on June 30, 1930, stood at £93,986,118, or a per capita debt of £162 (about \$812).

The administration is under a governor appointed by the Crown, and an executive council; legislative power is vested in a council and an assembly, the latter consisting of 46 members elected for three years. Governor in 1930, Brig.-Gen. Sir Alexander G. A. Hore-Ruthven, appointed May, 1928; Premier, Treasurer, and Minister of Railways, R. L. Butler (Liberal). See **AUSTRALIA.** The Liberal-Country party coalition Government, which in the 1929 State Legislature held 28 seats against Labor's 16, was overthrown by the Labor party at the general election held early in 1930. Labor held 26 seats, the Liberals 17, and the Country party 2, following the election of 1930.

SOUTH CAROLINA. POPULATION. According to the Fifteenth Census, the population of the State on April 1, 1930, was 1,738,765. The population on Jan. 1, 1920, was 1,683,724. The capital is Columbia.

AGRICULTURE. The following table gives acreage, production, and value of the principal crops, in 1929 and 1930:

| Crop | Year | Acreage | Prod. Bu. | Value |
|----------------|------|-----------|-------------------------|------------|
| Cotton | 1930 | 2,193,000 | 1,040,000 ^a | \$..... |
| | 1929 | 2,183,000 | 845,000 ^a | 89,280,000 |
| Corn | 1930 | 1,635,000 | 26,978,000 | 24,280,000 |
| | 1929 | 1,422,000 | 23,321,000 | 23,088,000 |
| Tobacco | 1930 | 129,000 | 94,170,000 ^b | 11,300,000 |
| | 1929 | 133,000 | 82,460,000 ^b | 13,194,000 |
| Oats | 1930 | 408,000 | 9,996,000 | 7,397,000 |
| | 1929 | 408,000 | 11,016,000 | 8,813,000 |
| Sweet potatoes | 1930 | 52,000 | 5,200,000 | 4,160,000 |
| | 1929 | 50,000 | 5,750,000 | 4,888,000 |
| Hay | 1930 | 383,000 | 805,000 ^c | 5,724,000 |
| | 1929 | 368,000 | 316,000 ^c | 6,056,000 |
| Potatoes | 1930 | 23,000 | 2,073,000 | 3,865,000 |
| | 1929 | 22,000 | 2,608,000 | 3,651,000 |
| Wheat | 1930 | 42,000 | 538,000 | 705,000 |
| | 1929 | 64,000 | 768,000 | 1,152,000 |

^a Bales. ^b Pounds. ^c Tons.

Farms in the State numbered 157,894 in 1930, as against 172,767 in 1925 and a total of 192,693 in 1920.

MINERAL PRODUCTION. The narrowly limited mineral industry of the State ran increasingly to the production of stone, which contributed in 1928 substantially more than half of the year's entire mineral product as reckoned by value. The yield of stone rose to 1,278,190 short tons for 1928, from 1,197,870 for 1927; in value, to \$2,203,863 for 1928, from \$1,992,558 for 1927. The value of clay products, the next mineral industry in order of importance, declined to \$1,462,055 for 1928, from \$1,802,772 for 1927. The yearly yield of raw clay, 109,186 short tons, in value \$1,000,183 for 1928, went only in part into the State's own clay products. The entire mineral product of the State attained the value of \$4,045,849, with allowance for duplications, for 1928; for 1927, of \$4,251,137.

FINANCE. State expenditures in the year ended Dec. 31, 1929, as reported by the U. S. Department of Commerce, were: for maintaining and operating governmental departments, \$14,113,851; (of which \$4,119,874 was for local education); for interest on debt, \$1,456,734; for improvements, \$11,606,735; total, \$27,176,320 (of which \$13,558,431 was for highways, \$2,374,129 being for maintenance and \$11,184,302 for construction). Revenues were \$21,653,726. Of these, property and special taxes formed 25.2 per cent; departmental earnings and compensation to the State for officers' services, 6.7; sale of licenses, 59.4 per cent (including gasoline taxation of \$5,227,064). The funded debt of Dec. 31, 1929, \$41,150,242 outstanding, included \$35,516,160 for highways; net of sinking fund assets, the debt was \$40,853,503. On a property valuation of \$426,359,133, were levied State taxes of \$2,830,345.

TRANSPORTATION. The total number of miles of railroad line under operation on Jan. 1, 1930, was 3778.95. No additional construction of line or trackage in 1930 was reported.

EDUCATION. Steps were taken to revise the system of school reports made by the county superintendents to the State Department of Education. It was intended that the annual State report should in consequence carry the figures of an

annual school census, enrollment, average attendance, and classified totals of public-school expenditures.

CHARITIES AND CORRECTIONS. The State had a State Board of Public Welfare, which, however, did not maintain executive offices in 1930. A child-placing bureau aided needy children in divers ways. Under the charge of the State Board of Health were two institutions for tubercular patients, the South Carolina Sanatorium (white) and the Palmetto Sanatorium (colored). Other State institutions were the Industrial School for Boys, Industrial School for Girls, State Reformatory for Negro Boys, State Training School (for the feeble-minded), State Hospital, Confederate Infirmary, and State Penitentiary.

LEGISLATION. The State Legislature held its regular annual session, adjourning on April 4. Three bills were passed to effect a constitutional change, subject to approval by popular vote in November, to do away with annual legislative sessions and substitute biennial sessions in their stead. It was required by law that drivers of motor vehicles on the roads of the State must provide themselves with drivers' licenses, procurable for 50 cents, and that the proceeds of these licenses should be employed to employ officers to patrol the highways. The pooling of State funds was facilitated by enactment. A law was passed to prevent municipalities and counties from purchasing their supplies of gasoline outside the State and escaping the payment of the State's tax on gasoline sales. The weights, sizes, and loads permissible for vehicles using the highways were limited. A small revolving fund of \$50,000 for the purchase of seeds and fertilizers was created. Provision was made for the manufacture of road signs and of license plates for motor vehicles at the State Penitentiary. Radio receiving sets were subjected to a tax of which the proceeds were to aid the State Tuberculosis Sanatorium. As a means to minimize litigation with regard to the State's \$65,000,000 issue of road bonds it was required that those instituting suits with regard to the sale of the State's securities furnish bond of \$25,000. Another act validated \$10,000,000 of highway bonds of which the sale had been questioned.

POLITICAL AND OTHER EVENTS. In the Democratic primary election, held on August 26, Sen. Cole L. Blease received the largest vote, but his lead was not sufficient to secure his renomination. A runoff primary was therefore held on September 9. In this second primary Blease was defeated for the Senatorial nomination by James F. Byrnes of Spartanburg, who received a vote greater by about 5000. In the first primary Olin D. Johnson, an opponent of the policy of a heavy issue of State bonds, led by about 9000 votes for Governor, but in the runoff I. C. Blackwood gained the nomination by a narrow margin. Senator Blease's loss of votes was attributed to his having alienated an element in his party by bolting the Smith Presidential ticket in 1928.

The 150th anniversary of the battle of King's Mountain was celebrated on the battlefield, near the North Carolina line, on October 7. President Hoover attended and delivered the chief address, before some 35,000 persons. Allegations of cruel treatment of prisoners employed in chain gangs by Spartanburg County led to the institution by Governor Richards in July of an inquiry.

ELECTIONS. The democratic candidates, James F. Byrnes for Senator and I. C. Blackwood for Governor, were elected on November 4 without

opposition, and the usual delegation of seven Democratic Representatives was chosen.

OFFICERS. Governor, John G. Richards; Lieutenant-Governor, Thomas B. Butler; Secretary of State, W. P. Blackwell; Treasurer, J. H. Scarborough; Budget Secretary, Walter E. Duncan; Attorney-General, John M. Daniel; Comptroller-General, A. J. Beattie.

JUDICIARY. Supreme Court: Chief Justice, R. C. Watts (later deceased, no successor being chosen in 1930); Associate Justices, Thomas P. Cothran, John G. Stabler, Eugene S. Blease, Jesse F. Carter.

SOUTH CAROLINA, UNIVERSITY OF. A non-sectarian State institution of higher education in Columbia; chartered in 1801 and opened in 1805. The enrollment for the autumn session of 1930 totaled 1673, of whom 1055 were men and 618 women. The registration for the summer session was 492. The faculty, including instructors, numbered 103. The appropriation by the General Assembly of the State of South Carolina was \$537,780 for the fiscal year. There were 110,000 volumes in the libraries. President, Davidson McDowell Douglas, A.M., D.D., LL.D.

SOUTH DAKOTA, POPULATION. According to the Fifteenth Federal Census the population of the State on Apr. 1, 1930, was 692,849. The State Census of May 1, 1925, showed a population of 681,200, of which 20,559 were Indians. Of this total, 347,579 were males and 313,122 were females. By the Fourteenth Federal census the population was 636,547 on Jan. 1, 1920. The capital is Pierre.

AGRICULTURE. The following table gives the acreage, production, and value of the principal crops in 1929 and 1930:

| Crop | Year | Acreage | Prod. Bu. | Value |
|----------|------|-----------|-------------|--------------|
| Corn | 1930 | 4,965,000 | 76,958,000 | \$36,170,000 |
| | 1929 | 4,916,000 | 112,085,000 | 69,493,000 |
| Hay | 1930 | 3,803,000 | 3,161,000* | 23,076,000 |
| | 1929 | 3,785,000 | 3,667,000* | 29,163,000 |
| Wheat | 1930 | 3,420,000 | 40,840,000 | 18,929,000 |
| | 1929 | 3,211,000 | 31,200,000 | 29,001,000 |
| Oats | 1930 | 2,236,000 | 64,844,000 | 13,617,000 |
| | 1929 | 2,259,000 | 64,382,000 | 21,890,000 |
| Barley | 1930 | 1,935,000 | 42,570,000 | 12,345,000 |
| | 1929 | 2,016,000 | 37,296,000 | 16,783,000 |
| Flaxseed | 1930 | 670,000 | 3,484,000 | 4,634,000 |
| | 1929 | 637,000 | 3,758,000 | 10,522,000 |
| Potatoes | 1930 | 65,000 | 3,445,000 | 3,273,000 |
| | 1929 | 67,000 | 4,422,000 | 5,085,000 |
| Rye | 1930 | 400,000 | 5,800,000 | 1,450,000 |
| | 1929 | 222,000 | 2,442,000 | 1,856,000 |

* Tons.

Farms in the State numbered 83,138 in 1930, as against 79,537 in 1925 and 74,637 in 1920.

MINERAL PRODUCTION. Gold, mainly the output of the Homestake Mine, continued to furnish about three fourths of the total mineral product of the State in 1928. There were produced in 1929, 312,328 fine ounces of gold or very nearly the 318,095 fine ounces of 1928; by value these yearly totals were \$6,450,400 for 1929 and \$6,575,600 for 1928. Sand and gravel were produced in 1928 to the value of \$1,301,075; stone to that of \$451,869. The total value of the mineral product of the State was \$9,443,488 for 1928; for 1927, \$8,463,952.

Metal mines in South Dakota in 1930 produced \$8,423,776 in gold and 105,000 ounces of silver, according to the U. S. Bureau of Mines, Department of Commerce. This compares with the production in 1929 of \$6,549,599 in gold and 85,182 ounces of silver. Despite the serious damage by

fire to the Ellison hoist on July 10, 1930, the Homestake mine, at Lead, the largest producing gold mine in the United States, increased its production \$1,900,000 over the 1929 output.

TRANSPORTATION. The total number of miles of railroad line under operation on Jan. 1, 1930, was 4287.45. No additional construction of line or trackage in 1930 was reported.

EDUCATION. There were enrolled in the public schools of the State, in 1930, 165,624 pupils. Of these, 134,286 were in elementary and 31,338 in high-school grades. The expenditures for public-school education totaled \$19,213,611. Salaries of teachers averaged, for the year, \$1282.

CHARITIES AND CORRECTIONS. The central authority over the charitable and correctional institutions of the State rests with the State Board of Charities and Corrections, one of the constitutional boards of the government. A separate constitutional board, the State Pardon Board, composed of the presiding judge of the State Supreme Court, the Secretary of State, and the State Attorney-General, exercises powers of pardon elsewhere vested in the executive. The parole system is conducted by a statutory Parole Department, headed by a State parole officer. Separate commissions administer the activities for child welfare and for the care of the feeble-minded. The State Penitentiary, at Sioux Falls, had in confinement, on June 30, 1930, 467 convicts, including 18 women. Other State institutions were: Home and School for the Feeble-minded, Redfield; School for the Deaf, Sioux Falls; School for the Blind, Gary; State Training School, Plankinton; Tuberculosis Sanatorium, Custer; Hospital for the Insane, Yankton; Soldiers' Home, Hot Springs.

POLITICAL AND OTHER EVENTS. Stock raisers were reported by the State Sheriff as suffering increasingly from the depredations of stock thieves using automobile trucks, which the local officers of the law were found inadequate to stop or trace. There resulted a demand for the creation of a State constabulary. This demand was supported by bankers in the State, who demanded fuller protection against bank robbers. In the Republican primaries on May 6 U. S. Senator McMaster was renominated. He had asked a vote of confidence in Progressive Republicans who had opposed the regular Republicans in the Senate, while his opponent, George J. Danforth, had presented himself as a Hoover Republican. For Governor, Gladys Pyle, Secretary of State, received the highest Republican primary vote. She failed, however, to obtain 35 per cent of the vote cast, as the State law required, and the nomination was thus thrown into the hands of the State Republican convention, which nominated W. J. Green.

ELECTIONS. Governor William J. Bulow, running on the Democratic ticket, was elected to the U. S. Senate, on November 4, receiving 105,079 votes, as unofficially reported, to 97,869 for the incumbent Republican Senator, W. H. McMaster. The Governorship went to Warren E. Green, Republican, obtaining 106,316 votes (unofficial), to 92,282 for D. A. McCullough, Democrat. The Legislature remained in Republican control in both branches, and three Republican Representatives were elected. Four proposed amendments to the State constitution were adopted by popular vote. They provided that judges might suspend sentences on first offenders; that the proceeds of fines be paid into local school

funds; that farm lands within consolidated districts might be specially classified for purpose of taxation; and that the Rural Credits Department pay the regular taxes on lands acquired by foreclosure. A proposed amendment to authorize the Legislature to alter by a two-thirds vote the salaries of State officers was rejected. Rejected also, by a referendum vote, was a measure to impose a tax at the rate of 3 per cent on the sales of motor vehicles.

OFFICERS. Governor, W. J. Bulow; Lieutenant-Governor, J. T. Grigsby; Secretary of State Gladys Pyle; Treasurer, A. J. Moodie; Auditor, William M. Dunn; Attorney-General, M. Q. Sharpe; Superintendent of Public Instruction, E. C. Giffen.

JUDICIARY. Supreme Court: Presiding Judge, N. D. Burch; Judges, Dwight Campbell, Samuel C. Polley, James Brown, Carl G. Sherwood.

SOUTH DAKOTA, UNIVERSITY OF. A State institution of higher education in Vermillion, founded in 1882. The enrollment for the autumn term of 1930 was 1292 and for the summer session, 299. The faculty and staff numbered 149. The productive funds amounted to \$355,880, and the income for the year was \$110,421. The library contained 70,000 volumes. In the fall of 1930 there was completed the first unit of a student-union building, costing \$100,000. President, Herman G. James, J.D., Ph.D.

SOUTH DAKOTA STATE COLLEGE. A State college of agriculture and mechanic arts in Brookings, founded in 1882. The enrollment for the summer session and the autumn of 1930 was 1529, distributed as follows: Agriculture, 149; engineering, 265; home economics, 130; pharmacy, 83; commercial science, 184; printing and rural journalism, 40; trades and industries, 10; general science, 221; special students in music, 31; graduate students, 20; secondary school of agriculture, 208; summer school, 235. The teaching staff of 103, including whole and part-time teachers, was equivalent to 87 full-time teachers. The productive funds of the college amounted to \$504,870. The income for 1929-30 was distributed as follows: For college maintenance and extension of physical plant, \$625,890; for the agricultural experiment station, \$138,249; and for agricultural and home-economics extension service, \$277,538. The library contained 42,700 bound volumes and 12,000 pamphlets. During 1929-30 the Coughlin Campanile, a gift of an alumnus, Charles Coughlin, was completed at a cost of \$75,000. President, Charles W. Pugsley, D.Agr.

SOUTHERN CALIFORNIA, UNIVERSITY OF. An institution of higher education for men and women in Los Angeles, Calif., founded in 1879. The enrollment for 1929-30, including summer session and extension classes, was 17,137. In the autumn of 1930, there were 535 members on the faculty. The endowment was \$1,600,000, the income from tuition and fees, \$1,639,975, and other income, \$209,018. There were 126,637 volumes in the library. In 1930 construction of a new physical education building was completed. President, Rufus B. von Kleinsmid, Sc.D., J.D.

SOUTH POLE. See **POLAR RESEARCH.**

SOUTHWEST AFRICA. A former German protectorate, administered since Dec. 17, 1920, by the Union of South Africa under a mandate from the League of Nations; bounded by Portuguese West Africa, the Atlantic Ocean, Cape Providence of the Union, and Bechuanaland Protectorate. Area, 311,820 square miles; population,

at the census of 1926, 24,115 Europeans and about 234,790 natives; estimated in 1930, 30,404 Europeans and 261,117 natives. Capital, Windhoek.

SOVIET CENTRAL ASIA. A region in Central Asia, including the territory formerly known as Russian Turkestan, and extending from the Caspian Sea to Mongolia and from Siberia to the northern boundaries of Afghanistan, and Persia. Administratively it is divided into the following soviet socialist republics and autonomous areas affiliated with the Soviet Union:

SOVIET STATES OF CENTRAL ASIA

| | Area sq. km. ^a | Population 1926 ^a |
|-------------------------|------------------------------|---------------------------------|
| Kazak Republic | 2,924,938 | 6,530,528 |
| Turcoman Republic | 473,000 | 883,549 |
| Uzbek Republic | 340,346 | 5,270,200 |
| Tadzhik Republic | 80,000 | 745,200 |
| Kirghiz Republic | 246,000 | 997,441 |
| Kara-Kalpak Area | 113,000 | 303,460 |
| Total | 4,177,284 | 14,730,378 |

^a Figures from Soviet Union Year Book for 1929.

SOVIET RUSSIA. See RUSSIA.

SPAIN. A constitutional monarchy of southwestern Europe, occupying the greater part of the Iberian peninsula, and separated from France by the Pyrenees. Capital, Madrid; ruling sovereign in 1930, King Alfonso XIII.

AREA AND POPULATION. The area of Continental Spain is 190,050 square miles; including the Balearic and Canary Islands and Spanish possessions on the West Coast of Africa, it is 194,800 square miles. The estimated population on Jan. 1, 1930, was 22,760,854, as compared with 21,338,381 at the census of 1920. Births averaged 652,607 annually from 1925 to 1929; deaths 418,681. The birth rate per 1000 inhabitants in the same period averaged 29.3 annually and the death rate, 18.8. The principal cities, with their estimated populations on Jan. 1, 1929, are: Madrid, 816,928; Barcelona, 767,774; Valencia, 269,727; Seville (Sevilla), 216,511; Málaga, 159,479; Zaragoza, 155,529; Murcia, 154,705; Bilbao, 150,112.

EDUCATION. At the census of 1920, 39.8 per cent of the males and 53.1 per cent of the females over five years of age could neither read nor write. In 1927, there were 29,010 public and about 5500 private elementary schools, with approximately 3,000,000 pupils, and 65 secondary, or middle-class schools, with 76,293 pupils (9310 girls). In the same year, the 11 universities enrolled 39,719 students.

PRODUCTION. Agricultural, garden, and forest products dominate the economic life of the country. Together with extensive mineral and water-power resources, they form the basis for the considerable industrial development during and since the World War. While the productive area of Spain is placed at 113,987,500 acres, or 90.4 per cent of the total surface, the area under cultivation in 1925 was 47,823,000 acres, or 38.3 per cent of the total. Due to the aridity of the central and southern sections, about 41 per cent of the total area of Spain is devoted to meadow and pasture land, on which sheep raising receives particular attention. The area and production of the chief crops in 1928 and 1929 are shown in the accompanying table.

Spain has an exportable surplus of copper, iron, lead, zinc, manganese, mercury, and pyrite, and adequate amounts for its own use of tungsten, barite, fluor spar, graphite, gypsum, talc,

SPANISH CROPS: AREA AND PRODUCTION

| Crop | Area ^a | | Production ^b | |
|-------------------------------|-------------------|--------|-------------------------|----------------------|
| | 1928 | 1929 | 1928 | 1929 |
| Wheat | 10,480 | 10,478 | 119,884 | 154,249 |
| Rye | 1,384 | 1,638 | 14,418 | 22,896 |
| Barley | 4,508 | 4,426 | 82,855 | 97,521 |
| Oats | 1,965 | 1,700 | 84,782 | 45,071 |
| Corn | 960 | 1,174 | 21,059 | 25,190 |
| Rice | 121 | 120 | 14,227 | 14,720 |
| Potatoes | 831 | ... | 139,892 | ... |
| Sugar beets | 146 | 153 | 1,437 ^c | 1,599 ^c |
| Beet sugar ^f | ... | ... | 214 ^c | 221 ^c |
| Olive orchards | 4,347 | 4,416 | 55,448 ^d | 179,689 ^d |
| Grapevines | 3,541 | 3,541 | 583,415 ^e | 634,010 ^e |

^a Thousands of acres.

^b Thousands of units—bushels except as indicated.

^c Unit, metric tons.

^d Unit, gallon of oil.

^e Unit, gallon of wine.

^f Seasons ended following year.

and soapstone. Domestic consumption is small and iron-ore production is dwindling. British capital controls most of the valuable mineral deposits. Mineral production in 1929, in metric tons, was: Coal, 6,983,400; lignite, 402,000; coke and briquettes, 1,198,400; pig iron, 731,600; steel ingots and castings, 924,000; lead, 133,300; zinc, 11,800. The value of crude mineral products in 1928 was 422,976,000 pesetas (\$70,172,000) and that of metallurgical and other mineral products was 1,295,300,000 pesetas (\$214,900,000).

COMMERCE. Excluding bullion movements, imports for consumption in 1929 declined to 2,736,700,000 pesetas (average exchange value of the peseta in 1929 was \$0.1468) from 3,004,300,000 pesetas in 1928. Domestic exports similarly decreased to 2,108,100,000 pesetas from 2,118,400,000 pesetas in the previous year. The unfavorable balance of trade amounted to 628,600,000 pesetas in 1929 and 885,900,000 pesetas in 1928.

Spain's unfavorable balance of trade in 1930 was the smallest in a decade. Imports totaled 2,440,000,000 pesetas and exports 2,290,000,000, according to preliminary figures. The unfavorable trade balance was 147,000,000 pesetas.

FINANCE. Ordinary budget revenues in 1930 were estimated at 3,669,672,000 pesetas and ordinary expenditures at 3,637,684,000 pesetas. Preliminary returns for the year forecast a slight surplus in the final account. Preliminary returns for 1929 placed ordinary receipts at 3,724,000,000 pesetas and ordinary expenditures at 3,596,000,000 pesetas. Extraordinary receipts were calculated at 500,000,000 pesetas and extraordinary expenditures at 459,000,000 pesetas, leaving an estimated surplus of 169,000,000 pesetas. However, as the extraordinary receipts were largely loans, an actual deficit of some 331,300,000 pesetas was shown, as compared with an actual deficit of 194,100,000 pesetas in 1928 and 262,200,000 pesetas in 1927.

The total funded public debt on Jan. 1, 1930, stood at 19,988,000,000 pesetas (about \$3,258,000,000), as compared with 19,273,000,000 pesetas on Mar. 31, 1929. Most of the public debt is held in Spain.

COMMUNICATIONS. Important developments in the Spanish railway situation took place in 1930. The Andaluces Railway, the most important system in southern Spain, purchased the Sur de Espana lines for 20,376,700 pesetas (about \$2,852,865). This gave the Andaluces system a total of 1021 miles of broad-gauge track, with an estimated property value of 302,234,309 pesetas (about \$42,312,000). The total railway mileage

in 1928 was 10,138 miles. Most of the railways, though privately owned, received government subventions. The Minister of Finance reported in May, 1930, that railway receipts from 1926 through 1929 totaled 1,516,900,000 pesetas and expenditures 1,512,300,000 pesetas. A deficit of 299,000,000 pesetas was estimated for 1930.

GOVERNMENT. According to the constitution, executive power is vested in the King, who acts through a responsible ministry, and legislative power in the Cortes, or Parliament, consisting of a Senate and Chamber of Deputies. Parliament was dissolved by royal decree, Sept. 16, 1923, and the control of the government remained in the hands of the dictator, Primo de Rivera, until early in 1930.

HISTORY

The ferment of unrest, which reached dangerous proportions in 1929, was not allayed by the fall of the dictatorship of Primo de Rivera on Jan. 28, 1930. The nation seethed throughout the new year in a wild confusion of revolutionary conspiracies, anti-monarchist demonstrations, strikes, riots, political controversies, and autonomous movements in Catalonia and the Basque provinces. That King Alfonso held his throne at the end of 1930 was due to the loyalty of the bulk of the army and the inability of his opponents to reconcile their conflicting aims and ambitions.

FALL OF PRIMO DE RIVERA. When the dictator, who for more than six years had guided the destinies of the nation, submitted his resignation as Premier to the King on January 28, few were surprised. His prestige had steadily declined during 1929 (see 1929 YEAR BOOK). The antagonism of the King, dissatisfaction in the army, the financial straits of the government, and widespread popular unrest made his continuance in office impossible. On January 18, he announced that the purposes of the dictatorship had been achieved and that he planned to withdraw. The continued fall of the peseta forced the resignation of his Minister of Finance two days later. Then came an attempted military revolt and riots by students of the National University at Madrid. In a moment of indiscretion, the Premier on January 26 sent a note to about 17 ranking army officers asking whether he still held the support of the army. Alfonso seized the opportunity to ask for Primo de Rivera's resignation before any public answer had been received from the military chiefs. The King immediately ordered General D'Amaso Berenguer, head of his military household and former Military Governor of Morocco, to form a new Cabinet.

THE BERENGUER RÉGIME. The new Premier announced that his first task would be to re-establish constitutional government, provide for the election of the Cortes, or Parliament, and restore civil rights and the right of free speech and a free press. Whether the King desired the full restoration of constitutional rights is difficult to say, but the obstacles confronting such a programme were in themselves sufficient to explain the lack of progress made during the year. During six years of dictatorship the old political parties had disintegrated, voting lists were out of date, and the machinery for holding an election required complete rehabilitation. In addition, every move in the direction of constitutional government made possible new attacks upon the monarchy and the Cabinet and agitations which

frequently resulted in disorders. Parliamentary elections were originally promised for November, but in that month the census committee reported that the election lists could not be completed before Mar. 1, 1931.

The Cabinet formed by Premier Berenguer, who assumed also the portfolio of War, contained but one outstanding figure—the Duke of Alba as Minister of Education. The other members were: Finance and Economy, Manuel Arguelles; Public Works, Leopold Matos; Interior, General Enrique Marzo; Navy, Vice Admiral Salvador Carvia; Labor, Pedro Sangro y Ros de Ordoño; Justice, José Estrada; Commerce, Julio Wais. It was generally anticipated that the life of the Cabinet would prove short. The King, by a decree of February 15, abolished the powerless National Consultative Assembly established by Primo de Rivera. At the same time he restored the former rule providing for promotion in the army on a basis of seniority, rather than of merit or favoritism. Meanwhile, the Premier appointed civil governors in most of the 52 Spanish Provinces and established provincial delegations, which were Conservative in character.

Dissatisfaction with the slowness of the transition from dictatorship to constitutional government became increasingly vocal as the year progressed. A number of Republican and Socialist leaders and university professors, exiled from the country by Primo de Rivera, returned to conduct agitations against the King and the Berenguer régime. Among them were Miguel de Unamuno, the philosopher, and Antonio Maria Sbert, leader of the non-Catholic student group at the University of Madrid. Sanchez Guerra (see 1929 YEAR BOOK), former Premier, renewed his demands for the establishment of a republic. Student demonstrations, labor strikes, and food riots broke out in February and increased in violence as the agitation gathered momentum. There were frequent clashes with the police and numerous deaths, injuries, and arrests. In February, also, occurred a reorganization of the Cabinet. The Duke of Alba was named Minister of State, a post abolished by Primo de Rivera, and his place as Minister of Education was filled by Elias Tormo.

Alarmed by the development of the republican movement, the army, the clergy, and the aristocracy rallied to the support of the monarchy. A monarchist demonstration was held in the new Madrid bull ring in April, attended by delegates from all Spanish Provinces. Clashes between republicans and monarchists featured political meetings in the large cities.

Despite intense political activity, the government continued its gradual restoration of constitutional rights. A large degree of freedom of speech and press was allowed. Professor Unamuno was reinstated as rector of the University of Salamanca. On March 13, a royal decree re-established juridical rights and another permitted those fined unlawfully by the régime of Primo de Rivera to claim the return of their payments. In May, steps were taken toward reopening the universities closed during student riots early in the month.

The political campaign in preparation for the anticipated elections in November got under way in earnest in September, accompanied by general strikes and rioting in many cities. The government on September 18 lifted the newspaper censorship for the first time in seven years, except

in Barcelona, but with a stern warning that abuses of freedom would be severely punished. An alliance of the most important of the 22 republican parties in Spain was formed and reached an agreement to enter only one republican candidate in each district for the general elections. An alliance with the Socialists was rejected.

FALL OF THE PESETA. The political difficulties of the government were increased by the alarming decline in the exchange value of the peseta, a tendency which engrossed the attention of government officials and the business classes throughout the year. With a par value of about five to the dollar, the peseta in June exchanged at around 8.50 to the dollar. On August 19, Finance Minister Arguelles resigned because of his inability to check the peseta's decline. He was succeeded by Julio Wais, Minister of Economy, whose post was assumed by Luis Rodriguez Viguera. The new Finance Minister introduced measures designed to restrict imports, control all foreign-currency transactions, and prevent speculation in foreign exchange. The peseta continued to decline, however, reaching 10.50 to the dollar on October 16. It then rallied to 8.93 on October 30.

THE REPUBLICAN CONSPIRACY. The decline of the peseta had been accompanied by a rise in prices, which contributed to the suffering caused in some districts by the interruption of economic activities through labor strikes and political disorders. The announcement made in November that elections could not be held until the following March fanned popular discontent, and a wave of violence swept the country. Following a clash in Madrid on November 14 between workers of the building trades and the police, the General Union of Workers called a 48-hour strike, which spread to other cities. In some cities, notably Barcelona, Communist groups appeared to have forced the strike on the Socialist trades unions, which later repudiated a policy of violence. For several days rioters terrorized Madrid and in Barcelona strikers barricaded the streets. In clashes with the police, many were killed and hundreds injured.

These events proved a prelude to a more ominous republican uprising, which started on December 12 with the revolt of the garrison of the fortified town of Jaca in the Pyrenees. The revolution had been carefully planned on a large scale, with the primary object of establishing a republic. Through the over-eagerness of a young officer, Captain Galan, the insurgents at Jaca tried to effect a junction with fellow-conspirators in a neighboring town a few days before the appointed time. Prompt intervention by loyal troops, dispatched from Madrid, resulted in the defeat of part of the rebels in a mountain pass and the frustration of the plan for a combined march on Barcelona, which was to have become the national revolutionary headquarters. The premature move in the North also enabled General Berenguer to forestall risings in other parts of the country. Jaca subsequently surrendered to loyal troops and the two insurgent leaders, Captains Galan and Garcia, were summarily court-martialed and shot.

On December 15, Maj. Ramon Franco, the noted Spanish aviator, emerged from hiding and for a few hours gained control of the Cuatro Vientos military air field near Madrid. The artillery regiment of Leon ended the uprising by firing 100 rounds over the heads of the rebels

at the air field. Major Franco and 11 other aviators escaped in four airplanes to Portugal. These revolutionary efforts were accompanied by a general strike in most of the large cities. The *Guardia civil* and the *Guardia de Seguridad* remained loyal, however, and a strong display of force led to the termination of the strike. Martial law, which had been declared throughout Spain on December 15, continued in effect to the end of the year. The roundup of republican leaders and participants in the abortive revolt placed nearly 10,000 persons within Spanish prisons by December 20. Among the leaders of the conspiracy, charged with signing a revolutionary manifesto, were Alcalá Zamora, Miguel Maura, Francisco Largo Caballero, and Hernando Ríos. In Madrid alone, 950 were under arrest on December 20. A mass "confession" of complicity in the conspiracy made its appearance on the same date. By the end of the year, the situation had quieted down to such an extent that the government was discussing the possibility of an immediate lifting of martial law. Official figures released December 19 placed casualties in the revolt at 45 dead and 187 wounded. Republicans declared these figures to be too low. One result of the revolt was the announcement by General Berenguer that he intended to restore the Constitution of 1876 and would summon the Cortes for this purpose following the elections scheduled for the following March.

OTHER EVENTS. A new Spanish tariff schedule published in the Royal Gazette of July 23, 1930, raised still further the Spanish tariff wall, already the highest in Europe. The tariff action was protested by some American exporters, who considered it a reprisal for the increases in import duties in the American tariff adopted earlier in the year. This charge was denied in Spain. See obituary articles on PRIMO DE RIVERA Y ORBANEJA, GEN. MIGUEL; and WEYLER Y NICOLAU, GEN. VALEBIANO, who died during the year, and SPANISH LITERATURE.

SPANISH ACADEMY. See SPANISH LITERATURE.

SPANISH-AMERICAN LITERATURES.

It is necessary to remind our readers that the facts here presented must not be considered exhaustive, nor must the omission of some of the countries be taken as evidence that they produced nothing in 1930. Alberto Guillén (who, in his *Breve antología peruana*, made a very select little volume of the best modern Peruvian poetry) has done a remarkable bit of editing in his larger collection, *Poetas jóvenes de América*.

ARGENTINA. The following items show Argentina well represented in several fields. *Fiction.* Roberto Arlt, *Los 7 locos* (whose conception, critics declare, had no precursors, but which won, nevertheless, the third prize for prose in the 1930 Municipal Competition for Literature); Samuel Eichelbaum, *Tormenta de Dios* (collection of tales highly praised by the critics); B. González Arrioli, *La virgen de Luján* (finely documented recreation of historic scenes and personages); Carlos B. Quiroga (who has specialized in Argentina's Northwest, as witness his earlier novels, *Cerro*, *La particiolla ilusionada*, *Alma popular*, *La montaña bárbara y misteriosa*, and *Frax Mamerto Esquíú*), *La raza sufrida* (splendid and imposing), and *La imagen noroéstica* (hailed as a worthy member in the series, and granted the second prize for prose in the 1930 Municipal Competition for Literature); Rosa Río, *Piquillín*;

Sara Etcheverría, *El constructor del silencio* (awarded first prize in 1930 Municipal Competition for Literature); Julio A. Quesada, *Frivolas* (Novelerías dialogadas).

Essays. Alcira Olivé, *El divino derecho* (brilliant defense of motherhood and severe diatribe against the social ostracism of mothers without benefit of clergy); Herminia C. Brumana, *Mosaicos* (a restless, daring book); and Ernesto Nelson (one of the greatest educators in the three Americas), *La salud del niño, su protección social* (a very important and thoroughly documented work).

Poetry. Augustín de Rossi, *Flores en el deseo* (versos); Julio César Ford, *La casa donde el hombre buscó el amor* (versos); H. Lartigueau Lespada, *Nuevas orazonadas* (colección de versos); Angélica Fuselli, "A cuantos . . ." (verses showing very womanly sensibility and great delicacy of religious feeling); Emilia Helena Citter Morosini (who some years ago in great grief produced a book of verse *Acacias*), *Celajes* (although still melancholy it gives ground for hope that she will gradually conquer her grief and produce something more cheerful); Sara Montes de Oca de Cárdenas, *Ofrenda* (a miscellaneous collection of rich verse which reveal the writer as an exuberant soul crying aloud its burning Christian ideal).

Erudition. Mariano G. Bosch (author of *Teatro antiguo de Buenos Aires*, 1904, and of *Historia del teatro en Buenos Aires*, 1910), *Historia de los orígenes del Teatro Nacional Argentino y la época de Pablo Podestá* (interestingly written and well documented).

BOLIVIA. J. Uriel García, *El Nuevo Indio*.

CHILE. Ernesto Silva Román, *El dueño de los Astros* (cuentos); Aníbal Echeverría y Reyes, *Voces usadas en la industria salitrera* (valuable dictionary of technical words); Daniel de la Vega (very popular poet), *Sus mejores poemas*; Julio Vicuña Oñfuentes (genial folklorist), *Estudios de métrica española* (excellent); Ruperto Murillo, *Hacia la luz* (love story with a theme of political unrest and social reform); Julián Petrovick, *Naípe adverso* (fine bit of romanticism).

In 1930 there were several changes in the Chilean Academy. Early in the year the perpetual secretary, Ramón A. Laval, died. Samuel A. Lillo was elected perpetual secretary. The following scholars, having read their respective entrance discourses, took their chairs: Roberto Peragallo y Silva (*Grandeza futura del idioma español*); Gen. Francisco J. Díaz (*Locuciones viciosas en el lenguaje militar*); and José A. Alfonso, vice Vicente Reyes.

COLOMBIA. Outstanding items in Colombia's literary activity for the year are: Alfonso Mejía Robledo, *La risa de la fuente* (excellent novel of Colombian provincial life and first volume of a new series, *Novelistas Hispanoamericanos*, published by the Editorial Cervantes, in Barcelona); Arturo Suárez, *Rosalba: Historia de un amor grande y verdadero* (Colombian novel of the dazzlingly beautiful valley of the Cauca, after five editions in its native land, has now appeared in an Argentine edition); Luis G. Sepúlveda (hailed by critics as the Spanish-American George Bernard Shaw), *Instantáneas Neoyorkinas* (excellent skits in verse, showing a keen appreciation of the real New York).

COSTA RICA. Camilo Cruz Santos, *De mi vida inquieta—selección de crítica y discursos* (very

well received). The Costa Rican Academy lost its well-known member, Claudio González Rucavado.

CUBA. Cuba's contributions that have come to hand are more erudite than belletristic. Eduardo Zamacois (who lives generally in Spain or elsewhere in Europe), *Los vivos muertos*; A. Hernández Catá, *Mitología de Martí* (careful studies about the great Cuban patriot); Diego Vicente Tejera (hijo), *Delitos cometidos con ocasión del ejercicio de los derechos individuales garantizados por la Constitución*; Elisea Giberga, *Obras* (vol. ii contains his Parliamentary Discourses in the years previous to Cuba's independence); Coronel Luis Yero Miniet, *Carlos Manuel de Céspedes*; Roque E. Garrigo, *Historia documentada de la conspiración de los Soles y Rayos de Bolívar* (2 vols., published by the Academy of History of Cuba); Jorge Juárez Cano, *Hombres del 51*; Adrián del Valle, *Historia documentada de la Conspiración de la Gran Legión del Águila Negra* (granted the prize for the 1929 Competition of the Academy of History of Cuba).

DOMINICAN REPUBLIC. There were two volumes of essays by Federico Henríquez Carvajal, *Ética i Estética: I, Páginas breves; II, Almas i Libros*.

ECUADOR. Víctor H. Escala, author of *Kaleidoscopio* (which first appeared in Yokohama where the author was Ecuador's diplomatic representative, and later appeared in Venezuela) and of *La Sandalia del Peregrino* (admirable work that had run through two editions, 1925 and 1928), published *Mosaico* (travel notes of an experienced man-of-the-world, and series of critical articles on books). Other works are: Jesús Vaquero, Dávila, *Aspectos sociológicos de la nacionalidad ecuatoriana*; César Augusto Velarde, *Patología Indolatina*; and José de la Cuadra, *Sueño de una noche de Navidad* and *El amor que dormía*.

GUATEMALA. Of late years the Guatemalan Academy suffered many severe losses through death, four of which occurred in 1930: Manuel Valladares, Mariano Zecceña, Tácito Molina Izquierdo, and its illustrious Director, Antonio Batres Jáuregui. The following new members were elected to fill the vacancies mentioned and complete the roster: Carlos Federico Mora, Carlos Salazar, Jorge García Granados, David Vela, Lisandro Sandoval, Manuel Cobos Batres, José María Bonilla, Carlos Wyld Ospina, and José B. Ubico. Of these recent electees Lisandro Sandoval has just published a monumental part of a work that bids fair to be almost colossal: *Diccionario de raíces griegas y latinas y de otros orígenes del idioma español*, *Tomo primero, Primera parte: Raíces griegas* (pp. LXXII, 932 in 4^{to}).

MEXICO. Martín Luis Guzmán, *La sombra del caudillo*; Alfonso Comín (author of *Entre volcanes*, novel with scene laid in Mexico), *Xochitl* (volume of verse on the Mexican Revolution); Pedro I. Pérez Piña, *Atavismo* (*Novela Mexicana*); Manuel Brioso y Candiani, *Album literario de Oajaca*; Jesús Guzmán y Raz Guzmán, *Bibliografía de la reforma, la intervención, y el imperio*, *Tomo I*; Jorge Salas y Medina, *Disquisiciones gramaticales*; and *Algunos documentos sobre el Tratado de Guadalupe y la situación de Méjico durante la invasión americana*.

NICARAGUA. Hernán Robledo, *Sangre en el trópico* (*Novela de la intervención yanqui en Nicaragua*) (a keen study by a former Sub-Secretary of the Ministry of Public Instruction in the cabinet of President Juan Bautista Sacasa, both interesting and important); Julio Linares,

Poemas cortos; Rubén Darío, *Obras Completas* (ordenadas y prologadas por Alberto Ghirardo y Andrés González-Blanco), vols. xviii and xix. Azarias H. Pallais took his seat in the Nicaraguan Academy.

PERU. At a reception held in her honor in Madrid, Angélica Palma (talented daughter of the great tradiconista Ricardo Palma) spoke on *Mujeres del Perú*. She published also a new novel *Uno de tantos*.

SALVADOR. Rafael García Escobar, *Rosas de América*.

URUGUAY. Carlos Alberto Garibaldi, *Tensiones y Alegrias* (poemas); *Publicaciones del Centro Gallego IV y V, Curso de conferencias* (series of lectures by distinguished persons native and foreign, on topics of varied cultural interests); Carlos Sabat Ercasty, *Los Adioses* (*Interludios al modo antiguo*); Arturo Scarone, *Bibliografía de José Enrique Rodó*.

VENEZUELA. In connection with the Bolívar Centenary, the Venezuelan Government ordered the reprinting of two very important works: Francisco González Guinán, *Historia Contemporánea de Venezuela* (of which vol. i has appeared); and Gil Fortoul, *Historia Constitucional de Venezuela* (of which the author is preparing a second edition). Other works published during the year include: Caracciolo Parra Pérez (Venezuelan diplomat in Rome), *Miranda et la révolution française* (written in French), and *Bolívar* (synthesis of Bolívar's political ideas, written in Spanish); Guillermo Austria, *Cenizas de emoción*; Pablo Godoy Fonseca, *El derecho de castigar*; and Rafael Angarita Arvelo, *Ilustraciones del Romancero Castellano, Cancionero y Romancero Venezolano* (*Poesía popular*) (an interesting study that appeared in the September-October number of *Cultura Venezolana*). The most amazing production of the year, however, is *Doña Bárbara* by Rómulo Gallegos, who, despite the appearance, in 1920, of his first novel, *Reinaldo Solar* (reprinted this year), was practically unheard of previously, and who is now hailed by some serious critics as the first "great novelist" that Spanish America has produced.

SPANISH LITERATURE. For the fifth year in succession, the dramatic output of 1930 seemed to run ahead of that of the other branches, and for the third year in succession erudition seemed to outstrip fiction.

DRAMA. The older generation continued to flourish, to our delight and advantage, as witness the following: J. Benavente, *Los andrajos de la púrpura* (his best play in years, based on the life of Eleanor Duse); *La melodía del jazz-band*, and *Los amigos del hombre*; G. Martínez Sierra, *Triángulo* (farce with an unusual idea beautifully worked out); Azorín, *Angelita* (auto sacramental—highly praised); Pilar Millán Astray, *El millonario y la bailarina*; Alvarez Quintero Brothers, *Mariguilla Terremoto*, *La esposa y la chismosa* (wife endures husband's infidelities rather than disturb the peace of the home and shock the children), *Doña Hormiga* and *Los duendes de Sevilla*; Miguel de Unamuno, *Sombras de sueño*; Eduardo Marquina, *El monje blanco* (retablos de leyenda primitiva); Manuel y Antonio Machado, *La Lola se va a los puertos* . . . ; Luis Fernández Ardavin, *Han cerrado el portal*.

Others may also be mentioned: Armando Cotarelo y Valledor, professor at the University of Santiago de Compostela, *Lubacán* (*drama gallego*); Serrano Anguita, *Manos de plata*;

Eduardo Ugarte and José López Rubio, *La casa de los naipes*; J. M. Granada and Sobrevilla, *La hija de Juan Simón*; L. Navarro and J. M. López-Morís, *El oro del diablo* (a very fine and delicate work).

FICTION. Some of the well-known authors continued to charm the public: Pío Baroja, *Los pilotos de altura* and *La Estrella del Capitán Chimista*; Concha Espina, *Siete rayos del sol*; A. Insúa, *El Capitan "Malacentella"* and *El amante invisible*; W. Fernández Flórez, *El País de papel* and *Los que no fuimos a la guerra*; Pedro Mata, *El pájaro en la jaula*; V. Blasco Ibáñez, *El Caballero de la Virgen* (Alonso de Ojeda); José Más, *Luna y sol de marisma*; A. Pérez Lugín, *La virgen del rocío ya entró en Triana* (important posthumous work completed and published by J. A. Vázquez).

POETRY. Much of the best Spanish verse appears in the drama. Of nondramatic verse the following may be noted: Juan Bautista Andrade, *Diana de Gaita*; Juan José Domenchina, *El tacto fervoroso*; Antonio Ríos Argüeso, *Flores marchitas*; Professor José Manuel Camacho Padilla, *Guía lírica de Córdoba*; Miguel Gimeno Castellar, *Torre de Silencio* (awarded prize by the Cámara del Libro de Madrid); Juan Alcaide Sánchez, *Colmena y pozo*; and Alejandro Casona, *La flauta de Safo*.

ERUDITION. Among the most interesting works of erudition were the following: Angel Dotor, *Mirador—las letras y el arte contemporáneos, 1924-1929*; J. M. Salaverría, *Sevilla y el andalucismo*; J. Ortega y Gasset, *El espectador, VII*; Santiago Alba, *Para la historia de España*; R. Martínez de la Riva, *Blasco Ibáñez, su vida, su obra, su muerte, sus mejores páginas*; Alardo Prats y Beltrán, *Tres días con los endemoniados* (*La España desconocida y tenebrosa*); F. Romero Otazo, *Sentido democrático de la doctrina de Santo Tomás*; F. García Mercadal, *La Casa popular en España*; Xavier de Winthuyssen, *Jardines Clásicos de España—Castilla*; S. Cánovas Cervantes, *¿Cómo llegó a reinar Fernando VII?*.

ROYAL ACADEMY. Three members-elect took their chairs, all being among the six recently created regional chairs: one Basque, Julio de Urquijo e Ibarra, and two Catalans, Lorenzo Riber y Campins (for Majorca) and Antonio Rubió y Lluch (for Cataluña). To fill the vacancy caused by the death of E. Gómez Baquero ("Andrenio"), announced last year, the Academy elected Ignacio Bolívar. The Academy secured a Royal Decree of May 15, 1930 abolishing the six recently created regional chairs, the said decree to take effect only upon the death of the respective incumbent. The Academy published in facsimile form the Salamanca 1514 edition of the *Farsas y Eglogas* of Lucas Fernández.

The Fastenrath Prize for lyric poetry for the last quinquennial was awarded to Eduardo del Palacio.

NECROLOGY. The Catalan theatre lost its greatest *escenógrafo* in the person of Mauricio Vilumara at the age of eighty-three. The Spanish theatre suffered two very great losses: Irene Alba, who for more than 30 years had been creating important rôles; and Fernando Díaz de Mendoza, husband of María Guerrero, who with their company (known as Guerrero-Mendoza) had been dominant figures on the Spanish stage for more than half a century (see 1928 YEAR BOOK). The most notable literary loss was that of Gabriel Miró, one of Spain's best-known novelists.

SPECTROSCOPY. See **ASTRONOMY**; **PHYSICS**.

SPECULATION. See **FINANCIAL REVIEW**.

SPEECH. See **PHILOLOGY**, **MODERN**.

SPEED-BOAT RACING. See **MOTOR BOATING**.

SPERRY, ELMER AMBROSE. An American inventor and engineer, died in Brooklyn, N. Y., June 16, 1930. He was born in Cortland, N. Y., Oct. 12, 1860, and was educated at the Cortland State Normal and Training School, attending Cornell University 1879-80. He devised an electric arc light that was adopted and in 1880 he established the Sperry Electric Company in Chicago for the purpose of manufacturing these lights, and electrical machines and appliances.

About 1900 Mr. Sperry became interested in electro-chemistry and established a research laboratory in Washington, under the charge of C. P. Townsend, which continued in operation for 10 years. Among the achievements of this laboratory were the so-called Townsend process for manufacturing pure caustic soda from salt, accompanied by the production of hydrogen and chlorine compounds; the chlorine detinning process; and the electrolytic process for producing white lead from impure by-product lead. In 1915 the inventor announced his high-intensity arc searchlight, which was adopted by the principal armies and navies.

Mr. Sperry later was perhaps best known for his inventions based upon the application of the gyroscope. Chief of these was the gyro-compass, which eliminated the variations due to the earth's magnetism. This instrument not only served in navigation but afforded a permanent base line for the firing of torpedoes. This invention also was adapted to ocean navigation. From it was developed the gyro-stabilizer to keep a ship on an even keel.

Among Mr. Sperry's naval warfare inventions were a stabilized platform for the magnetic-needle submarine detector; electrically sustained gyros for torpedoes which enabled them to complete long trajectories with a high degree of accuracy; the goniometer, an instrument for determining the altitude of an airplane; and the pretelemeter, a device for anti-aircraft gunners to determine the fuse setter's range and the exact position of a target in terms of azimuth and elevation.

During his lifetime Mr. Sperry took out more than 400 patents. He was president of the Sperry Gyroscope Company of Brooklyn from 1910 to 1926 and chairman of the board from 1926 to 1929, when the organization was sold to the North American Aviation Company. He received numerous honors and medals, was one of the first members of the Naval Consulting Board, formed in 1915 as civilian advisers to the U. S. Navy, and in 1927 was chairman of the division of engineering and industrial research of the National Research Council.

SPIDERS. See **ZOOLOGY**.

SPIRITUALISM. See **PSYCHICAL RESEARCH**.

SPITZBERGEN. See **SVALBARD**.

SPORTS. Articles covering the activities in the various sports during 1930 will be found under such titles as **ATHLETICS**, **BASEBALL**, **FOOTBALL**, **GOLF**, **RACING**, **TENNIS**, **YACHTING**, ETC.

SQUASH RACQUETS. See **RACQUETS**.

STANDARDS. See **PHYSICS**.

STANFORD UNIVERSITY. A nonsectarian institution for the higher education of men and women in Palo Alto, Calif.; founded in 1891 in

memory of Leland Stanford, Jr. The enrollment for the autumn quarter of 1930 was 3576, and for the summer quarter, 1262. The faculty numbered 538. The productive funds of the university amounted to \$30,374,520, and the budget income for the year, including fees, was \$2,995,000. The library contained 528,934 volumes (including the Hoover War Library). Acting president, Robert Eckles Swain, Ph.D., executive head of the chemistry department, who was appointed to serve during the leave of absence of Ray Lyman Wilbur.

STARS. See **ASTRONOMY**.

STATE BANKS. See **BANKS AND BANKING**.

STATE LEGISLATION. See articles on various States, and **OLD AGE PENSIONS**.

STATE TAXES. See **TAXATION**.

STATISTICAL ASSOCIATION, AMERICAN. An organization founded in Boston in 1830 to foster an interest in statistics and to promote scientific methods of collecting and interpreting statistical data.

The various association chapters meet from time to time in the leading cities of the United States. The ninety-second annual meeting was held in Cleveland Dec. 29-31, 1930. The officers of the association for 1931 were: President, William F. Ogburn; vice-presidents, Walter E. Stewart, William A. Mackintosh, Harry C. Carver, Sewall Wright, Fred G. Tryon, Donald R. Belcher; secretary-treasurer, Willford I. King; editor, Frank Alexander Ross. The official publications are: *The Journal of the American Statistical Association* and the *Annals of Mathematical Statistics*, each issued quarterly. Headquarters are in the Commerce Building of New York University, 236 Wooster Street, New York City.

STATISTICS. The British Government, during the year, issued an official paper giving the total expenditures for specific social services for the years 1928 and 1929. The table on page 736 indicates the expenditures for these years for England and Wales and Scotland.

STANDARD OF LIVING OF FORD MOTOR COMPANY EMPLOYEES. The Bureau of Labor Statistics, in the early part of 1930, in order to furnish basic material for minimum wage scales to Ford Motor Company employees in Europe, made a study of 100 families of employees working for the Ford Motor Company in Detroit. All these employees were supposed to be maintaining a family on the Company's minimum wage of \$7 a day. The average annual earnings of husbands in the families canvassed was \$1,694.63 and the average income from all other sources was \$17.24, making a total average income of \$1,711.87. The average expenditures of the 100 families was \$1,719.83. This leaves an average deficit of all families of \$7.96. The average number of persons per family was 4.5; the average equivalent of adult males was 3.27. The following figures indicate the distribution of expenditures by per cents: food, 32.3 per cent; clothing, 12.2 per cent; housing, 22.6 per cent; fuel and light, 6 per cent; furniture and house furnishings, 5.2 per cent; life insurance, 3.4 per cent; street car and bus fares, 2.2 per cent; expenses of sickness, 3.8 per cent; school expenses, 0.4 per cent; cleaning supplies, 1.0 per cent; barber, 0.7 per cent; miscellaneous expenses, 10.2 per cent. The housewives in the majority of these families did their own laundry work but electric washing machines were used in 49 homes. Only 5 families reported a telephone in the home. Forty-seven of these working men's families

EXPENDITURES UNDER SPECIFIED ACTS IN 1928 AND 1929

[Conversions into U. S. currency made on basis of £ = \$4.867]

| Act | England and Wales | | Scotland | |
|--|---------------------------------|---------------------------------|---------------------------------|---------------------------------|
| | Year ending Mar. 31, 1928 | Year ending Mar. 31, 1929 | Year ending Mar. 31, 1928 | Year ending Mar. 31, 1929 |
| Unemployment insurance acts | \$186,178,379 | \$281,015,699 | \$22,039,721 | \$30,947,183 |
| National health insurance acts | 164,190,843 | 167,894,250 | 18,770,091 | 18,979,850 |
| Widows', orphans', and old-age contributory pensions act | 51,586,235 | 103,257,397 | 6,603,841 | 12,682,099 |
| Old-age pensions acts | 145,432,759 | 150,648,347 | 18,601,383 | 19,279,613 |
| War pensions acts and the Ministry of Pensions act | 249,010,128 | 235,927,920 | 28,079,359 | 26,692,752 |
| Education acts | 397,228,437 | 408,759,443 | 62,373,755 | 64,039,393 |
| Acts relating to reformatory and industrial schools | 2,839,301 | 2,608,444 | 834,192 | 824,789 |
| Inebriates acts | 146 | ..... | ..... | ..... |
| Public health acts relating to— | | | | |
| Hospitals and treatment of disease | 33,281,993 | ..... | 6,438,380 | 6,579,508 |
| Maternity and child welfare | 10,089,589 | 10,677,101 | 1,345,587 | 1,425,885 |
| Housing of the working classes | 112,693,640 | ..... | 17,295,541 | 18,882,020 |
| Acts relating to relief of the poor | 199,472,969 | ..... | 21,855,452 | 20,152,177 |
| Unemployed workmen act | 199,819 | ..... | 73,484 | 43,799 |
| Lunacy acts | 12,865,777 | ..... | 6,233,987 | 6,248,586 |
| Mental deficiency act | 5,903,065 | ..... | ..... | ..... |
| Total | \$1,570,367,980 | ..... | \$210,544,772 | ..... |

owned cars. Seventeen families purchased automobiles, new or second hand, during 1929 and two families purchased their cars in 1928 but completed the payments in 1929. Upkeep on cars averaged \$78.02 for the 47 families. Only five families reported servant hire and in their case the annual average was only \$21.56 expended for this purpose. The following data regarding the home conveniences possessed by the 100 families covered in the survey indicate something of the standards of living being enjoyed: families having automobiles, 47; radio sets, 36; radio loud speakers, 35; foot sewing machines, 75; vacuum cleaners, 21; telephone, 5; piano, 13; phonograph, 45; electric washing machines, 49; electric irons, 98; electric fans, 4; electric toasters, 6. See UNEMPLOYMENT.

STEAMBOAT INSPECTION SERVICE, U. S. See SAFETY AT SEA.

STEAM BOILERS. See BOILERS, STEAM.

STEAM ENGINES. See POWER PLANTS AND BOILERS.

STEAM TURBINES. In the field of steam turbines, the year 1930 showed a trend toward the single-shaft tandem type for units of large capacities—100,000 kilowatts and above,—and the single-cylinder type for capacities up to 80,000 kilowatts. For extensions or rehabilitation of existing plants where it was necessary to install greatly increased capacity in the floor space formerly occupied by smaller units, the vertical (superimposed) type offered a solution. One notable instance of this was at the Rouge plant of the Ford Motor Company where a 100,000-kilowatt superimposed compound unit was being installed in the space formerly occupied by a 12,500-kilowatt turbine-generator. A similar case was to be found in Station "A" of the Pacific Gas & Electric Company at San Francisco, where two 50,000-kilowatt units were being put in. In both cases the units were to operate at 1200 pounds pressure, the essential difference being that in the San Francisco plant the high-pressure turbine and generator are mounted on top of the generator of the low-pressure turbine, whereas in the Ford installation the high-pressure turbine was over the low-pressure turbine with their generators occupying the same relative positions.

The record for size still was held by the 208,000-kilowatt cross-compound unit at the State Line Station near Chicago which was completed in 1929. In Europe the size of turbines was increasing although they have not yet attained the

capacities reached by units in the United States. The Lungstrom, radial-flow type was there gaining in popularity and one machine of 50,000 kilowatts capacity was installed near Stockholm, Sweden. The highest efficiency thus far reported had been attained by an 85,000-kilowatt Brown-Boveri turbine at the Zachorniwitz plant in Germany, which has an indicated efficiency of 87.7 per cent.

In the United States the year under review saw a trend toward higher steam temperatures and several turbines were being built to operate at 825 to 850 degrees Fahrenheit. Such temperatures had been in use for several years in a few European stations. The 10,000-kilowatt turbine built in England in 1929 for the Detroit Edison Company to operate at 1000 degrees was delivered but at the end of the year was not yet in service.

Turbine units of higher speeds, namely, 3600 r.p.m., have lately received attention and units have been built to operate at this speed up to 15,000 kilowatts capacity in the tandem-compound type. These higher speeds mean lighter motors and a shorter distance between bearings.

Refinements in design include a greater number of stages and longer blades in the high-pressure section in order to attain higher efficiency. Blade materials for the low-pressure stages of large units still presented a problem and various materials were being tried out to resist erosion and cutting from the moisture in the steam. These include chromium plating, nitrided materials and wear-resistant shields of hard metals such as tungsten and tantalum. As yet these were in the experimental stage.

STEEL. See IRON AND STEEL; METALLURGY.

STEEL IN CONSTRUCTION. See BRIDGES.

STEIN, LUDWIG. A German philosopher and publicist, died in Berlin, July 14, 1930. He was born in Erdő-Bénye, Hungary, Nov. 12, 1859, and attended the Universities of Berlin and Halle. In 1889 he became professor of philosophy at the Polytechnic Institute in Zurich and in 1891 at the University of Bern. His principal works are: *Die Psychologie der Stoa* (1886); *Die Erkenntnistheorie der Stoa* (1888); *Die soziale Frage im Licht der Philosophie* (4 vols., 1897–1923); *Der Sinn des Daseins* (1904); *Der soziale Optimismus* (1905); *Philosophische Strömungen der Gegenwart* (1908); *Weltbürgertum, Nationalstaat und internationale Verständigung* (1913); *Einführung in die Soziologie* (1921); and *Evolution and Optimism* (1924). He was editor of other works.

STELLAR EVOLUTION. See **ASTRONOMY**; **PHYSICS**.

STERLING, THOMAS. An American lawyer and former United States Senator, died in Washington, D. C., Aug. 26, 1930. He was born near Amanda, Ohio, Feb. 21, 1851, and was graduated from the Illinois Wesleyan University in 1875. Admitted to the Illinois bar in 1878, he practiced in Springfield. In 1882 he removed to Redfield, S. D., and was elected a member of the Senate of the first State Legislature in 1890. From 1901 to 1911 he was dean of the law college of the University of South Dakota in Vermilion. In 1913 he was elected to the United States Senate to succeed Robert J. Gamble and was reelected in 1918 for the term ending in 1925. At the time of his death he was a member of the faculty of the National University law school in Washington and also was engaged in private practice in that city.

STEVENS INSTITUTE OF TECHNOLOGY. A college of engineering in Hoboken, N. J.; founded in 1870. The college offers an unspecialized course in the fundamentals of engineering to provide basic training for the practice of the profession in its several branches. The enrollment for the autumn of 1930 was 509, including 31 graduate students, and for the summer session of that year, 87. There were 63 members on the teaching staff. The productive funds amounted to \$3,400,000, and the income for 1929-30, including fees from students, was \$400,000. The library contained 20,000 volumes. In June, 1930, the Stevens engineering camp in Johnsonburg was opened on a tract of 350 acres. President, Harvey Nathaniel Davis, Ph.D.

STOCKS AND BONDS. See **FINANCIAL REVIEW**.

STOKER. See **BOILERS**; **POWER PLANTS**; **STEAM**.

STONE AGE. See **ANTHROPOLOGY**.

STORMS. See **METEOROLOGY**.

STORY, WILLIAM EDWARD. An American mathematician and educator, died in Worcester, Mass., Apr. 10, 1930. He was born in Boston, Mass., Apr. 29, 1850, and was graduated from Harvard in 1871. He then studied at the universities of Berlin and Leipzig, receiving the Ph.D. degree from the latter institution in 1875. From 1876 to 1889 he was successively assistant and associate professor of mathematics at Johns Hopkins University. In the latter year he was called to the newly-founded Clark University as professor of mathematics, occupying this chair until his resignation in 1921. From 1878 to 1882 he was editor-in-charge of the *American Journal of Mathematics* and later edited the *Mathematical Review*.

STRAITS SETTLEMENTS. A British crown colony in Malaysia, comprising Singapore (with Christmas Island, Cocos Islands, and Labuan), Penang (with Province Wellesley and the Dindings), and Malacca. The Settlements were divided by area and population (1929) as follows: Singapore, 281 square miles and 555,284 inhabitants; Penang, 571 and 342,023; Malacca, 720 and 194,342. Labuan had an area of 28 square miles and a population of 5904 (not included in figures for Singapore). Total area, 1600 square miles; population, 1,097,553, more than half of whom are Chinese. The capital, Singapore (population 259,610 in 1921), ranks seventh in importance among the ports of the world, the volume of trade handled annually approximating \$1,000,000,000. Georgetown (Penang), with a population of 101,180 in

1921, and Malacca, population 21,200, are the chief towns of the two other STRAITS territories.

Governor in 1930, Sir Cecil Clementi, appointed January, 1930. See **CHRISTMAS ISLAND** and **LABUAN**.

STRATIGRAPHY. See **GEOLOGY**.

STRAUS, SIMON WILLIAM. An American banker, died in New York City, Sept. 7, 1930. He was born in Ligonier, Ind., Dec. 23, 1866. In 1884 he entered the banking business with his father as manager of the Chicago branch of the mortgage loan firm of Straus Bros. & Co. He was admitted to partnership in 1888, and on the death of his father in 1894 became senior partner. The firm was reorganized as S. W. Straus & Co. in 1898 and incorporated in Chicago in 1905. Mr. Straus acting as president until 1928 when he became chairman of the board. The New York office was opened in 1912, and branches were established in 40 other cities of the United States. Mr. Straus also founded the Franklin Trust and Savings Bank of Chicago and the Straus National Bank and Trust Companies in New York and Chicago.

STRIKES AND LOCKOUTS. It will be noted, from the following table, that the number of strikes and lockouts in the United States for the year 1930 showed a marked falling off, when compared with those of the preceding year. There is no question that the economic depression was the greatest single influence in bringing about this result. The table presents the strike history of the country for the period January, 1929-June, 1930.

| Month and year | Number of disputes | | Number of workers involved in disputes | | Number of man-days lost during month or year |
|----------------|----------------------------|---------------------------|--|---------------------------|--|
| | Beginning in month or year | In effect at end of month | Beginning in month or year | In effect at end of month | |
| 1927: Total | 734 | .. | 349,434 | ..... | 87,799,394 |
| 1928: Total | 629 | .. | 357,145 | ..... | 31,556,947 |
| 1929: Total | 903 | .. | 230,463 | ..... | 9,975,218 |
| 1930 | | | | | |
| January | 42 | 21 | 8,879 | 5,316 | 182,202 |
| February | 44 | 33 | 37,301 | 6,562 | 436,788 |
| March | 49 | 34 | 15,017 | 5,847 | 289,470 |
| April | 60 | 41 | 5,814 | 5,711 | 180,445 |
| May | 64 | 30 | 9,281 | 4,640 | 192,201 |
| June | 54 | 34 | 13,791 | 8,499 | 150,627 |
| July | 76 | 31 | 14,219 | 5,039 | 148,982 |
| August | 51 | 32 | 15,902 | 7,161 | 145,696 |
| September | 69 | 41 | 15,946 | 13,409 | 144,580 |
| October | 46 | 34 | 10,824 | 15,649 | 336,250 |
| November | 41* | 26 | 5,101 | 8,145 | 215,141 |
| December | 22* | 11 | 4,132 | 6,361 | 279,119 |

* Preliminary figures subject to change.

None of the strikes that took place during the year 1930 involved large groups of workers or was characterized by serious disorders of the kind that have attended industrial disputes in previous years. Below there follows an account of some of the more important strikes and lockouts in the United States:

Garment Workers, Cleveland.—A general strike of organized garment workers in Cleveland began January 7. The union demands included a 40-hour instead of the prevailing 44-hour week, elimination of the sweatshop, guarantee of workers' wages in the shops of contractors, and preference for skilled workers in Cleveland before work was sent out of the city. The total number of workers involved in the walkout was 2500. A preliminary agreement between the striking workers and the association manufacturers was reached January 8 and went into effect January

13. Its most significant provisions were the following: a five-day and forty-two-hour week; the use by inside manufacturers of union contracting shops; the guarantee by inside manufacturers of one week's wages to workers in contracting shops and preference of work to cloak makers and dress-makers in the city of Cleveland before work is to be sent outside of the city.

Dressmakers, New York.—On February 4, in order to eliminate sweatshop conditions in the garment and dressmaking factories of New York City, the International Ladies' Garment Workers' Union called on its 30,000 members, of whom two-thirds are women, to quit work. The conditions for which the strikers were leaving their machines and tables included the following: the five-day and 40-hour week; a minimum scale of wages; the right to the job; the assumption by the jobber of conditions existing in contracting shops; elimination of sweatshop conditions. The strike affected the inside manufacturers, represented by the Affiliated Dress Manufacturers, Inc.; the contractors, represented by the Association of Dress Manufacturers, Inc.; and the jobbers, represented by the Wholesale Dress Manufacturers' Association, Inc. The four bodies involved in the dispute agreed to accept the services of Lieut. Governor Herbert H. Lehman as mediator. An agreement with the inside dress manufacturers was reached on February 10. Under it the union agreed to waive its demands for an unemployment insurance fund for one year; a permanent, impartial chairmanship was set up; a five-day and forty-hour week was agreed upon; Saturday overtime during the busy season was to be permitted at time and a half; the wage scale was to remain unchanged. The difficulties between the jobbers and contractors were settled February 12. By the agreement that was reached the contractors' association consented to give up its claim to jurisdiction over contracting shops outside of New York City while the jobbers pledged themselves to confine their work to members of the contractors' association for a trial period of three months.

Garment Workers, Massachusetts.—On March 13, 2000 workers, affiliated with the International Ladies' Garment Workers' Union in the Boston locals, struck for the creation of an unemployment fund, the setting up of an impartial chairmanship, increases in wages and the use of only decent outside contracting shops in those cases where contractors were being used. The chief demand, however, was for the five-day week and the eight-hour day. On March 24 the strike was over with the signing of agreements covering all the union demands except the wage increase and the creation of the unemployment fund.

Teamsters and Chauffeurs, New York City.—On May 1, 400 teamsters and chauffeurs, handling building materials, struck for an increase in wages of \$1 a day and an extra helper on trucks handling more than 3000 bricks. The strike terminated successfully May 9. On May 5, 700 chauffeurs employed in building operations went on strike, demanding a 55-hour week instead of a working day ranging from 11 to 16 hours and wage increases to \$35 per week. The strike ended on May 31, with the men receiving a wage increase of \$2.50 per week.

Garment Workers, Baltimore.—On July 23 the Ladies' International Garment Workers' Union called out its 2000 members in Baltimore in a strike whose principal demands were the follow-

ing: recognition of the union, elimination of sweatshops, the 40-hour week, the five-day week in two years, a minimum wage scale and the establishment of an arbitration committee. Some one-half of the manufacturers affected immediately came to terms with the union and a three-year contract was signed calling for the following: recognition of the union, a 44-hour week for the first year and a 40-hour week for the third year, and the right of discharge accorded to the employer on the basis of a defined procedure. Other manufacturers soon followed this example and by August 4 the strike was over.

Southern Textile Workers.—At Bessemer City, N. C., on August 18, 550 workers in the plants of the American Cotton Mills went on strike against a proposed general wage increase averaging 20 per cent. The strikers also demanded a reduction in the rent of the company houses. The strike terminated on August 25, with the establishment of the *status quo*. On September 29, some 4000 workers employed in the Riverside and Dan River Cotton Mills, located at Danville, Va., struck to obtain recognition of their union, which had recently become affiliated with the United Textile Workers. The strike was still in progress in December and apparently had been lost by the workers. Reference should be made to the YEAR BOOK of 1929 for a discussion of the labor troubles that were so numerous in the Southern textile areas for that year. At its 1930 convention, the executive council of the American Federation of Labor reported that it was making considerable headway in its organization campaign in these disaffected areas. Headquarters were established at Birmingham, Ala., and a total of 21 organizers was being maintained in the field. Up to September, 1930, 112 local unions had been organized in the various crafts affiliated with the A. F. of L., as well as five central labor unions.

Women's Tailors and Dressmakers, New York City.—On September 25 some 2550 workers, employed in the fashionable shops of New York City, struck for a wage increase of \$3 per week for the tailors and improved working conditions for the unorganized workers. Although the workers met with some success early in the strike the majority of the employers refused to give way with the result that the strike continued for upwards of two months.

CANADA. The accompanying table presents the record of strikes and lockouts in the Dominion for the years 1913 to 1929.

STRIKES AND LOCKOUTS IN CANADA, 1913 TO 1929

| Year | Number of disputes in exist- ence in the year | Begin- ning in the year | Disputes in existence in the year Employers involved | Workers involved | Time loss in working- days |
|------|--|-------------------------------|--|---------------------|----------------------------------|
| 1913 | 113 | 106 | 1,015 | 39,536 | 1,287,678 |
| 1914 | 44 | 40 | 205 | 8,678 | 430,054 |
| 1915 | 43 | 38 | 98 | 9,140 | 106,149 |
| 1916 | 75 | 74 | 271 | 21,157 | 208,277 |
| 1917 | 148 | 141 | 714 | 48,329 | 1,134,970 |
| 1918 | 196 | 191 | 766 | 68,489 | 763,341 |
| 1919 | 298 | 290 | 1,913 | 138,988 | 3,942,189 |
| 1920 | 285 | 272 | 1,278 | 52,150 | 866,754 |
| 1921 | 145 | 138 | 907 | 22,930 | 956,461 |
| 1922 | 85 | 70 | 569 | 41,050 | 1,975,276 |
| 1923 | 91 | 77 | 419 | 32,868 | 768,494 |
| 1924 | 73 | 63 | 415 | 32,494 | 1,770,825 |
| 1925 | 83 | 81 | 510 | 25,796 | 1,743,996 |
| 1926 | 77 | 73 | 598 | 24,142 | 296,811 |
| 1927 | 79 | 72 | 652 | 22,683 | 165,288 |
| 1928 | 101 | 97 | 726 | 18,239 | 238,182 |
| 1929 | 90 | 88 | 243 | 12,924 | 154,936 |

STUDENTS IN UNIVERSITIES AND COLLEGES. See **UNIVERSITIES AND COLLEGES.****STUDY, COURSES OF.** See **EDUCATION IN THE UNITED STATES; UNIVERSITIES AND COLLEGES.**

STUTZ, HARRY C. An American automobile manufacturer, died in Indianapolis, Ind., June 26, 1930. He was born in Ansonia, Ohio, Sept. 12, 1876. His early experience as a mechanic was obtained in a machine shop in Dayton. In 1910 he joined Henry Campbell in forming the Stutz Motor Car Parts Company, and in 1911 organized the Ideal Motor Car Company to manufacture the Stutz car, the two companies being consolidated in 1913 under the name of the Stutz Motor Car Company. He sold his interests in this company in 1919 but later again became associated with Mr. Campbell in the H. C. S. Motor Car Company.

SUBMARINE BOAT. See **NAVAL PROGRESS. SUBWAYS.** See **RAPID TRANSIT.**

SUCCESSION STATES. The designation applied to the three states forming the Little Entente. See **LITTLE ENTENTE.**

SUDAN, ANGLO-EGYPTIAN. A British-controlled territory in the upper Nile region of Africa, extending south from Egypt and Libia to British East Africa and the Belgian Congo; bounded on the east by the Red Sea, Eritrea, and Ethiopia, and on the west by French Equatorial Africa. Area, estimated at 1,008,100 square miles; population in 1928 estimated at 5,483,889. Capital, Khartoum, with 40,760 inhabitants; other cities, Omdurman, 102,648; Khartoum North, with adjacent rural district, 97,628.

In 1929 imports amounted to £E6,856,114 and exports to £E6,526,112. The budget for 1929 was estimated to balance at £E6,451,000 (the Egyptian pound exchanged at \$4.99 in 1928). Railway lines open for traffic in 1929 totaled 2097 miles. Governor-General in 1930, Sir John L. Maffey. See **EGYPT, under History.**

SUEZ CANAL. The preliminary reports for 1930 of the Compagnie Universelle du Canal Maritime de Suez showed a somewhat unusual decline in traffic, the first occurrence of this kind since the revival of traffic in 1922. In 1930 it was estimated that 5761 ships with a net tonnage of 31,608,759 passed through the canal, as compared with 6274 ships with a net tonnage of 33,466,014 in 1929. The movement of merchandise in 1930 was 28,511,000 gross tons; in 1929, 34,516,000 gross tons. Total transit and navigation receipts in 1930 amounted to 1,044,107,000 French francs (French franc equals \$0.0392). The accompanying table gives the final figures for Suez Canal traffic for 1929 and some years earlier:

SUEZ CANAL TRAFFIC

| Year | Transits Number | Net tonnage Tons | Cargo traffic Metric tons | Tolls Gold francs* |
|------|--------------------|---------------------|------------------------------|----------------------------|
| 1929 | 6274 | 33,466,000 | 34,516,000 | 1,115,920,000 ^b |
| 1928 | 6084 | 31,906,000 | 32,622,000 | 221,090,000 |
| 1927 | 5544 | 28,965,000 | 29,524,000 | 208,650,000 |
| 1922 | 4345 | 20,743,245 | 21,860,000 | 162,613,850 |
| 1919 | 3986 | 16,013,802 | 13,973,000 | 136,969,915 |
| 1912 | 5373 | 20,275,120 | 25,444,000 | 132,929,341 |
| 1909 | 4239 | 15,407,527 | 16,924,000 | 117,754,888 |

* One gold franc equals \$0.193.

^b In French francs, each equaling \$0.0392. See **EGYPT under Communications and History.**

SUFFRAGE. See **JAPAN, TURKEY, and SOUTH AFRICA under History.**

SUGAR. The world's sugar production in 1929-1930 as based on estimates published by Willett and Gray was 26,884,442 tons of 2240

pounds comprising 17,651,150 tons of cane sugar and 9,233,292 tons of beet sugar. The yields in long tons of cane sugar for the more important countries were placed as follows: Cuba, 4,671,260 tons; Java, 2,894,000 tons; British India, 2,766,000 tons; Formosa, and Japan, 926,255 tons; Hawaii, 815,000 tons; Porto Rico, 773,310 tons; Philippines, 750,000 tons; Brazil, 600,000 tons; and Australia, 530,483 tons. The estimate for the production of North and South America was 8,963,988 tons, for Asia 7,337,134 tons, for Africa 721,865 tons, and for Australia and Polynesia 618,163 tons. For 1930-31 the same authority estimated sugar production at 28,162,530 tons of which 11,597,100 were cane sugar.

Cane-sugar production in 1930 in the United States, limited to Louisiana, was estimated by the Department of Agriculture at 208,000 short tons, 8000 tons more than in 1929 and the largest since 1922. The acreage of sugar cane increased from 169,000 acres in 1929 to 184,000 acres in 1930. The introduction of disease-resistant varieties during recent years was reviving the industry in Louisiana. The value of the 1930 sugar-cane crop of 3,108,000 tons at \$3.42 per ton, the farm price December 1, was \$10,625,000 and of the 1929 crop of 3,159,000 tons at \$3.81 per ton, \$12,038,000. The production of sugar-cane sirup was estimated at 19,427,000 gallons on an area of 116,000 acres at the rate of 167.5 gallons per acre. The farm price Dec. 1, 1930, was 58.6 cents per gallon, giving a total value of \$11,390,000.

In the United States the Department of Agriculture estimated the production of sugar beets at 9,175,000 tons on an area of 799,000 acres with an average yield of 11.5 tons per acre compared with 7,318,000 tons, 688,000 acres and 10.6 tons, respectively, in 1929. It was forecast that the beet crop of 1930 would make 1,185,000 tons of refined sugar compared with 1,018,000 tons in 1929 and a five-year average of 1,011,000 tons. At the rate of \$7.15 per ton, the farm price December 1, the 1930 tonnage of beets was valued at \$65,561,000. As estimated, Colorado produced 3,299,000 tons of sugar beets, Nebraska 1,132,000 tons, California 771,000 tons, Wyoming 621,000 tons, and Montana 564,000 tons.

The production of maple sugar in the United States in 1930 was estimated at 2,588,000 pounds, procured from 14,421,000 trees at the rate of .18 of a pound per tree. The maple-sirup production was placed at 3,977,000 gallons from the same number of trees, the average rate per tree being .28 of a gallon. See **UNITED STATES under Congress.**

SUICIDE. See **CRIME.**

SULPHUR. During 1930 production in the United States, Sicily, and continental Italy, the world's three leading producers, increased and the total output for the world was estimated at about 2,900,000 tons, or an increase of 100,000 tons over 1929. The shipments were estimated at 2,450,000 tons, as compared with 2,800,000 tons in the previous year. In the United States production was active and totaled 2,558,981 long tons, as against 2,362,389 tons mined in 1929.

The exports of sulphur from the U. S. in 1930 totaled 598,220 tons valued at \$12,525,718, as against 855,183 tons valued at \$17,628,813 in 1929. Sicily increased its production in 1930 with an estimated output of 245,000 tons, as against 237,000 tons in 1929, while continental Italy produced about 88,000 tons in 1930, with shipments about 75,000 tons, as compared with 65,000 tons

in 1929. In Japan a decrease in production and shipments was noted over the previous year, while Chile was estimated to have produced 10,000 tons, and Spain 70,000 tons. The United States was in a position to supply as much sulphur as was required, and at the end of 1930 had 2,487,000 tons available stock, a net gain of 569,000 tons for the year.

SUMATRA. See DUTCH EAST INDIES.

SUN. See ASTRONOMY.

SUNDAY-SCHOOL UNION, AMERICAN. A volunteer association composed of members of different Protestant denominations, whose object is to establish and maintain Sunday schools and to publish and circulate moral and religious publications. In the year ending Feb. 28, 1930, 746 schools were organized and 554 schools reorganized, with a total of 4104 teachers and 38,676 pupils. There were 202 young people's societies established; 120 preaching stations opened; 17 churches of various denominations organized; and 6 churches built. The income for the year ending Feb. 28, 1930, was \$588,877; expenditures amounted to \$580,163. The most important of the publications is the *Sunday School World*. The officers in 1930 were: President, E. Clarence Miller; vice presidents, James M. Snyder and Robert L. Latimer; treasurer and recording secretary, John H. Talley; secretary of missions, Elliott D. Parkhill; editor of publications, Arthur M. Baker. National headquarters are at 1816 Chestnut Street, Philadelphia.

SUPERPHOSPHATE. See FERTILIZERS.

SURETY INSURANCE. See INSURANCE.

SURGEONS, AMERICAN COLLEGE OF. A college or guild (not a teaching institution), organized in 1913 by some 500 surgeons of North America representing every branch of surgery. The membership in 1930 was about 10,000 and included prominent surgeons of the United States, Canada, and the Latin-American countries.

The 1930 congress was held in Philadelphia October 13-17. The official journal of the college is *Surgery, Gynecology and Obstetrics*. The officers for 1930-31 were: President, Dr. C. Jeff Miller, New Orleans; president-elect, Dr. Allen B. Kanavel, Chicago; vice presidents, Dr. Eldridge L. Eliason, Philadelphia, and Dr. Ross Millar, Ottawa; treasurer, Dr. Frederic A. Besley, Waukegan, Ill. Dr. Franklin H. Martin was director general and Dr. Malcolm T. MacEachern and Dr. Bowman C. Crowell, associate directors. Headquarters are at 40 East Erie Street, Chicago.

SURGERY, PROGRESS OF. Leading developments in surgery during the year 1930 are summarized in the following paragraphs dealing with topics selected as of unusual and general significance.

ANÆSTHESIA. Perhaps the most important advance in anæsthesia in the United States during the year was the increased use of Avertin, a tribrom alcohol extensively employed in Germany and on the Continent since 1928. This drug, first prepared by Willstätter and Duisberg in 1927, soon gained wide acceptance, and has been used now in approximately 400,000 cases. In the December issue of the *Archives of Surgery*, Waters and Muehlberger of the University of Wisconsin reviewed the extensive literature which had accumulated on the use of this anæsthetic and reported the results of their own clinical and pharmacological studies. They found that Avertin produced a rapid, deep anæsthesia in animals, that the margin of safety was as great as with

ether and other similar drugs, that recovery was usually quite uneventful, and that there was no evidence of damage to the liver or kidneys by ordinary doses.

Clinically, the drug is given by instillation in the rectum. As a rule a 3 per cent solution containing 0.1 gram of Avertin per kilogram of body weight is used. The patient immediately becomes drowsy, but feels no alarm or fear, and is asleep in seven minutes. In twenty minutes the anæsthesia has reached its maximum depth and is maintained at this level for several hours. In the United States full anæsthetic doses are not given, and Avertin is supplemented with small amounts of nitrous-oxide or ether given by inhalation. By this technique a safe, so-called "basal" anæsthesia is obtained which can be varied in depth as required by the addition of inhalation anæsthetics. As a matter of fact, for ordinary operations only very slight additional anæsthesia is required. After a period of from two to five or six hours the patient slowly awakes. There is no excitement and practically never any nausea or vomiting. The patient has no memory of what has occurred and feels as if he were awakening from a sleep. Usually he soon falls asleep again and may not awake for several hours more.

OSTEOMYELITIS. Dr. W. S. Baer of the Johns Hopkins Medical School introduced a new method of treatment for osteomyelitis which promised to be of great value. This serious disease, an inflammation of the bone and marrow, is quite common in childhood and too frequently results in a chronic, recurring infection. It was frequently observed during the World War that soldiers, who had been wounded and had lain on the field for some hours before being brought to relief stations, had their wounds infested with maggots. Surprisingly enough, the wounds that did contain maggots were often quite clean and free from pus. Dr. Baer conceived the idea of applying this observation to the treatment of the infected, purulent bone cavities found in osteomyelitis. In his studies he found that the maggots acted as scavengers, that they would feed on necrotic tissue but refuse to ingest living tissue.

Maggots which have been raised from sterilized eggs (to prevent contamination with the germs of tetanus) are placed in the infected bone cavity following operation, and are prevented from escaping by covering the cavity with a small, tightly fitting box. After a few days they die and are removed by irrigation. More maggots are placed in the cavity until all the dead tissue and products of infection have been removed. They seem to produce no harmful effect on the patient and are apparently very effective in cleaning up the infected tissue.

EARLY DIAGNOSIS OF PREGNANCY BY HORMONE TESTS. Need has long been felt for an accurate diagnostic test for early pregnancy, and indeed many tests have been proposed, none of which have proved to be of much value. Recent work on the female sex hormone and on a hormone secreted by the anterior part of the pituitary gland has furnished three methods for diagnosis which seem to be fairly accurate. Mazer and Hoffman reported the interesting results of their use of these tests (*Jr. Am. Med. Assn.*, Jan. 3, 1931).

Investigators found that there is present in the blood and in the urine of pregnant women a substance called "female sex hormone" which produces the phenomena of "heat" or oestrus when injected into animals. Further, in 1927, Zondek

and Ascheim in Europe and Smith and Engle in the United States found that an extract of the anterior lobe of the pituitary gland (a small gland of internal secretion located at the base of the brain) caused maturation of the ovaries when injected into immature white mice. It was already known that in pregnancy there is a marked enlargement of the anterior lobe of the pituitary, and further study showed that the urine of pregnant women contained fairly large quantities of this anterior pituitary hormone.

The first test resulting from these studies, the so-called female sex hormone test, is carried out as follows: small quantities of the patient's urine are injected into female mice which have been previously castrated. If appreciable quantities of the hormone are present, the mouse shows oestrus, and this can be accurately determined by microscopic examinations of vaginal smears. This test was positive in 75 per cent of the women who later proved to be pregnant and was falsely positive in only 4 per cent.

The second test (Ascheim-Zondek) depends upon the presence of a demonstrable quantity of anterior pituitary hormone in the urine of pregnant women. Repeated small injections of urine are made into immature white mice and after four days the animals are killed. The test is positive if the ovaries of the mice are found on examination to show the changes of maturation and ovulation. In Mazer's series 73 per cent of the pregnant women gave a positive test, but the test was also positive in 16 of 64 women who were not pregnant. This was probably due to the fact that detectable quantities of anterior pituitary hormone are sometimes found in the urine of women who have marked ovarian insufficiency.

The third test (Siddall) depends upon the development of the lower genital tract of immature mice following the injection of blood serum of the pregnant woman, brought about probably by the action of both the female sex hormone and the anterior pituitary hormone. The test is considered positive when the weight of the uterus and ovaries of the mouse is greater than $\frac{1}{400}$ of the animal's weight. In the series reported, the test was positive in 76 per cent of the women later known to be pregnant, but was erroneous in 17 per cent.

DIAGNOSIS OF DISEASES OF THE URINARY TRACT. In few fields of medicine is diagnosis more exact than in urology. This is largely due to the fact that not only may the lower part of the urinary tract be seen by cystoscopy, but the ureter and pelvis of the kidney may be easily injected with an opaque material and their outline accurately shown in the X-ray. Urologists have long wished for a means of visualizing the urinary tract by means of a substance injected intravenously in order that its function might be better studied and in order that the patient might be saved the burden of cystoscopy. Researches of Swick and Binz apparently offer a method for accomplishing this. In 1923 Rowntree and his co-workers at the Mayo Clinic were able to obtain fairly satisfactory Röntgenograms of the kidneys by injecting 10 per cent sodium iodide intravenously. This was given up because of the toxicity of the drug and because visualization was not uniformly satisfactory. Swick of New York, working in Germany in the clinics of Lichtwitz in Altona and von Lichtenberg in Berlin, developed a method of intravenous urography which promised to be of great value. He used a series

of iodine containing pyridine compounds, synthesized by Binz, and finally found that one of them (subsequently named Uroselectan) was secreted differentially by the kidneys, was opaque to the X-ray, gave a fairly uniformly accurate delineation of the urinary tract, and most important of all was practically non-toxic in the doses used. This work was reported in Berlin in 1929 and again in the *Jr. Am. Med. Assn.*, Nov. 8, 1930.

GALL BLADDER DISEASE. Moore of the Barnes Hospital in St. Louis reported his experience with cholecystography (demonstration of the gall bladder outline by X-ray) in the seven years since it was first devised by the Washington University Medical School group headed by Dr. Evarts Graham (December, 1923). This method is based on the fact that certain dyes, which are opaque to the X-ray, are excreted by the liver following intravenous or oral administration, are then concentrated in the gall bladder, and thus serve to visualize it. The dye most commonly used is phenol-tetraiodo-phthalein. If the function of the gall bladder is normal, the dye is concentrated and the shadow of the gall bladder is uniformly dense. If the gall bladder is diseased, this concentration fails to take place and the shadow is either absent or of diminished density. Gall stones frequently show as small, round, less opaque areas in the uniform gall bladder shadow.

Cholecystography has been widely used since its discovery in 1923, and has proved to be an exceedingly valuable agent in the diagnosis of gall bladder disease. It may be properly said that it has revolutionized diagnosis in this particular field.

Moore reported the results of 1956 examinations. In the cases in which the diagnosis could be verified at operation or necropsy, the test proved to be correct in 98.77 per cent. Most of these examinations were made after the intravenous administration of the drug, a method not used in some clinics because of fear of the dye's exerting a toxic effect. Moore stated that there were no deaths and no serious reactions in his series. Twenty per cent of the patients had very mild reactions and 14 per cent had more persistent discomfort and occasional nausea and vomiting, but no alarm was felt concerning them. (*Jr. Am. Med. Assn.*, Dec, 27, 1930.)

CANCER. In the *Annals of Surgery* for January, 1931, there appeared a comprehensive review of present knowledge concerning cancer, to which contributions were made by the leading scientists and surgeons of American and of Europe. The volume was in honor of Dr. James Ewing of the Cornell Medical School in New York, probably the chief student of malignant disease in America. The subject of cancer is considered under four headings: Cancer in its general relations, cancer research, regional cancer, and radium and Röntgen ray therapy of cancer. Among the American contributors were W. J. Mayo, Finney, Crile, Lewis, Bloodgood, Graham and Coley, and among the Europeans Gordon-Watson, Sampson-Handley, and Sir G. Lenthal Cheate of England, Wintz and Erlanger of Germany, and Bastianelli of Italy.

Practically, the chief problem that presents itself is still that of early diagnosis. The cause of cancer is as yet unknown and no specific treatment has been developed for it; but in spite of this fact, early cancer, as a rule, may be cured by surgery, or by both radiotherapy and surgery.

A recent report from the University of Pennsylvania Medical School is of interest. Investigators there found that extracts of the cortex of the supra-renal gland were of no value in the prevention or treatment of spontaneous cancers in mice—a form of cancer which is in many respects identical with that found in man. Their work was prompted by the fact that Coffee and Humber of San Francisco had treated a great number of sufferers from cancer with such an extract and believed it of some value. This controlled laboratory experiment failed to furnish an experimental basis for such treatment, and verified the opinion of leading students of cancer that it was probably of little efficacy (Itami and McDonald, *Science*, October, 1930).

RELIEF OF PAIN IN ARTERIAL DISEASES OF THE EXTREMITIES. Certain obliterative vascular diseases of the lower extremities, notably thromboangiitis obliterans (Buerger's Disease) and arteriosclerotic gangrene, are accompanied by intractable pain as well as by ulceration and necrosis of tissue. This factor of pain is so important that legs are often sacrificed by the surgeon in order to obtain for the patient relief from suffering, even though amputation is not rendered necessary by actual gangrene. Smithwick and White of the Massachusetts General Hospital made a valuable contribution to the treatment of painful circulatory diseases of this type (*Surgery, Gynecology and Obstetrics*, September, 1930). They described a method of blocking the sensory nerves to the lower leg and foot by alcohol injection. See **MEDICINE, PROGRESS IN.**

SURINAM. See DUTCH GUIANA.

SVALBARD (SPITZBERGEN). An Arctic archipelago under Norwegian sovereignty, situated 360 miles north of Norway between 10 and 35 degrees east longitude and 74 and 81 degrees north latitude. Area, about 25,000 square miles; population, 749 in winter of 1927-28; administrative headquarters, Green Harbor. The chief islands are West Spitzbergen, Northeast Land, and Barents Island. Coal deposits on West Spitzbergen, estimated at 8,000,000,000 tons, are mined from six camps open the year round. The largest camp is Longyearbyen, with 490 inhabitants in the winter of 1927-28. Coal exports in the summer of 1929 totaled 236,000 tons.

SVERDRUP, OTTO. A Norwegian Arctic explorer, died in Copenhagen, Denmark, Nov. 26, 1930. He was born in Bindal, Helgeland, Oct. 31, 1854, and followed the sea at the age of 17. In 1888 he joined the expedition which Fridtjof Nansen (q.v.) conducted across the ice-capped interior of Greenland. In 1893 he started with Nansen for the North Pole as commander of the *Fram*, which had been built under his supervision. When Nansen, in 1895, left the *Fram* in an attempt to reach the North Pole by dog sledge, Sverdrup remained with the ship, attaining during the long Polar drift a point only a few miles south of Nansen's farthest, that of 85° 57' N. In August of the following year he brought the ship safe through the ice to Troms, Norway. During 1898-1902 Sverdrup led another expedition in the *Fram* in an attempt to circumnavigate Greenland. Unable to pass north of Cape Sabine, Smith Sound, he transferred his field of operations the second summer to Jones Sound, where his explorations were notable in extent. They included Heiberg and Ringnes lands, the most westerly coasts of Grinnell Land, and regions near Greely Fiord. See **SVERDRUP ISLANDS.**

SVERDRUP ISLANDS, svér'dróöp. A group of islands in the Canadian Arctic, west of Ellesmere Land, the Canadian title to which was formally recognized by the Government of Norway in 1930. The Sverdrup group was discovered and explored in 1898-1902 by Captain Otto Sverdrup (q.v.), leader of a Norwegian Polar expedition. The Canadian Government, in return for the withdrawal of Norway's claims, paid Captain Sverdrup \$67,000 and promised to accord favorable treatment to Norwegian hunters and fishermen in the territory.

SWARTHMORE COLLEGE. A nonsectarian institution for the higher education of men and women in Swarthmore, Pa.; founded in 1864 by the Society of Friends. The 1930 enrollment was 590 full-time students. The teaching staff numbered 65. During 1930 a two-year endowment campaign was completed, by which \$4,000,000 was added to the educational endowment fund, bringing the total endowment to \$7,500,000. The library contained 68,000 volumes. President, Frank Aydelotte, LL.D.

SWEDEN. A constitutional monarchy occupying the eastern and larger part of the Scandinavian peninsula. Capital, Stockholm; reigning sovereign in 1930, King Gustaf V.

AREA AND POPULATION. With a gross area of 173,174 square miles (land area, 158,510 square miles), Sweden had a population at the census of 1930 of 6,120,080, as compared with 5,904,489 in 1920. For the five years 1925 to 1929, births averaged 99,274 annually and deaths 73,445, the annual excess of births being 25,829. During the same period, immigrants averaged 5613 annually and emigrants 12,461. Stockholm, the largest city, had a population of 509,097 at the end of 1930, as against 419,449 in 1920. The estimated population of the other leading cities in 1929 was: Göteborg, 241,561; Malmö, 119,778; Norrköping, 61,270; and Hälsingborg, 55,299.

EDUCATION. Of a total of 877,881 children between the school ages of 7 to 14 years in 1928, 743,048 were attending school. In addition, there were 28,120 students in Government high schools (lyceums), many in private and technical schools, and 7712 in the four universities.

PRODUCTION. Approximately one-half of the population is engaged in agriculture and the remainder in commerce and industry. Arable land in 1928 totaled 9,185,000 acres, or 9.1 per cent of the land area; permanent meadows, 2,280,000 acres; forests and pasture, 60,749,000 acres. The total value of field crops produced in 1929 was \$284,963,000 (\$305,166,000 in 1928) distributed in part as follows: Sown hay, \$84,427,000; oats, \$41,299,000; potatoes \$29,613,000; wheat, \$24,242,000; rye, 17,339,000. Production, by quantity, of the leading crops in 1929 was: Wheat, 19,031,000 bushels; rye, 16,232,000 bushels; barley, 11,485,000 bushels; oats, 88,239,000 bushels; mixed grain, 516,000 metric tons; potatoes, 70,843,000 bushels; sugar beets, 767,000 metric tons; beet sugar, 121,000 metric tons; hay, 4,822,000 metric tons; forage roots, 3,012,000 metric tons. Live-stock in 1928 included 2,898,000 cattle, 1,369,000 swine, 806,000 sheep, and 628,000 horses.

Industrial activity slumped somewhat in 1930 in sympathy with the world economic depression, but in general Sweden was much less affected than the other countries of Europe. Mineral and metallurgical production in metric tons in 1929 was: Iron ore, 11,467,600; coal, 395,000; pig iron, 489,700; steel ingots and castings, 729,900; zinc ore,

72,300; manganese ore, 14,600. Ships, machinery, wood pulp and paper, lumber, and matches, are the principal manufactured products. New ships launched in 1930 aggregated 132,000 gross tons, as against 107,000 gross tons in 1929. The total production of manufactures and semi-manufactures in 1929 was valued at 5,677,000,000 kronor, or 9 per cent more than in 1928 (1 krona equals \$0.2680 at par).

COMMERCE. In spite of the decline in general price levels, exports increased 15.1 per cent in value in 1929, as compared with 1928, while imports rose 3.7 per cent. The respective totals were: Exports, \$485,954,000 in 1929 and \$422,010,000 in 1928; imports, \$474,784,000 in 1929 and \$457,732,000 in 1928. Germany was the leading source of supply in 1929, furnishing 30.8 per cent of all imports, and the United Kingdom was the chief market, taking 25.2 per cent of all exports. In 1930, both imports and exports decreased noticeably. Preliminary figures showed imports of 1,647,890,000 kronor (\$422,458,000) and exports of 1,545,220,000 kronor (\$414,891,000) in 1930.

FINANCE. Actual returns for the fiscal year ended June 30, 1929, showed ordinary receipts of 732,416,000 kronor (\$196,287,000) and ordinary expenditures of 701,243,000 kronor (\$187,933,000). The net surplus of 16,700,000 kronor was automatically transferred to the treasury reserve fund. The state-operated railways yielded a profit of 29,189,000 kronor and the administration of posts, telegraphs, and telephones a profit of 24,200,000 kronor. In the budget for 1929-30, ordinary receipts were estimated at 740,228,000 kronor and ordinary expenditures at 689,285,000 kronor. Preliminary returns indicated an actual net surplus for the year approximately the same as in 1928-29. The 1930-31 budget, including ordinary and extraordinary items, balanced at 813,367,200 kronor. The national debt on Dec. 31, 1930, stood at 1,805,000,000 kronor, an increase of 6,000,000 kronor during the year. More than 80 per cent of the debt was held internally.

COMMUNICATIONS. At the beginning of 1930, there were 10,391 miles of railway line, of which 4028 miles were state-owned. Gross revenues of the merchant marine in 1929 were estimated at 319,604,212 kronor (290,232,047 kronor in 1928). In 1928, 29,992 vessels of 15,894,000 net registered tons entered Swedish ports and 30,049 vessels of 15,989,000 tons cleared.

GOVERNMENT. Executive power is vested in the King, who acts through a responsible ministry known as the Council of State, at the head of which is the Minister of State, or Premier. Legislative power is in the Diet (Riksdag) of two chambers.

HISTORY. A distinct swing to the Left among the Swedish people in 1930 caused increasing dissatisfaction with the Lindman Cabinet's conservative attitude toward tariff protection, religious instruction in the schools, disarmament, social reform, and labor legislation. A long series of rebuffs administered the Government in the Riksdag culminated May 31 in the defeat in both Chambers of its proposals for increased agricultural imports duties. The Cabinet accordingly resigned on June 2.

A new Ministry was formed June 7 by Carl Gustaf Ekman, Director of the Public Debt and leader of the People's party. A former stone-cutter and probably the outstanding political figure in Sweden, Ekman had been Premier once before. He failed in his effort to secure a broad

parliamentary basis for his Ministry. Of the 12 members, but five were members of the Riksdag. He controlled outright only the 28 votes of the People's party. The party, however, held the balance of power between the Right and the Left parties and was thus normally assured of a majority vote upon any measure it supported. In outlining his programme before the Riksdag June 7, Premier Ekman said that the questions of national defense, tax reforms, and social legislation would be disposed of as soon as possible. The Riksdag adjourned for the summer soon after he assumed office. On October 25, the Government inaugurated a survey of the national defense problem with the appointment of a commission headed by Per Albin Hansson, Social Democratic leader and former Minister of National Defense. The primary question dividing the Left ranks on this issue was whether the problem should be attacked in conjunction with the other Scandinavian countries and possibly the League of Nations or whether Sweden should follow Denmark's example and disarm without regard to the action of other countries.

The September elections, regarded as a preliminary skirmish in the campaign leading up to the election of a new Lower Chamber of the Riksdag in 1932, confirmed the drift toward the Left evidenced in earlier political developments of the year. Although the Liberal parties of the Left Centre, headed by Premier Ekman, sustained the heaviest losses (39 seats), the Social Democrats gained 30, as against a gain of 19 for the Agricultural Union, and three for the Conservatives. One faction of Communists lost 11 seats, the other gaining five.

Queen Victoria of Sweden (q.v.) died in Rome Apr. 4, 1930. See ICELAND and DENMARK under *History*.

SWEDENBORGIANS. See NEW JERUSALEM, CHURCH OF THE.

SWEDISH LITERATURE. See SCANDINAVIAN LITERATURE.

SWETE, E. LYALL. An English actor and producer, died in London, Feb. 19, 1930. Born at Wrington, Somersetshire, July 25, 1865, he was educated at Trinity College, Stratford-on-Avon, and at the Worcester Cathedral School. His notable earlier performances included the rôles of Sir Daniel Ridgley in Pinero's *His House in Order* and the Earl of Warwick in Shaw's *Saint Joan*. He was also a producer of plays. *The Blue Bird* was staged by him at the Haymarket Theatre in 1909 and *Chu-Chin-Chow* at the Manhattan Opera House (New York) in 1917. From 1917 to 1921, he was in New York City, where he was both actor and producer. On his return to England, he produced plays at the West End theatres.

SWIMMING. Eighty American and nearly that many world's swimming marks were shattered by American swimmers during 1930 in one of the most brilliant seasons the sport has experienced. Of the 80 new National Amateur Athletic Union records established, 26 were for men and 54 for women. Leading the assault on previous records were Miss Helene Madison, 17-year-old Seattle schoolgirl; Miss Eleanor Holm, 10 years old, of the New York Women's Swimming Association; and Clarence Crabbe, of Los Angeles.

Miss Madison alone established 26 new records for women in free-style swimming. Her time, in 75-foot pools, for 100 yards was 59 seconds; for 220 yards, 2:35. In 110-yard tanks, she lowered

the 440-yard record to 5:39½; the 880-yard mark to 11:41½; and the 1-mile record to 24:34½. Fifteen new records in back stroke and medley events, were set by Miss Holm, while Crabbe lowered four free-style marks, including that for the mile, which he covered in 21:27, and for the half-mile, covered in 10:20¼. Other important records were broken by Raymond Ruddy, who set a new free-style indoor 440-yard mark of 4:55½.

Ruddy won the men's outdoor long-distance title, and Lisa Lindstrom, of the New York W. S. A., the women's title in the same event, while team titles were garnered by the New York A. C. and the New York W. S. A., respectively. The A. A. U. fancy diving championships went to Harold Smith and Georgia Coleman of the Los Angeles A. C.

SWINE. See LIVESTOCK.

SWINTON, ALAN ARCHIBALD CAMPBELL. A Scottish engineer, died in London, Feb. 20, 1930. He was born in Scotland, Oct. 18, 1863, and was educated in Scotland and at Havre, France. A shadow picture of the bones in his hand which he made in 1896 was said to be the first photograph taken by means of Röntgen rays in Great Britain. In 1898 he showed experiments with cathode rays and X-rays at the Royal Institution of Great Britain. After 1904, he gave up his work as electrical contractor and became exclusively a consulting engineer, at the same time doing research work in radio. He was also associated with the development of the Parson's turbine.

SWITZERLAND. A federated republic in the centre of Europe, bounded by Germany on the north, France on the west, Italy on the south, and Austria on the east. Capital, Berne.

AREA AND POPULATION. The area of Switzerland is 15,940 square miles; population, according to the census of 1920, 3,880,320; estimated in 1929, 4,052,200. In 1929 the estimated population of the principal cities was: Zurich, 232,520; Basel, 147,425; Geneva, 130,200; Berne, 111,370. Births in 1929 totaled 69,006; deaths, 50,438; marriages 31,238. German is the language of 70.9 per cent of the people, French of 21.2 per cent, Italian of 6.2 per cent, and Romansch of 1.1 per cent.

EDUCATION. For the school year 1928-29 there were 4376 primary schools, with 472,246 pupils and 16,263 teachers; 618 secondary schools, with 57,655 pupils and 3190 teachers; and 210 higher secondary schools, with 19,523 students and 2060 teachers. The seven universities had 6647 students for the winter semester of 1929-30.

PRODUCTION. The arable land aggregates about 1,250,000 acres and is divided among some 212,290 peasant proprietors. Of a total working population of 1,950,000, 26 per cent are engaged in agriculture and 44 per cent in industry. Forest land totaled 2,315,482 acres; grass land, 3,025,000 acres; and pasturage, about 2,000,000 acres. Dairying and cattle raising are the principal agricultural occupations.

Violent storms during July and August, 1930, damaged or destroyed a considerable part of the wheat, corn, potato, and fruit crops, with the result that prices of agricultural products mounted from 20 to 40 per cent. The value of agricultural production in 1930 was placed at 1,385,000,000 francs, as against 1,479,000,000 francs in 1929.

Mining in Switzerland is confined to the production of salt, iron ore, and manganese ore. Industries flourish, there being 8253 factories in operation in 1928. Swiss watchmakers produce about 90 per cent of the world output and export 95 per

cent of their production. Machinery, electrical apparatus, textiles, chemicals, and dairy products are other leading industrial lines. Due to complete reorganization of the industrial structure, Swiss manufacturers in 1929 reported the most satisfactory year since the depression of 1921.

COMMERCE. Total imports in 1929 amounted to 2,783,848,000 francs and exports to 2,134,436,000 francs, leaving a surplus of imports of 649,412,000 francs, as compared with an import surplus of 539,500,000 francs in 1928 (1 franc exchanged at \$0.1027 in 1929). The balance of trade is chronically unfavorable, the excess of imports being ordinarily offset by tourist expenditures, exports of electrical power, and heavy foreign investments. American tourists in Switzerland are estimated to expend between \$8,000,000 and \$10,000,000 annually. In 1930, Swiss imports totaled 2,664,000,000 francs and exports 1,768,000,000 francs, leaving an unfavorable balance of 896,000,000 francs.

Germany, France, and the United States, in the order named, were the leading customers and sources of supply in 1929.

FINANCES. In the federal budget for 1930, revenues were estimated at 383,000,000 francs and expenditures at 382,780,000 francs, the estimated surplus being 220,000 francs. Actual receipts in 1929 were 395,956,833 francs and actual expenditures, 371,966,066 francs, leaving a surplus of 23,990,767 francs. The budget estimates for 1929 were lower in all respects than the actual returns, receipts being calculated at 352,800,000 francs, expenditures at 350,925,000 francs, and the surplus at 1,875,000 francs. The national debt on Jan. 1, 1930, including that of the federal railway system, totaled 4,901,729,000 francs, as compared with 4,952,596,000 francs on the same date in 1929.

COMMUNICATIONS. State railway lines, excluding tramways and funiculars, had a length on Jan. 1, 1929, of 3367 miles, of which 1046 miles were electrified.

GOVERNMENT. Both executive and legislative power are vested in the Parliament of two chambers. The Federal Assembly delegates the chief executive authority to the Federal Council, whose seven members are elected for three years. The chief magistrates are the President of the Confederation and the Vice President of the Council, and are elected by the Federal Assembly for one year. President in 1930, Dr. Jean Marie Musy.

HISTORY. Enactment of the Hawley-Smoot tariff by the United States Congress during 1930 aroused widespread protest in Switzerland, which exported a considerable part of its manufactured products to America. Preliminary returns for 1930 showed a decline of 23 per cent in imports from the United States, as compared with 1929, and a decrease of 32 per cent in exports to the United States.

As a result of a referendum held April 7, the Government was empowered to raise taxes on strong liquors and to take over and operate all private stills, the increased income being allotted to social reform and old-age pensions. Dr. Henri Häberlin, chief of the federal Department of Justice and Police, was elected President of Switzerland for 1931 on Dec. 11, 1930.

SYMONS, (GEORGE) GARDNER. An American painter, died in Hillside, N. J., Jan. 12, 1930. He was born in Chicago, Ill., in 1861 and obtained his art education at the Art Institute of Chicago,

studying later in Paris, London, and Munich. He was best known for his winter landscapes and marines. He was represented in the permanent collections of practically all of the leading art museums in the United States. Among his outstanding paintings are: "The Opalescent River," in the Metropolitan Museum of Art, New York City; "Snow Clouds," in the Corcoran Art Gallery, Washington; "Sorrow," in the Cincinnati Art Museum; "Snow-Clad Fields in the Morning Light," in the Toledo Art Museum; "The Top of the Hill and Beyond" and "The Winter Sun," in the Art Institute of Chicago; and "Through Snow-Clad Hills and Valley," in the City Art Museum, St. Louis.

SYMPHONY ORCHESTRA. See MUSIC.

SYRACUSE UNIVERSITY. A nonsectarian institution of higher learning for men and women in Syracuse, N. Y.; founded in 1870. The 1930 autumn enrollment was 5317; the extension school enrollment was 1592; and the summer session enrollment was 1903. The faculty numbered about 525 for the year 1929-30. The productive funds of the university amounted to \$3,648,821, while the income for the year was \$1,916,249. The library contained 195,220 volumes and more than 75,000 pamphlets. Chancellor, Charles Wesley Flint, D.D., LL.D.

SYRIA. A mandated territory of France in western Asia, bounded by the Mediterranean on the west, Palestine on the south, Iraq on the east, and Turkey on the north. The total area is about 60,000 square miles, with a population in 1929 of 2,831,622, divided administratively as follows: Republic of Syria (population, 1,696,638), Republic of Lebanon (796,284), Alawiyya (286,920), and Jebel Druze (51,780). The population is mainly of Arabic origin. Arabic is the chief language and about 1,514,755 are Moslems in religion. The principal towns are Damascus, the capital of the Syrian Republic, with 193,912 inhabitants; Aleppo, 177,313; Beirut, capital of Lebanon, 134,655; and Homs, 52,792.

PRODUCTION, ETC. Agriculture and cattle breeding are the main occupations, the total area under crops approximating 7719 square miles. Wheat, barley, maize, olives, silk cocoons, cotton, and sesame are the leading crops.

Imports during 1929 were valued at 72,998,400 Syrian pounds and exports at 25,506,080 (1 Syrian pound equals about \$0.7840).

Revenues in 1929 were reported at 21,905,200 and expenditures at 18,111,000 Syrian pounds. Vessels entering the ports in 1928 numbered 3777 of 1,923,593 tons. In 1927 there were 492 miles of railway and 2240 miles of macadam highways. A weekly air service between Beirut and Bagdad was established in January, 1930.

GOVERNMENT. Executive power is vested in the French High Commissioner, although the five territories exercise a certain amount of autonomy. High Commissioner in 1930, Henri Ponsot.

HISTORY. The impasse reached in February, 1929, between the French High Commissioner and the Syrian Nationalists over the form of the proposed new Constitution was ended on May 22, 1930, when the High Commissioner promulgated a new statute providing for the establishment of a republic with a Parliament elected for four years. The President, who must always be a Moslem, was given the right to adjourn and dissolve Parliament under specified conditions.

Under the compromise finally reached the French consented to accept the Constitution in the form

desired by the Nationalists, which gave the republic powers equivalent to those of an independent state, in return for the addition of a final article reserving to France the control of foreign relations and other powers as long as she continued to exercise the mandate. The new republic included all the territory under French mandate with the exception of the Republic of Greater Lebanon, which was granted a Constitution in 1926. Continuation of the largely autonomous administrations in territories of the Alawiyya, of the Jebel Druze, and in the Turkish-speaking enclave of Alexandretta was guaranteed.

In Lebanon, economies introduced by the Cabinet headed by M. Emile Eddeh, and particularly the closing of Moslem schools, orphanages, and hospitals, resulted in the resignation of the Cabinet on March 25, 1930. A new Ministry was formed by Edib Pasha, a Maronite, the first Prime Minister of Lebanon and a former Egyptian Treasury official. Emile Eddeh's administration was characterized by increasing disregard of the Lebanese Parliament, which was reported wholly engrossed in partisan bickerings. Suppression of the parliamentary régime was threatened.

TACNA-ARICA. See CHILE, under *History*.
TADZHIKISTAN, or TADZHIK SOCIALIST SOVIET REPUBLIC. See SOVIET CENTRAL ASIA.

TAFT, WILLIAM HOWARD. Former President of the United States and former Chief Justice of the U. S. Supreme Court, died in Washington, D. C., Mar. 8, 1930. He was born in Cincinnati, Ohio, Sept. 15, 1857, and was graduated from Yale University in 1878 and from the Cincinnati Law School in 1880. Admitted to the Ohio bar in 1880, he was for a year law reporter for the Cincinnati *Times* and the *Commercial* before entering upon actual law practice. During 1881-83 he was assistant prosecuting attorney for Hamilton Co., Ohio, after which he practiced in Cincinnati until 1887, serving for the last two years of that time as assistant county solicitor for Hamilton Co. He was judge of the Superior Court of Ohio during 1887-90. With this background of legal and judicial experience, Mr. Taft entered upon his national service with an appointment to the office of Solicitor-General of the United States in 1890. From 1892 to 1900, he was United States circuit judge for the Sixth Circuit, a part of which time (1896-1900) he was also professor and dean in the law department of the University of Cincinnati. In 1900 he was appointed president of the United States Philippine Commission and in 1901 became the first civil Governor General of the Philippine Islands. He remained Governor General until 1904, organizing the government and doing much toward promoting a sympathetic understanding between the Filipinos and the people of the United States. In 1902 he was sent to Rome by President Roosevelt to confer with Pope Leo XIII in regard to the purchase of the agricultural lands of the religious orders in the Philippine Islands. This accomplished, he secured from Congress an appropriation of \$7,239,000 for the purchase and then sold the lands to the tenants and inhabitants on easy terms.

In 1904 he was appointed Secretary of War in President Roosevelt's cabinet. Sent by the President to Cuba to adjust an insurrection there in 1906, he acted for a short time as governor. The following years, he visited Panama, Cuba, Porto Rico, and, later, Japan, the Philippine Islands, and Russia. As Secretary of War, Mr. Taft was both a political adviser and close personal friend

of President Roosevelt, who in 1908, designated Mr. Taft as his successor in the office of president. With Mr. Roosevelt's support, he easily secured the Republican nomination and, in 1908, defeated William Jennings Bryan, the Democratic candidate. He met with opposition as president. The Payne-Aldrich Tariff Act of his administration proved unpopular and the Ballenger-Pinchot controversy in the Department of Interior and other matters developed hostile criticism. Mr. Roosevelt came to consider that President Taft was reactionary and that he was not keeping his campaign promises. The break in their friendship grew more definite as time went on until, in 1912, Mr. Roosevelt announced himself a candidate for the presidency in opposition to Mr. Taft. Although Mr. Taft secured the Republican nomination, Mr. Roosevelt, as candidate of the newly-formed Progressive party, so divided the Republican votes that the election was lost to the Democratic candidate, Woodrow Wilson. On retiring from the presidency in 1913, Mr. Taft turned again to law, holding the Kent professorship of law at Yale University from 1913 to 1921. In 1915 he became president of the League to Enforce Peace, which concerned itself with the promotion and ratification of the Treaty of Peace and the League of Nations, and, in 1918-19, he was co-chairman of the National War Labor Conference Board. Mr. Taft, in 1921, was appointed by President Harding Chief Justice of the U. S. Supreme Court. Widespread expressions of approval of the appointment indicated the esteem in which Mr. Taft was held. In 1922, while on a visit to England, he was made an honorary bencher of the Middle Temple. Early in February of 1930, Chief Justice Taft retired from the Supreme Court bench because of ill health and, at that time, the nationwide tributes to him were most affectionate in nature.

TAHITI. See OCEANIA.

TAIWAN. See FORMOSA.

TAJIKISTAN. See TADZHIKISTAN.

TALKING PICTURES. See MOTION PICTURES.

TANGANYIKA (tän'gán-yé'ká) **TERRTORY.** An African territory administered by Great Britain under a mandate of the League of Nations, formerly German East Africa. Area, about 374,000 square miles. The native population (mainly of mixed Bantu race) was estimated at 4,742,872 in 1928 (4,107,000 at census of 1921); Europeans numbered 5808 (2447 in 1921), and Asiatics, 24,000 (14,991). Capital, Dar-es-Salaam, with a population of 25,000. The capital and Tanga are the chief seaports.

The chief agricultural products are cereals, coffee, manioc, peas and beans, groundnuts, oil products, sweet potatoes and other vegetables, fruits (chiefly bananas), and coffee. Sisal and cotton are also important crops. The imports in 1928 were valued at £3,737,000; total exports, £4,050,594. In the budget for 1929-30 revenue was estimated at £1,916,052 and expenditure at £1,886,728. Governor in 1930, Sir D. C. Cameron, appointed in 1925. For the British Government's proposal for the union of Tanganyika, Kenya, and Uganda, see KENYA.

TANGIER. See MOROCCO.

TARIFFS. See UNITED STATES under *Congress and Administration*; AUSTRALIA, CANADA, FRANCE, and SPAIN under *History*; AGRICULTURE.

TASMANIA. A state of the Australian Commonwealth, consisting of the island of that name

and several small islands. Area, including the island of Macquarie (170 square miles), 26,215 square miles; population, according to the census of 1921, 213,780; estimated on Mar. 31, 1930, 215,969. Capital, Hobart, with a population including suburbs (Jan. 1, 1930), of 57,500.

Primary education is free, secular, and compulsory. In 1927 there were 500 State schools, with 1282 teachers and 31,978 enrolled pupils. Agriculture, stock raising, mining, manufacturing, and lumbering are the chief industries. In 1927-28 the net value of agricultural and pastoral products was £4,484,000, of manufactures, £3,670,888 (£3,556,194 in 1928-29), of mining products, £1,433,303 (1929). Wheat, oats, peas, hay, potatoes, fruits, and hops are the chief crops. In 1929 there were about 2,000,000 sheep, 208,812 cattle, 34,908 horses, and 48,304 swine. Wool production in 1928-29 was estimated at 14,900,000 pounds (as in the grease). Copper is the principal mineral exploited, others being gold, silver, lead, tin, and coal. The value of direct overseas imports in 1929-30 was estimated at £1,834,210; direct overseas exports, £2,970,843. For the fiscal year ended June 30, 1929, revenues totaled £2,866,434 and expenditures, £2,855,977. The State debt as of June 30, 1930, stood at £22,688,862.

Executive power is vested in a governor, acting through a responsible ministry, and legislative power in a parliament of two houses. Governor in 1930, Sir James O'Grady; Premier and Treasurer, J. C. McPhee. See AUSTRALIA.

TAXATION. Changes in the legislation of the several States in the matter of taxation during the year 1929-30 were very largely of a routine character. Federal legislation confined itself to two main features: (1) The new tariff law of 1930 which made advances upon rather more than 1100 articles; and (2) the modification of income tax rates (normal tax) which cut these rates by 1 per cent while corporation tax rates were reduced a like amount effective for the taxable returns of the year 1930. State legislatures were in session during the year to the number of nine only, as against some 43 the year before, the result being that the output of legislation on their part was rather less than usual. However, modifications were made in several significant particulars. Constitutional amendments were passed by 19 States and State tax commissions did work of more or less importance in half a dozen or more States. In Europe no very great changes took place during the year; and while the tendency was toward heavier taxation, particularly in Germany, the major alterations were along the same lines that had been indicated in the past. Tax burdens that proved so heavy in many European countries that political unrest had developed, and there was agitation of a pronounced and sometimes violent character in favor of relief.

Turning to State taxation in the United States, the principal changes may be summarized as follows:

STATE INCOME TAXES. Income tax legislation was altered in two States—South Carolina where personal exemptions were decreased for single individuals from \$1500 to \$1200 and for heads of families from \$2500 to \$2200, while rates were increased by lowering the brackets so that they ranged from 1 per cent to 5 per cent; and Virginia where exemptions were raised from \$1000 to \$1250 for single persons and from \$2000 to \$2800 for married. The income tax of Georgia

was held constitutional Apr. 17, 1930, by the Georgia Supreme Court and in Wisconsin the Tax Commission exempted insurance companies and steam-railroad and sleeping-car companies from income taxation.

INHERITANCE TAX. An estate tax was, in 1930, levied in Kansas equal to the difference between the Kansas tax upon an estate and the 80 per cent Federal credit. A new estate tax law was adopted in New York. See NEW YORK under *Legislation*.

STATE CONSTITUTIONAL AMENDMENTS. The legislature of Florida adopted by a single vote a proposed amendment permitting an inheritance tax at a rate of 80 per cent of the Federal and another eliminating ad valorem taxes on automobiles. In Georgia the income tax enacted in 1929 went into effect. Minor amendments were submitted to the people in Illinois; and in New Hampshire the constitutional convention proposed an amendment permitting the "general court" to exempt from the operation of income tax so much income as they may deem just, no income tax to be assessed at a rate greater than the average rate of taxation on general property. In Ohio an amendment permitting classification of property for tax purposes was passed and became effective on Jan. 1, 1931. In Utah several amendments to the constitution were proposed,—one calling for the creation of a State Tax Commission, an alteration in the tax on mining property, and the establishment of a maximum rate on taxable property.

CORPORATION TAXES.—In Kansas, the law providing for the assessment and taxation of shares of stock held by shareholders of banks, loan companies, and trust companies was amended to include the stock of investment and finance companies, but to except the stock of public service corporations, insurance companies, express companies, and sundry other enterprises. In Mississippi, a franchise tax was proposed on the stock of all corporations; in South Carolina the rate of income tax on corporations was increased in 1930 from 4 to 4½ per cent with a minimum tax of 2 per cent. In Tennessee, corporations were given the option to pay either a tax of ½ of 1 per cent of gross receipts or pay on their authorized capital as in existing law. In Texas a new franchise tax was in 1930 enacted on every foreign and domestic corporation doing business in the State.

VEHICLE AND GASOLINE TAXES. During the year 1930 motor vehicles taxation was changed in 10 States. In Georgia the method of issuing license plates by mail was adopted; in Kentucky the fee for motor cycles, formerly \$10, was reduced to \$5; fees for passenger pleasure cars and others were generally given a 25 per cent reduction. In Massachusetts the excise tax was amended so as to provide for taxation by months for periods of ownership less than a year. In Minnesota a law making motor vehicles owned by a public service corporation paying a gross earnings tax subject also to motor vehicles registration tax was held unconstitutional. Temporary registration of non-residents was required by Mississippi. New Jersey imposed a license tax of \$50 to \$100 on motor vehicle "junk yards." New York has exempted motor vehicles, used by societies for the prevention of cruelty to animals, from registration. South Carolina imposed a license fee on automobiles belonging to a nonresident corporation. Texas exempted farm trailers from registration fees. Virginia imposed a special tax on carriers operat-

ing regularly over designated routes. Fifteen States changed their laws or administrative rulings relating to taxation of gasoline. Most of these changes relate to the rate per gallon to be imposed. In Kentucky, however, a gasoline tax was imposed on refiners as well as dealers.

SALES TAXES. Kentucky introduced a sales tax on all stores except those engaged in selling garden or farm products, at one-twentieth of 1 per cent on gross sales up to \$400,000 gross receipts with higher rates on larger incomes. Mississippi imposed a sales tax on gross sales or gross income at rates varying from 1 per cent to ¼ of 1 per cent according to the nature of the business, and South Carolina reduced the lower limit of taxes on candy, to candy at 50 cents a pound instead of 80 cents as formerly.

LOCAL TAX ADMINISTRATION. Changes in local tax administration; made in two States—Illinois, which validated various resolutions and bond issues of Cook County passed as emergency issues; and Massachusetts which authorized the Commissioner of Corporations and Taxation to find some way by the payment of local taxes in two or more installments so as to get more money at the beginning of the year.

SPECIAL COMMISSIONS. In Georgia a group of private citizens were financing a survey of the State tax system; in Illinois the Revenue Investigation Commission made a preliminary report recommending a permanent non-partisan tax bureau; in Iowa an unofficial commission of business organizations was established to co-operate with the official special tax committee; the Louisiana Tax Commission was authorized to study the tax systems of other States; Massachusetts appointed a new tax commission for study of local problems; in New Hampshire the Recess Tax Commission of 1927 reported sundry bills which were defeated; in New York a temporary tax survey commission was created to produce a "workable and practicable and equitable" system of taxation; in Ohio the governor appointed a representative committee to be known as the Governor's Taxation Committee; in Oklahoma an unofficial tax commission of eight members was appointed; in Tennessee an unofficial committee of 15 business men was making a non-political study of the local system, and in Wyoming a citizens' committee of 21 members was appointed, while in Washington an advisory committee was to make a tax survey.

CHAIN STORE TAXES. Taxes on chain stores were held constitutional in Georgia, unconstitutional in Indiana, constitutional in North Carolina, unconstitutional in South Carolina—in each case by the local supreme court, and in New Hampshire a recess committee was appointed to study the taxation of chain stores.

BANK TAXES. In Massachusetts the bank tax was held unconstitutional in 1929, and what had been collected was ordered refunded. Special taxes on banks in Michigan were held unconstitutional and the same has been done in the State of Washington. In Kansas bankers were asked to refrain from litigation until Congress had acted on the bank tax question.

FEDERAL TAX RECEIPTS. During the year 1930 Federal receipts were (ordinary) \$4,177,900,000 as against \$4,033,200,000 in 1929, while expenditures for 1930 were \$3,994,200,000 as against expenditures in 1929 of \$3,848,500,000. Income tax receipts included in the foregoing were \$2,411,000,000 as against \$2,331,000,000 in 1929, while

miscellaneous internal revenue was \$628,300,000 as against \$607,000,000. Proceeds from government owned securities were as follows: Foreign obligations, \$239,500,000 against \$199,100,000; other than foreign obligations were \$20,300,000 against \$22,500,000. Corporation taxes which had been so large in former years were impaired by the reduction of income following upon the panic conditions, while stock market profits were greatly reduced by the losses incurred by those who had sold after the slump in values which ensued upon the panic of 1929, but these losses did not show in the fiscal year returns (to June 30, 1930). The following table shows the distribution of revenue from income tax as between corporations and individuals in 1930 and earlier years:

| | Corporation Per cent | Individual Per cent |
|------------|-------------------------|------------------------|
| 1922 | 47 | 53 |
| 1927 | 58 | 42 |
| 1928 | 59 | 41 |
| 1929 | 52 | 48 |
| 1930 | 51 | 49 |

The factors which previously had tended to keep corporation returns relatively high had lost their effect in 1930, but there was still a substantial tax revenue due to the Government upon profits made by corporations whose fiscal years had started prior to the panic.

For further information, see PUBLIC FINANCE and consult *Bulletins National Tax Association*, especially appendix to vol. xv, "Review of State Tax Legislation, 1930"; also *Report of the Secretary of the Treasury, 1930*.

TAXONOMY. See BOTANY; ZOÖLOGY.

TAYLOR, MAJ.-GEN. HARRY, U. S. A., RET. An American soldier and engineer, died in Washington, D. C., Jan. 28, 1930. He was born in Tilton, N. H., June 26, 1862, and was graduated from the U. S. Military Academy in 1884 and from the Engineer School of Application in 1887. Promoted through the grades, he became major general in 1924 and retired two years later. In 1911 he became assistant to the Chief of Engineers in Washington. During 1916-17, he was in charge of river and harbor works in New York harbor and on the Hudson River and Lake Champlain. He was commissioned brigadier general in the National Army on the entrance of the United States into the World War and served in France as chief of engineers. In September, 1918, he was appointed assistant chief of engineers in the U. S. Army, becoming chief in 1924.

TEACHERS, TEACHER TRAINING, ETC. See EDUCATION IN THE UNITED STATES.

TEACHERS' COLLEGES. See EDUCATION IN THE UNITED STATES; UNIVERSITIES AND COLLEGES.

TEL EL-AMARA. See ARCHÆOLOGY.

TELEPHONY. Parts of two more continents were brought within earshot of telephone users in the United States during 1930. In April telephone service was established connecting North America with Argentina and with the cities of Montevideo, Uruguay, and Santiago, Chile, in South America. In October service was opened to the eastern part of Australia via the transatlantic radio telephone to Great Britain and thence by another radio link to Australia. Additional points in Europe were also brought within range of America by telephone through extensions of the transatlantic service to cover the whole of Sweden (instead of

merely Stockholm, Göteborg and Malmö as theretofore), and to reach Memel and Kovno in Lithuania and Vatican City. The network of the Ericsson Telephone Company in Mexico, covering about 40 cities and towns, was also connected with the telephone system in the United States, making a substantial addition to the number of telephones in Mexico that could be reached from the United States and Canada. It became possible to talk from any telephone connected with the Bell System in the United States with practically any one of about 32,200,000 telephones in North and South America and Cuba, Europe, Australia and one point in Africa: Ceuta, Spanish Morocco. This represented 91 per cent of the total telephones throughout the world, which numbered approximately 35,000,000 on Dec. 31, 1930.

Ship-to-shore telephone service which was opened late in 1929 to the S.S. *Leviathan*, was extended to several other liners during 1930.

In common with other businesses, the telephone industry in the United States was appreciably affected by the general business depression during the year, but it continued to grow, though at a slower rate than in previous years. On Dec. 31, 1930, there were about 20,200,000 telephones in service in the United States, connected by more than 82,000,000 miles of wire. The total investment in telephone plant and equipment in the United States at that date was in excess of \$4,600,000,000. Employees of the operating telephone companies in the United States numbered about 400,000.

The average number of telephone conversations daily during 1930 was about 83,500,000, including approximately 79,900,000 local conversations and 3,600,000 toll conversations. Dial telephone service was further extended during the year and by the end of 1930 more than a quarter of all the telephones in the United States were served from dial system central offices.

About 35,000 miles of telephone circuits were being used in 1930 to link up chains of radio stations for simultaneous broadcasting. About 200 radio stations were included in one or other of the various chains.

During 1930 the Bell System bought the Teletype Corporation, manufacturers of telephone typewriters, and that business was operated as a subsidiary of the Western Electric Co., Inc. The New Jersey State Police established a state-wide telephone typewriter service during 1930.

In April, 1930, two-way television by which persons at a distance see each other while they converse, was demonstrated by Bell System engineers over a circuit between the Bell Telephone Laboratories and the headquarters of the American Telephone and Telegraph Company in New York, about two miles apart. See TELEVISION.

TELESCOPES. See ASTRONOMY.

TELEVISION. During the year the leading broadcasting and research corporations were actively engaged in the development of television, but it had not been reduced to a commercial basis. On May 22 at Schenectady television was used for the first time in a theatre as part of a regular performance, the images being transmitted by radio from a studio of the General Electric Company located about one mile from the theatre. Upon a screen, 6 x 7½ feet, active images of the performers were reproduced, which were readily visible to those seated on the back rows and in the balcony. The light impulses were transmitted on a wave length of 140 meters, and voice and

sound effects were also secured. The experiment was of interest in that the projection had been increased from about 14 inches square to an area 6 feet square, or about one-fourth that of the standard motion-picture screen.

An interesting development also carried on by the General Electric Company was the transmission of a television picture some 20,000 miles through space from the short-wave station W2XAF at Schenectady to station VK2ME at Sydney, Australia, where the signals were re-broadcast back and received again in Schenectady in about one-eighth of a second.

Television from color movie film, with all the colors reproduced, a method of securing television reproduction of fine detail without the use of extraordinarily wide frequency bands, either by radio or wire, and improved reproduction of color values in two-way television, were described at the meeting of the Optical Society of America, held at the University of Virginia, October 30, by Dr. Herbert E. Ives, under whose supervision the researches were carried out at the Bell Telephone Laboratories. The transmission of color movie film was done with the Kodacolor process, used in amateur 16-mm. motion-picture cameras. Here a series of minute ridges running the length of the film yields a positive film in which the image is made up of a series of fine horizontal lines. The position of these lines with respect to the ridges determines the color which they show on the screen. This is because the ridges act as cylindrical lenses and direct the light for the screen picture through one or more of three vertical color filters placed before the lens.

For the television arrangement, a scanning disk, with a series of fine holes, rotates in front of the film as it moves in front of a light. Then a lens projects the image on to three photoelectric cells side by side. No color filters are used, but the cells are arranged so that one picks up the red image, one the green, and one the blue. In the television receiver, which is the same as that used in previous experiments in transmitting color images from real subjects, the current from each of these cells is fed into a glow lamp which reproduces the original color. The light from these three lamps is combined, and so the eye sees the reproduced image in full color. See TELEPHONY.

TEMPLE UNIVERSITY. An institution for the higher education of men and women in Philadelphia, Pa.; founded in 1884. The 1930 autumn enrollment was 10,100. There were 694 members on the faculty. The income for the year totaled \$1,682,336. The library contained 47,874 volumes. In 1930 a medical school building was completed at a cost of more than \$1,000,000, and construction was begun on Mitten Memorial Hall, a recreation building, to cost more than \$500,000. President, Charles E. Beury, LL.D.

TENEDOS. See GREECE under *History*.

TENNESSEE. **POPULATION.** According to the Fifteenth Census, the population of the State on April 1, 1930, was 2,616,556. The population on Jan. 1, 1920, was 2,337,885. The capital is Nashville.

AGRICULTURE. The accompanying table gives the acreage, production, and value of the principal crops in 1929 and 1930.

Farms in the State numbered 245,968 in 1930; in 1925, 252,669; and in 1920, 252,774.

MINERAL PRODUCTION. The mining of coal, chief of the State's extensive list of mineral products, declined to a total of 5,405,464 net tons, for 1929,

| Crop | Year | Acreage | Prod. Bu. | Value |
|----------------|------|-----------|--------------------------|--------------|
| Corn | 1930 | 2,915,000 | 41,102,000 | \$38,225,000 |
| | 1929 | 2,944,000 | 73,600,000 | 67,712,000 |
| Cotton | 1930 | 1,227,000 | 400,000 ^a | ,000 |
| | 1929 | 1,120,000 | 515,000 ^a | 42,488,000 |
| Hay | 1930 | 1,380,000 | 1,153,000 ^b | 22,985,000 |
| | 1929 | 1,520,000 | 1,986,000 ^b | 34,464,000 |
| Tobacco | 1930 | 151,800 | 120,903,000 ^c | 19,465,000 |
| | 1929 | 132,300 | 107,784,000 ^c | 20,048,000 |
| Potatoes | 1930 | 41,000 | 2,867,000 | 3,609,000 |
| | 1929 | 39,000 | 3,576,000 | 4,828,000 |
| Sweet potatoes | 1930 | 44,000 | 3,740,000 | 3,366,000 |
| | 1929 | 44,000 | 4,400,000 | 4,180,000 |
| Wheat | 1930 | 308,000 | 3,542,000 | 3,542,000 |
| | 1929 | 405,000 | 3,645,000 | 4,811,000 |
| Oats | 1930 | 217,000 | 4,340,000 | 2,300,000 |
| | 1929 | 197,000 | 3,546,000 | 2,199,000 |

^a Bales. ^b Tons. ^c Pounds.

from 5,601,959 for 1928; by value, to \$9,122,000 for 1929, from \$9,694,000 for 1928. The production of stone, largely of the superior grades, retained second place, by rank of importance, among the State's mineral products in 1928. After allowance for duplications, the total value of the yearly mineral product of the State was \$38,789,242 for 1928; for 1927, \$37,874,981.

FINANCE. State expenditures in the year ended June 30, 1929, as reported by U. S. Department of Commerce, were: for maintenance and operation of governmental departments, \$21,318,394 (of which \$4,531,764 was for local education); for interest on debt, \$1,899,062 (of which \$683,466 was paid by the State on county road bonds); for permanent improvements, \$23,291,805; total, \$46,510,498 (of which \$28,269,696 was for highways, \$7,448,674 being for maintenance and \$20,821,022 for construction). Revenues were \$34,404,985. The funded debt on June 30, 1929, was \$31,609,026, against which were no reported sinking-fund assets. On property bearing an assessed valuation of \$1,836,874,048 were levied in the year State taxes of \$3,673,748.

TRANSPORTATION. The total number of miles of railroad line under operation on Jan. 1, 1930, was 3961.84.

EDUCATION. The school population of the State, as reckoned to include all persons from 0 to 18 years of age in May, 1929, numbered 661,071. There were enrolled in the public schools of the State, in 1929, 637,571 pupils. Of these, 569,301 were in common schools or elementary grades, and 68,270 were in high schools. The expenditures of the year for public-school education totaled \$21,832,006. The year's salaries of teachers averaged \$831.

CHARITIES AND CORRECTIONS. In accordance with a law of 1923, all charitable and penal institutions of the State were, in 1930, under the authority of the State Department of Institutions, which had as its head a commissioner (R. H. Lyle). There was also maintained for their needs a State purchasing agency.

POLITICAL AND OTHER EVENTS. In the Democratic primary, held on Aug. 7, 1930, Representative Cordell Hull was chosen the party's candidate for the U. S. Senate and Governor Henry H. Horton was renominated. Under the administration of Governor Horton progress was made with the development of communications designed to bring into contact the mutually isolated and widely differing eastern, central, and western portions of the State. Work was prosecuted on the system of bridges essential to this end; their intended cost was \$9,848,303.

Tennessee, like Virginia and West Virginia,

presented to the Federal Government objections to the practice of the Federal Power Commission, to require applicants for development of power on non-navigable streams to limit their projects to such a manner as not to impair the requisite flow of navigable waters below. The U. S. Attorney-General ruled that the Commission was not required by statute to impose the conditions to which objection had been made. Three natural-gas companies filed copies of their charters with the Secretary of State of Tennessee in the course of the year, with a view to piping natural gas, derived from the Texas fields, into the State.

At Nashville occurred in November a banking crisis of some magnitude. Caldwell and Company, a large investment house, was thrown on November 13 into the hands of a Federal receiver. This house had exerted a controlling interest in the Bank of Tennessee, a State institution with liabilities of \$13,969,000. The difficulties of Caldwell's, which became apparent early in the month, led to the suspension of the Bank of Tennessee on November 7 and its passing into the hands of the State Banking Department. At Knoxville the Holston-Union National Bank, in alliance with the Caldwell interests, closed on November 11. The State of Tennessee had on deposit in the Bank of Tennessee some \$3,000,000 of its highway funds and \$336,000 of its general Treasury funds; in the Holston-Union National Bank \$2,105,600 of its moneys. Some of the counties and the State of Louisiana were also depositors in one or another of the failed institutions. In order promptly to meet any strain on their resources the American National and the Fourth and First National banks and the Nashville Trust Company and the American Trust Company, all of Nashville, combined on November 13 under the name of the American National Bank, thus concentrating resources that approximated \$86,000,000.

ELECTIONS. Governor Henry Horton, Democrat, was reelected on November 4, obtaining 141,412 votes, by unofficial report, to 79,784 for C. Arthur Bruce, his Republican opponent. For the ensuing full term as U. S. Senator, Representative Cordell Hull, Democrat, was elected, defeating Paul E. Divine, Republican; the vote as unofficially totaled was 137,785 to 53,907. The appointed interim Senator, W. E. Brock, Democrat, was elected for the remainder of the term expiring March 4, 1931. Elections to the Federal House of Representatives gave eight seats to Democrats, one to a regular Republican, and one to an Independent Republican, O. B. Lovette. The State Legislature remained in control of the Democratic party.

OFFICERS. Governor, Henry H. Horton; Treasurer, John F. Nolen; Comptroller, Edgar J. Graham; Secretary of State, Ernest N. Haston; Auditor, P. H. Williams; Attorney-General, L. D. Smith; Commissioner of Education, P. L. Harned.

JUDICIARY. Supreme Court: Chief Justice, Grafton Green; Associate Justices, A. W. Chambliss, Colin P. McKinney, W. H. Swiggert, William L. Cook.

TENNESSEE, UNIVERSITY OF. A State institution of higher education, nonsectarian and coeducational in Knoxville, with colleges of medicine and dentistry and schools of pharmacy and nursing in Memphis, and a junior college in Martin; founded in 1794. The total enrollment was 5577 in 1930. The faculty numbered 451. The endowment funds of the university amounted to \$426,755; the income for the year 1929-30 was

\$2,981,632. There were 112,381 bound volumes in the libraries. President, Harcourt A. Morgan, LL.D.

TENNIS. Spectacular developments in the realm of lawn tennis marked the year 1930. Led by William T. Tilden, 2d, and Mrs. Helen Wills Moody the United States swept through the Wimbledon, England, tournament in June and July to an overwhelming victory, only to lose to France by 4 to 1 in the Davis Cup matches, and to England by 4 to 3 in the Wightman Cup competition. The year saw the rise of the veteran Tilden to new heights of tennis fame by conquering all opposition at Wimbledon and then his defeat by John Doeg, of Santa Monica, Calif., for the United States championship at Forest Hills, Long Island, on September 12, followed by his formal retirement from amateur competition at the close of the year. Mrs. Helen Wills Moody won her fourth successive championship at Wimbledon and her third French championship. She declined to defend her United States championship, which she had held for six years, and the title was taken to England by Miss Betty Nuthall, 19 years old, the first foreign player not resident on American soil to accomplish the feat. She easily defeated Mrs. Lawrence A. Harper of Oakland, Calif., in the finals, at 6-1, 6-4. Paired with Miss Sarah Palfrey, Miss Nuthall also won the American doubles championship. The men's doubles title was won by Doeg and Lott for the second year in succession.

Clifford B. Sutter, sophomore at the University of Tulane, won the intercollegiate tennis championship at Haverford, Pa., on June 28. Miss Sarah Palfrey, of Brookline, Mass., won the girls' national championship for the third consecutive year at Philadelphia on September 6, meeting Helen Marlowe, of Los Angeles in the finals. The national mixed doubles title was captured by Miss Edith Cross, of San Francisco, and Wilmer Allison.

The United States professional title was regained by Vincent Richards from Karel Kozeluh, Czechoslovakian star, who had taken the title from the American player in 1929. Later Richards announced his retirement from competitive play.

TEXAS. POPULATION. According to the Fifteenth Census, the population of the State on Apr. 1, 1930, was 5,824,715. The population on Jan. 1, 1920, was 4,663,228. The capital is Austin.

AGRICULTURE. The accompanying table gives the

| Crop | Year | Acreage | Prod. Bu. | Value |
|----------------|------|------------|------------------------|----------------|
| Cotton ... | 1930 | 16,975,000 | 4,100,000 ^a | \$ 316,000,000 |
| | 1929 | 17,872,000 | 3,950,000 ^a | 66,728,000 |
| Corn | 1930 | 4,941,000 | 91,408,000 | 73,208,000 |
| | 1929 | 4,533,000 | 86,127,000 | |
| Grain sorghum | 1930 | 2,928,000 | 46,816,000 | 30,430,000 |
| | 1929 | 2,760,000 | 46,920,000 | 32,844,000 |
| Wheat ... | 1930 | 2,570,000 | 28,270,000 | 19,789,000 |
| | 1929 | 2,520,000 | 87,800,000 | 39,690,000 |
| Oats | 1930 | 1,696,000 | 46,640,000 | 19,589,000 |
| | 1929 | 1,542,000 | 43,176,000 | 22,020,000 |
| Hay | 1930 | 948,000 | 925,000 ^b | 11,270,000 |
| | 1929 | 899,000 | 990,000 ^b | 12,552,000 |
| Sweet potatoes | 1930 | 109,000 | 7,630,000 | 7,248,000 |
| | 1929 | 104,000 | 7,884,000 | 7,753,000 |
| Rice | 1930 | 186,000 | 8,463,000 | 6,517,000 |
| | 1929 | 144,000 | 7,416,000 | 7,194,000 |
| Potatoes .. | 1930 | 41,000 | 3,674,000 | 5,695,000 |
| | 1929 | 31,000 | 2,459,000 | 3,688,000 |
| Barley .. | 1930 | 198,000 | 5,570,000 | 1,964,000 |
| | 1929 | 203,000 | 5,075,000 | 3,146,000 |

^a Bales. ^b Tons.

acreage, production, and value of the principal crops harvested during the years 1929 and 1930:

Farms in the State numbered 496,007 (1930); 465,646 (1925); 436,033 (1920). The area of the State's lands under irrigation increased considerably, to 797,695 acres for 1929, from 586,120 acres for 1919.

MINERAL PRODUCTION. Texas produced in 1929 more petroleum than any other State, in regard to quantity, and ranked second to Oklahoma alone in the production of petroleum according to value. The petroleum product of the State was 298,441,000 barrels for 1929, as against 257,320,000 for 1928; the value, \$324,900,000 (estimated) for 1929 and \$236,300,000 for 1928. The natural-gas industry increased greatly both in 1928 and thereafter, partly by reason of the construction of systems of pipe lines to convey the output of Texas wells to distant markets. There were produced 301,990,000 M cubic feet of natural gas in 1928, as against 254,063,000 M in 1927; by value, \$51,316,000 in 1928 and \$37,424,800 in 1927. Gasoline was extracted from natural gas to the quantity of 422,300,000 gallons in 1929 and of 324,516,000 in 1928; these quantities attained the values of \$25,930,000 for 1929 and of \$22,492,000 for 1928, additional to the value of the natural gas itself. The Texas output comprised the bulk of the domestic production of sulphur, which in 1929 was 2,362,389 tons valued at \$43,000,000.

The entire mineral product of the State, after allowance for duplications, had a value of \$378,616,955 for 1928; for 1927, of \$374,503,420.

FINANCE. State expenditures in the year ended Aug. 31, 1928, as reported by the U. S. Department of Commerce, were: for maintenance and operation of governmental departments, \$70,101,079 (of which \$13,803,923 was for local education); for interest on debt, \$135,091; for permanent improvements, \$14,076,254; total, \$84,312,424 (of which \$28,318,305 was for highways, \$16,882,208 being for maintenance and \$11,430,097 for construction). Revenues were \$93,140,031. The State's funded debt outstanding on Aug. 31, 1928, was \$4,266,722. Net of sinking-fund assets, it was likewise \$4,266,722. On property bearing an assessed valuation of \$3,988,421,517 were levied in the year State taxes of \$25,525,898.

TRANSPORTATION. The total number of miles of railroad line under operation on Jan. 1, 1930, was 16,890.64. There were built, in 1930, 245.13 miles of first, and 33.55 of second track.

EDUCATION. Terms of county superintendents were lengthened to four years and of the school trustees, save in the larger districts, to three years. The number of persons of school age in the State (from 6 to 17 years) was reported for 1930 as 1,563,595. There were enrolled in the public schools in the school year 1929-1930, 1,308,028 pupils. Of these, 1,071,890 were in elementary and 236,138 in high schools. The expenditures for public-school education in the year 1929-30 totaled \$23,000,000. The year's salaries of teachers averaged \$1051.

LEGISLATION. The forty-second regular session of the State Legislature convened on January 22. Adjourning on February 18, it was immediately reconvened in a called session that ended on March 21, in order that necessary work might be concluded. A tonnage tax on the production of sulphur in the State was imposed at the rate of 55 cents, Texas having almost a monopoly of the domestic production of sulphur at the time. As

the revenue of the State from its franchise taxes had been endangered by adverse court decisions, a new franchise-tax act was passed. It imposed charges at the rate of 65 cents to the \$1000 of capital up to \$1,000,000, 45 cents thereafter up to \$10,000,000 and 35 cents above that point on utilities. The basis set for reckoning capital was that of outstanding capital stock, surplus, and undivided profits, the courts having condemned a tax on stock merely authorized. The Pipe Line Act was passed, giving authority to the State Railroad Commission to limit pipe-line deliveries of petroleum and the production of the oil fields in accordance with estimates of the requirements of the refineries. In consequence of the dispute between the two States over the activities of Texas land agents in Wisconsin the Legislature passed a resolution urging Texas to boycott all Wisconsin products. The sum of \$150,000 was appropriated for the Alamo land purchase. S. H. Terrell, State Comptroller, brought before the House on impeachment charges, alleging irregularities in office, resigned on February 25.

POLITICAL AND OTHER EVENTS. In the Democratic primary vote to nominate a candidate for Governor, Mrs. Miriam A. ("Ma") Ferguson received on July 27 the highest vote. This did not assure the victory of the partisans of the Fergusons, for her vote fell short of the majority of all votes cast, requisite to a nomination. A runoff primary was therefore held. It yielded a solid majority for Ross S. Sterling, chairman of the State Highway Commission. Mrs. Ferguson's campaign for the candidacy had been in the stead of her husband, ex-Governor James E. Ferguson, who had been removed by impeachment in 1917. An act had been passed in 1924 by a Legislature dominated by his friends, to restore his right to hold office. This act was assailed in the courts by his opponents, and the State Supreme Court on May 23 held the act invalid.

The city of Dallas voted in October by a majority of about two to one to give up the existing government by commission and to adopt in its place a municipal government by council and city manager.

The construction of a long-distance pipe line to convey natural gas from the Amarillo field in Texas to Chicago was carried on during the year. The line when completed was to be owned and operated by the Natural Gas Company of America, controlled by the Insull interests, the Cities Service Company, the Standard Oil Company of New Jersey, and other corporations with business in the field.

ELECTIONS. Democratic candidates were elected on November 4 to all offices but one without serious opposition, in a light vote. Ross E. Sterling, Democrat, won the governorship by 162,418 votes, as unofficially reported, to 37,771 for William E. Talbot, Republican. Senator Morris Sheppard, Democrat, reputed author of the Eighteenth Amendment, was reelected, defeating John Haesly, Republican. The usual strong Democratic control of the Legislature was maintained. Seventeen Democrats were elected United States Representatives. The eighteenth seat was won by Harry Wurtzbach, Republican, in the Fourteenth District.

OFFICERS. Governor, Dan Moody; Lieutenant-governor, Barry Miller; Secretary of State, Jane Y. McCallum; Treasurer, W. Gregory Hatcher; Comptroller, S. H. Terrell; Attorney-General, Claud Pollard (succeeded by Robert Lee Bobbitt).

JUDICIARY. Supreme Court: Chief Justice, C. M. Cuerton; Associate Justices, T. B. Greenwood, William Pierson.

TEXAS, UNIVERSITY OF. A State institution of higher education in Austin, with a medical branch in Galveston and a college of mines and metallurgy in El Paso. The main university was opened in 1883. For the autumn term of 1930 the enrollment at the main university totaled 5505. In addition there were 447 enrolled in the medical branch, 339 in the college of medicine and 108 in the college of nursing, and 485 in the college of mines. There were 453 members on the faculty.

The endowment resources of the institution amounted to \$12,000,000, and the income from legislative appropriation, fees, and income from trust and special funds was placed at \$3,698,330. The libraries contained 596,506 volumes. The Gregory Gymnasium was completed during the year at a cost of \$518,000, and the mechanical engineering laboratory at a cost of \$230,000. There were also under construction a new chemistry building and a women's gymnasium. President, Harry Yandell Benedict, Ph.D., LL.D.

TEXAS FEVER. See VETERINARY MEDICINE.

TEXAS TECHNOLOGICAL COLLEGE. A State coeducational institution in Lubbock, Texas; opened in 1925. The enrollment for the summer session of 1930 was 1298 students and for the autumn of 1930, 2226 students. The faculty numbered 133 members. The appropriations for the year 1930-31 amounted to \$507,350. There were 47,632 volumes in the library. President, Paul Whitfield Horn, M.A., LL.D.

TEXTILE INDUSTRY. The textile industry in the United States in 1930 felt the industrial depression for which it had been adequately warned, if not prepared. In 1930, according to the estimates of the *Textile World* (New York), the rate of textile mill operation was approximately 22 per cent below 1929, and 16 per cent below 1928. This was due, in large measure, to the effort to keep production in line with buying, which naturally fell off under conditions. An attempt was made to develop foreign outlets for textiles by coöperative selling through the formation of the Textile Export Association of the United States to handle cotton goods, and of the American Textile Trade Company to export mercerized yarns. The new tariff increased duties on numerous items, but it was not believed that the effect of this legislation had any direct effect on the industry up to the end of the year.

New mill construction, as reported to the *Textile World*, was about 30 per cent less than in the calendar year 1929. New mill construction in various States was recorded as follows: Pennsylvania, 64; New Jersey, 57; North Carolina, 47; and Massachusetts, 33. As regards industries, North Carolina led in cotton, Massachusetts in wool, North Carolina and Pennsylvania tied in knit goods, New Jersey in silk, and also in finishing. The six States leading in new cotton-mill developments, in order of importance, were as follows: North Carolina, Georgia, South Carolina, Rhode Island, Alabama, and Massachusetts.

The number of cotton spindles in place, on Dec. 31, 1930 as reported by the U. S. government, 33,567,102, showed a reduction from 34,630,866 on January 31 or about 2 per cent, with the greatest part of this reduction in New England, and a small increase in the number of spindles in places in the cotton-growing States. These were distributed as follows: Cotton-growing States,

19,106,384; New England States, 13,054,306; all other States, 1,406,412. The active spindles in December were: Cotton-growing States, 16,869,856; New England States, 7,784,158; all other States, 871,806.

The decline in the cotton textile industry during the year, shown in figures from the Cotton Textile Merchants' Association of New York, based on the spindle hour figures of the U. S. Bureau of Census, may be quoted. In 1930 the industry produced approximately 6,303,657,000 yards of cloth, with a spindle hour activity of 76,702,655,000, or a production per spindle per hour of .0822, as compared with 8,207,887,000 yards with 99,899,724,000 spindle hours, or a production per spindle per hour of .0822 in 1929. The month of December, 1930, recorded a low activity represented by 5,916,378,249 spindle hours, as against 6,768,132,246 in December, 1929, and 9,226,738,123 in January, 1929.

In the wool industry the activity in 1930 was considerably below that of 1929. The U. S. Census Bureau on the basis of returns from approximately 1000 mills reported an average of 43.8 per cent of the wide looms in space active in 1930 as against 57.4 per cent in 1929; 47.2 per cent of narrow looms against 61 per cent; 48.4 per cent of carpet and rug looms against 65.8 per cent; 58.2 per cent of cards, against 73.1 per cent; 60.8 per cent of combs, against 69.3 per cent; 57.4 per cent of woolen spinning spindles, against 70.7 per cent, and 54 per cent of worsted spindles against 65.2 per cent. See RAYON; SILK; COTTON.

THEATRE. Future historians of the theatre, digesting and epitomizing the activities of the year 1930, will doubtless stress the fact that it was the first, if not the worst, of those years covering the big slump. Economically the theatre was as completely depressed as all other business. Being numbered with the luxuries it probably suffered more than other industries. Outside the four main theatrical centres of New York, Chicago, Boston, and Philadelphia, there was so little legitimate business done by the legitimate theatres that little else was talked about. And in those four centres no better than half the normal business was realized.

Nor could anything of less importance than a strikingly original or intensely human drama recreate an interest in the theatre. The leading producers of New York, tardily awakening to the fear that perhaps a lack of public confidence caused by long-standing abuses of the ticket privileges enjoyed by speculators was in part responsible for the public's attitude, proceeded to take steps. Organizing the League of New York Theatres, with Arthur Hopkins as president, they declared open war on speculators in general and the so-called "outlaws" or "gyp" agents in particular. A certain allotment of seats was agreed upon, these to be handled exclusively by accredited agents who should also be members of the league and subject to its rulings and control. The "buy" which permitted brokers to contract for the best seats in blocks was discontinued.

The agents in turn agreed to abide by a fixed premium of 75 cents per ticket. Harlow D. Savage, an executive of ability and no previous theatrical experience, was engaged at \$25,000 a year to manage the League. The League functioned more or less effectively, despite a vast amount of boring from within and constant fire from the sniping "outlaws" from without, over a period of months. When collapse threatened, the Postal

Telegraph Company stepped in and agreed to make each of its 160 branch offices in effect a theatre-ticket agency, and charge but 50 cents a ticket premium for its service. The new scheme pleased most of the honest managers, but was not to the liking of either the so-called accredited agents or the pestiferous free lancers. The expected crash was destined to come shortly after the calendar year came to a close, and though the League continued to function weakly, the distribution and sale of seats by outside agencies went back practically to where it was before the war was started.

The legitimate theatre had been persistently menaced all through the previous year by the novelty and increasing popularity of the on-rushing talkies. Suddenly there appeared to be a kind of merger of the menaced interests. The producers of talking pictures discovered that they had to have plays and they had to have players. They had to have plays with sufficient story value to stand retelling by the spoken word rather than by fantastic captions, and they had to have players capable of speaking those words with good address and at least passable diction.

The advantages thus gained were rather more in the actors' and playwrights' favor than in that of the producers. The latter had their profits from the sale of the picture rights, but after that they ceased to participate. Many players were given long and profitable engagements, and practically all playwrights of any standing were engaged, at salaries that frequently caused them to blush profusely, either to brighten up their own dialogue in one of their old plays being rewritten for the screen or to write new dialogue for silent pictures being revived.

The effect on the theatre, so far as the play-going public was concerned, was quickly to curtail the number of productions and to change the complexion of many casts. There resulted for a short time early in the new year a season of fewer and better plays. And that condition continued practically to the end of the playgoing year.

Early in 1930 the Irish Players had reorganized for a campaign they hoped would result in the establishment of their theatre permanently in New York. But their first revival of Synge's *Playboy of the Western World* blasted these hopes. Robert Emmet Sherwood, who had done well with *The Road to Rome* and *The Queen's Husband* in previous years, came forward with a war play entitled *Waterloo Bridge* in which a sentimental chorus girl who had taken to street-walking in London refused to disillusion a young American soldier on leave when she learned that he still believed in good women. This also failed.

There was promise in the production of *Children of Darkness*, a comedy brilliantly written in the old English manner by Edwin Justus Mayer, whose *Firebrand* had been successful. This was the story of a Jonathan Wild adventure in Newgate prison in 1725 and concerned principally the romance of the thoroughly unmoral jailer's daughter and the Count La Ruse, a titled thief. The chief parts were played by Basil Sydney and Mary Ellis, and there was much praise for them. The play's run was finished in ten weeks.

An adventure of minor importance to the season was that of Leo Bulgakov, a Russian who had left the Stanislavsky Moscow Art theatre to establish himself in America. While playing an important rôle in *Street Scene* Mr.

Bulgakov organized a company for the revival of Gorky's *Night Lodging*, rewritten by W. L. Laurence in the American vernacular and retitled *At the Bottom*. It proved an interesting adventure and attracted considerable attention for two months. A revival of Chekov's *The Seagull* followed.

Edgar Selwyn, having invested something over \$100,000 in a musical comedy by George S. Kaufman and George Gershwin called *Strike Up the Band*, and which had failed on tour, successfully reclaimed that property by having the book rewritten by Morrie Ryskind and by adding the comedy team of Clark and McCullough to the cast. Being smartly satirical and good-naturedly "agin' the gov'ment" the revised version pleased the Broadway crowd and ran on and on through the season.

Maurice Moscovitch, a Jewish actor of standing in London, and eager to conquer America, was given a chance by Charles Dillingham with a dramatization of Lion Feuchtwanger's novel, *Power*. The play was called *Josef-Suss* and Mr. Moscovitch gave a melodramatically effective performance. The public, however, was more than satisfied with 40 performances.

Having written an outstanding hit in *Strictly Dishonorable* in 1929, Preston Sturges's first appearance in 1930 was with a drama called *Recapture*, in which the Henry C. Martins, divorced five years, meet in France, each following a new affair. There they try to recapture the careless rapture of their first love by again running away with each other. The plan proves a failure and so did *Recapture*.

Donald Ogden Stewart, humorist, who had turned actor in Phillip Barry's *Holiday* the season before, now turned playwright. Fashioning a comedy he called *Rebound*, principally for the use of Hope Williams, who was also the featured player around whose personality *Holiday* had been written, he wrote another part in it for his own use and played it creditably. The play ran 114 performances to finish the season.

Katharine Cornell, still the big city's most persuasive emotional actress, acquired a vehicle in Margaret Ayer Barnes and Edward Sheldon's *Dishonored Lady*. It was a fairly commonplace drama, but Miss Cornell's performance of its distressed heroine, a lady whose periodical love affairs embroil her in the murder of one lover before she can take on another and better man, pleased her critics and her public.

Fred Stone had been in the hospital the better part of two years following an airplane crash. In February, following a short preliminary tour, he came back to Broadway with a musical comedy fashioned for him by William Anthony McGuire. *Ripples* it was called, and concerned the adventure of a two-fisted drinker, a descendant of the original Rip Van Winkle who also goes to sleep in the Catskills and awakes to find himself surrounded by dwarfs. He discovers, however, that these are midget bootleggers, hired because their size serves to fool the revenue officers. Mr. Stone indicated his recovery by repeating most of his old dances. His daughter Dorothy was again his leading woman, and his second daughter, Paula, made her début successfully with the troupe. *Ripples*, however, did not please New York and after 55 performances Mr. Stone took it touring. The road response was more generous.

February was about the most exciting month of the year in the American theatre. It had not

reached its shortened middle when a comedy called *Topaze*, from the French of Marcel Pagnol, was produced by the Shuberts and immediately adopted as a worth-while adventure. The title was the proper name of an honest teacher in a boys' school who was discharged because he refused to alter the report card of a stupid pupil merely because his mother was rich. Going to work for the city's biggest grafter *Topaze* threatens to expose also the dishonesty he finds rampant in city affairs, but is effectively silenced when his employer helps him to his degree as a Doctor of Philosophy. This honor so heartens *Topaze* that he immediately goes in for grafting on his own account, and before the play ends has taken over not only his employer's business but his mistress as well.

The day after *Topaze* was produced Herman Shumlin, newly come to Broadway prominence, offered a drama entitled *The Last Mile* that came as near standing the play reporters on their excited heads as anything had ever done in the history of the New York theatre. Based on an episode published in *The American Mercury* as the verbatim report of death-house conversations and reactions the night of an execution, as they were written down by one of the condemned, it took such grip of its audience in the first act as to send even the old-timers staggering uncertainly up the aisle. It was all very shivery and exciting and the play, splendidly acted, ran the season out. Which was a record for so serious a drama. American playgoers as a class much prefer that their playgoing experiences should be cheerful.

A week later a young man from China, Mei Lan-Fang by name, began a two-week engagement under the auspices of the China Institute. He had come, it was said, to bring to America the best that China had to offer in the way of native stage art and it was hoped that his performances and his art would prove to America that the Chinese theatre and Chinese dramatic art were not devoted exclusively to those interminable historical dramas that run for years and are, to Occidental minds, hopelessly involved. Mr. Mei played a series of one-act dramas, many dating back to the Han, the Ming, and the Tang dynasties, in which he appeared invariably in those female rôles in which he specialized and in the performance of which he was amazingly adept. So successful was the experiment that the engagement was extended from two weeks to five and could have been continued indefinitely had it not been that both the actor and his sponsors wished to give some time to the education of other American theatrical centres.

After Ed Wynn had produced a *Simple Simon* dream play of his own and Guy Bolton's concoction, and after George Abbott and S. K. Laurens had failed with a better than average domestic comedy called *Those We Love*, the Theatre Guild, for whom the season's adventures had not been particularly happy, played a trump card in George Bernard Shaw's newest play, *The Apple Cart*. Heavily British in its political background, and a bit labored as a satire that peered 50 years into the future and saw America voluntarily again a part of the British Empire, Mr. Shaw's play was greatly enjoyed by the more serious of the Guild subscribers but frankly left alone by the outside public. Eighty-eight performances and it was gone.

Two days later Laurence Rivers, Inc., produced Marc Connelly's stage arrangement of Roark

Bradford's *Ol' Man Adam an' His Chillun*. This proved a second red-letter first night. The audience was moved both to tears and to cheers by the persuasively simple and sincere retelling of the Old Testament story as it is heard and visualized by a Sunday-school class of Negro children in the deep South. The play's reviewers were ecstatic and mostly unrestrained in enthusiasm and *The Green Pastures* ran through both the season and the summer and into the next season. In May it was awarded the Pulitzer Prize as the outstanding drama of the year. Interestingly Laurence Rivers, Inc., is the *nom du theatre* adopted by a modest Wall Street financier named Rowland Stebbins, whose love of the theatre had led him into numerous similar ventures.

From February till early spring the season ran along to its close without stirring much additional excitement. A company of Japanese players, hoping, no doubt, to duplicate the success of their Chinese friends, failed to do so. George White, copying his friendly enemy, Florenz Ziegfeld, to the extent of engaging Josef Urban to provide the scenic background for a musical comedy called *Flying High*, won success with that venture. Mrs. Fiske, after having carefully avoided New York with the revival of *The Rivals* in which she had successfully played Mrs. Malaprop on tour, determined to give the urban provincials a chance at it. The engagement continued a month, with James T. Powers playing Acres and Fiske O'Hara Sir Lucius O'Trigger. Alla Nazimova joined the Theatre Guild to play in a Turgenev drama adapted as *A Month in the Country*. The subscribers of the Guild approved, and the Turgenev drama ran the season out.

In late March Fritz Leiber, leading the Chicago Civic Shakespeare Society on its first eastern tour, played three surprisingly good weeks of Shakespearean repertory at the Shubert. In mid-April the Theatre Guild staged its last play of the season, Philip Barry's *Hotel Universe*. This proved a psychological drama, touched with fantasy, which was played without intermission for two interesting hours. The subscribers were a little divided as to their opinion of it, but a majority admitted a profound admiration for the author and supported his play for 72 performances.

Jed Harris, returning to the theatre after having declared his determination to stay away from it forever, staged successfully a Rose Caylor adaptation of Chekov's *Uncle Vanya*. Lillian Gish came back from the cinema to play Helena, and both Mr. Harris's production and Miss Gish were generously praised. Eve Le Gallienne added a second Shakespearean play to her Civic theatre repertory (having already played *Twelfth Night*), choosing this time to play Juliet. Her own success was noted, her production accepted for its novelty and simplicity and her company's support faintly praised.

Walter Hartwig added interest to the annual Little Theatre Tournament, which he had conducted for seven years, by giving a second week to a contest of full-length plays. Prizes were won in the Little Theatre tourney by the Players' Stock company of the Y. M. H. A. of New York, the Morse Players of St. Louis, Mo., the Studio Players of Buffalo, N. Y., and the Paravent Players of Providence, R. I. The Belasco trophy went to the Studio Players of Buffalo for a performance of Anatole France's *The Man Who Married a Dumb Wife*. In the long-play contest, which

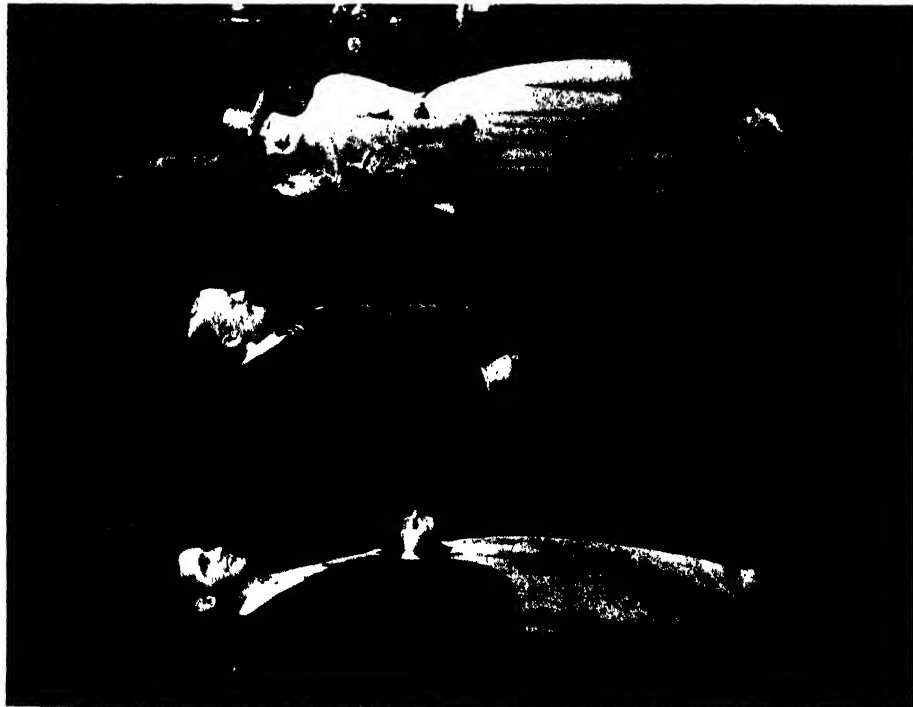


Photo by White Studio, N. Y.

"THE FIRST MRS. FRASER"

JOHN HALLORAN, LAWRENCE GROSSMITH, AND GRACE GEORGE



Photo by White Studio, N. Y.

"THE GREEN PASTURES"

CHARLES WESLEY HILL AS GABRIEL
(Died Dec. 10, 1930)

TWO NOTABLE PLAYS OF 1930

had five entries, the prize went to Marjorie Bartholomew for a three-act comedy called *The New Freedom*.

For their annual spring revival of one of the older dramas The Players Club selected the comparatively modern *Milestones*, written by Arnold Bennett and Edward Knoblock in 1911. To this they added Austin Strong's and Lloyd Osborne's *The Little Father of the Wilderness*, originally played by Francis Wilson in 1912. Mr. Wilson, retired these many years, came forward again to repeat his performance of Père Marlotte and had the support of practically all the active members of the club. *Milestones* was given by a cast including Tom Powers, Beulah Bondi, Selena Royle, and Dorothy Stickney. A prologue written by Franklin P. Adams was read by Edwin Milton Royle.

As a final flare in a dying season the Philadelphia Theatre Association, organized and largely financed by the late Horace Howard Furness, Jr., revived the *Lysistrata* of Aristophanes' which had caused no end of comment. In New York this 2100-year-old farce was accepted as hawdy but honest. Its success was immediate and throughout the summer it helped divert the stay-at-homes without appreciable effect on the atmospheric temperature.

Early in August David Belasco, hoping for another hit such as he had scored the year before with *It's a Wise Child*, produced a comedy of similar character called *Dancing Partner* with Lynn Overman featured. It did no better than fair, though it ran for 119 performances. The regular season was a fortnight late in starting and produced nothing of promise until Arthur Hopkins offered a drama called *Torch Song*, written by Kenyon Nicholson, with Mayo Methot playing a cabaret girl who joins the Salvation Army to cure a love hurt and then falls a second time. *Torch Song* held on for 11 weeks.

The first day of September the Shuberts again struck pay dirt with an amusing domestic wrangle in Greenwich Village written by Frances Goodrich and Albert Hackett and called *Up Pops the Devil*. Two weeks later John Golden brought out *That's Gratitude*, a comedy by and with Frank Craven that was freely spoken of as his best since *The First Year*.

There were plenty of failures the first month of the new season, but a few outstanding hits as well. One of these was George Kaufman's and Moss Hart's savage but highly amusing satire of life among the picture makers of Hollywood called *Once in a Lifetime*. Another, a boldly spoken but most diverting study of three "Follies" girls, was oddly entitled *The Greeks Had a Word for It*. Charles Hopkins, sticking profitably to the sweet and clean type of play, produced a Benn Levy fantasy entitled *Mrs. Moonlight* in which a wife who wants to grow old gracefully cannot do so because she had prayed on a mystic charm when she was 18 that she would always be young and pretty. Joe Cook stimulated the allegiance of his royal following with *Fine and Dandy*.

Two of the outstanding early season successes were musical, one *Girl Crazy*, with a George Gershwin score, and the other a revue with Fred Allen, Libby Holman, and Clifton Webb featured called *Three's a Crowd*. Dramas did not do so well. Jane Cowl managed an interestingly staged revival of *Twelfth Night*, and Lenore Ulric saved one of the more anemic imitations of *Rain* called *Pagan Lady*. The Theatre Guild presented an

elaborately staged Soviet melodrama, *Roar China*, to its subscribers but could not interest outsiders and the Shuberts imported an Edgar Wallace thriller *On the Spot*, which, with Crane Wilbur and Anna May Wong, managed to hold on.

The Theatre Guild's first hit of the season was achieved, fairly enough, with Maxwell Anderson's *Elizabeth the Queen*, Lynn Fontanne playing the name part in a triumphant makeup and Alfred Lunt aiding and abetting the drama as Lord Essex.

In mid-November the drama picked up with the overnight success of *Grand Hotel* by Vicki Baum, adapted by W. A. Drake. This Reinhardtian drama, written for a revolving stage, was expertly cast and staged by the same Herman Shumlin who had attracted attention the year before with his production of *The Last Mile*. The play, presenting kaleidoscopic cross sections of life, maintained its success through the winter.

Mr. Belasco, disappointed that *Dancing Partner* had not done better, closed the play in November and replaced it with one called *To-night or Never*, the story of a prima donna who goes adventuring for the good of her art. Interest was added to his production by the fact that Helen Gahagan, who had quit the drama two years before to study singing abroad, agreed to play the lead, in which undertaking she was eminently successful.

Jane Cowl, holding to the repertory idea, added a Benn Levy comedy called *Art and Mrs. Bottle* to her *Twelfth Night* season, and later put aside the Shakespeare revival until she went touring. Mary Boland, long without a part suited to her amusingly artificial style, found one in Paul Osborn's *The Vinegar Tree*. Ethel Barrymore, a little defiant, brought in the dramatization of Julia Peterkin's prize-winning novel, *Scarlet Sister Mary*, which Daniel Reed had made for her. Miss Barrymore had done well with the play on the road, although her public was frank to say that it did not care greatly for its favorite in blackface. New York would not have it at all and the actress, insisting that she owed something more to her art and to the theatre than merely so-called "Barrymore parts," packed up her scenery, her daughter Ethel Barrymore Colt, who made her debut in this company, and her burnt cork and went touring a second time.

Eva Le Gallienne offered a new play by Susan Glaspell called *Alison's House* which confessedly dramatizes the life of Emily Dickinson, American poetess whose fame was achieved some years after she had died. This pleased the Civic Repertory audiences greatly.

One of the moving-picture cathedrals, the Colony, came over to the drama when B. S. Moss remodeled the stage and Ray Goetz tried the experiment of offering a huge revue, *The New Yorkers*, at something approximating popular prices.

Arthur Hammerstein, having failed to make *Luana* meet expenses, failed again with *Ballyhoo*, starring W. C. Fields, for the same reason. Fritz Leiber brought his Chicago Shakespeareans back for another three weeks, and the year rode to an exciting finish with two melodramas, *Midnight*, offered by the Theatre Guild, and *Five Star Final*, produced by A. H. Woods. Both these plays were by newspaper writers, and both had journalistic backgrounds.

Five Star Final was a savage attack on the sensation-breeding methods of the worst of the

tabloids written by Louis Weitzenkorn, who had at one time been managing editor of the New York *Evening Graphic*. *Midnight* sought to prove that by wallowing in crime orgies, as exploited by the press, we were merely widening a vicious circle and weakening the decency standards of a susceptible citizenry. *Five Star Final* exposed the malicious harm a cheap newspaper can do by stirring up old scandals and invading the private lives of past offenders. Because the New York *Evening Gazette* decided to revive the story of how Nancy Vorhees had killed her playboy deceiver twenty years before it not only blasted the life of Nancy's illegitimate daughter, raised in ignorance of her mother's crime, but forced both Nancy and her second husband to commit suicide rather than face the scandal.

The British theatre also suffered a fairly dull year. The new year found three of the still most successful plays, St. John Ervine's *The First Mrs. Fraser*, Noel Coward's *Bitter Sweet*, and R. C. Sherriff's year-old sensation, *Journey's End*, held over from the previous season. These continued to do well for many months. *Bitter Sweet*, in fact, was still running at the end of the year.

The only American dramas to create any particular stir in London were Elmer Rice's *Street Scene* and Rachel Crother's *Let Us Be Gay*, both of which achieved fairish runs. Noel Coward again confounded his critics by doing a lot of things considered at least outré in a comedy called *Private Lives*, in which he and Gertrude Lawrence appeared, and was rewarded with a considerable success. The prolific and amazingly speedy concocter of thrillers, Edgar Wallace, saw his rather exciting picture of Chicago gangster life, *On the Spot*, expanded into a season's run, and it did nearly as well in New York. He tried another, *Smoky Cell*, which copied in some ways *The Last Mile*, but this one was not such a successful production.

A. A. Milne had fair success with his *Michael and Mary*, Sir James Barrie did nothing, and Bernard Shaw rested on such laurels as the Malvern festival brought him. R. C. Sherriff, with just short of 600 performances recorded for *Journey's End*, saw his second play, a light comedy called *Badger's Green*, withdrawn after 35 showings.

BIBLIOGRAPHY. The year's theatre books of first importance included the periodic issue of John Parker's *Who's Who in the Theatre*; a *Book on Dramatic Costume*, by E. Dabney and C. M. Wise; *The Russian Theatre*, by Gregor Fulop-Muller; Harley Granville-Barker's *A National Theatre*; *The Drama in English*, by Walter Prichard Eaton; Gordon Craig's *Henry Irving*; Max Beerbohm's theatre writings and dramatic criticisms in two volumes and called *Around Theatres*; John Mason Brown's *Upstage*; and a popular estimate of late screen developments by Arthur Edwin Krows entitled *The Talkies*. The annual issue of *The Best Plays* (Burns Mantle) included the record of the New York season and excerpts from 10 of the season's outstanding successes.

See also LITERATURE, ENGLISH AND AMERICAN; FRENCH LITERATURE; GERMAN LITERATURE; ITALIAN LITERATURE; SCANDINAVIAN LITERATURE; SPANISH-AMERICAN LITERATURE; SPANISH LITERATURE; and PHILOLOGY, MODERN.

THEOSOPHICAL MOVEMENT. THE. The year 1930 witnessed the further spread of interest in the ancient Wisdom-Religion, traceable through

the centuries in the truths uttered by the great seers, sages, and poets of every race, and restated by Mme. Helena P. Blavatsky towards the close of the nineteenth century under the name, Theosophy. Theosophy, which is not a particular set of dogmas and beliefs but religion itself, binding all beings in the universe into one grand whole, teaches an unknowable, absolute, divine Principle as the source of the manifested universe.

The Aryan Path, an outstanding nonpolitical and nonsectarian monthly magazine, international in scope and appeal, was launched in January, 1930, with offices in Bombay, London, and New York. Numerous new editions of standard Theosophical books also appeared in 1930, including *The Key to Theosophy*, *The Voice of the Silence*, *Echoes from the Orient*, and *The Ocean of Theosophy*, the first two by Madame Blavatsky and the others by William Q. Judge. A series of pamphlets issued in Bombay by Theosophy Company (India), Ltd., has made available important Theosophical articles long out of print. In Holland a monthly magazine, *De Theosoof*, has been launched.

THEOSOPHICAL SOCIETY, AMERICAN. The American division of the Theosophical Society, a world-wide organization founded in 1875 by Mme. Helena P. Blavatsky and Col. Henry S. Olcott. World headquarters were later established at Adyar, India, near Madras. In 1930 branches existed in 44 nations, on five continents. The American Theosophical Society, which was known formerly as the American Section of the Theosophical Society, had, in 1930, 220 local lodges. The president of the society was L. W. Rogers. Headquarters are in Wheaton, Ill.

THOMPSON, ROBERT MEANS. An American lawyer and financier, died in Fort Ticonderoga, N. Y., Sept. 5, 1930. He was born in Corsica, Pa., Mar. 2, 1849, and was graduated from the U. S. Naval Academy in 1868. After serving as ensign and master, he resigned from the Navy in 1871, and the following year entered the Harvard law school from which he was graduated in 1874. Admitted to the bar, he practiced in Boston for several years. He later became identified with several mining and smelting corporations, including the Oxford Copper Company and the International Nickel Company of which he was chairman. He was also first president of the American Olympic Association and chairman of the American committee for the Olympic games held in Stockholm in 1912 and in Paris in 1924.

THOMPSON, WILLIAM BOYCE. An American financier, died in Yonkers, N. Y., June 27, 1930. He was born in Virginia City, Mont., May 13, 1869, and attended the School of Mines at Columbia University. Successful in various mining enterprises in the West he became director and officer in many important business organizations and financial institutions. He headed the American Red Cross Mission to Russia in 1917, and during 1921-22 served as a member of the advisory committee to the American delegation at the Washington Disarmament Conference. In 1924 he founded and endowed the Thompson Institute for Plant Research in Yonkers.

THOMSON, CHRISTOPHER BIRDWOOD THOMSON, FIRST BARON. A British soldier and statesman, died near Beauvais, France, Oct. 5, 1930, in the *R-101* disaster. Born Apr. 13, 1875, he was educated at Cheltenham College and the Royal Military Academy, Woolwich. Commissioned in the Royal Engineers in 1894, he served in the

Mashonaland campaign (1896) and in the Boer War (1899-1902). On the outbreak of the World War he was sent to general headquarters of the British Expeditionary Forces in France, and the following year was appointed military attaché and then chief of the British military commission in Rumania. In 1917 he was transferred to Palestine, and served on the Supreme War Council at Versailles during 1918-19, retiring with the honorary rank of brigadier-general. In 1924 he was appointed Secretary of State for Air in the Labor government, and was also created first Baron Thomson of Cardington. When the Labor government again took office after the election of 1929 he resumed his cabinet post.

THULSTRUP, TURE DE. A Swedish-American painter, died in New York City, June 9, 1930. He was born in Sweden in 1848 and attended the National Military Academy in Stockholm. While his father was Swedish Minister to France, he studied drawing in Paris. Moving to the United States he was an illustrator for several years for the *New York Daily Graphic* and *Leslie's Weekly*. In 1880 he became associated with *Harper's Weekly*, his sketches of important events of the day appearing for more than 20 years in that paper. As a painter, he depicted the life of the South during the Colonial and Civil War periods, typical subjects being: "When Quality Goes to Town"; "A Meet in Old Virginia"; and "Gossip after Church."

TIBET, ti-bét' or tib'et. A central Asian territory extending eastward from the Pamirs to the border of China; nominally under the suzerainty of China. Area, estimated at 463,200 square miles; population, approximately 2,000,000. Capital, Lhasa, with a population of 15,000 to 20,000. See CHINA, and NEPAL.

TICK ERADICATION. See VETERINARY MEDICINE.

TIMBER. See FORESTRY.

TIME SCALE. See GEOLOGY.

TIN. During the year there was a decline in production, in consumption, and in the price of tin. In December, 1930, the cash price for Standard was £104½, the lowest price recorded in London since 1902. The United States decreased its imports from 195,165,173 pounds of bar blocks, pigs, etc., valued at \$91,838,781 to 180,844,329 pounds valued at \$60,233,644. As usual, British Malaya was the leading source, imports from that territory being valued in 1930 at \$41,326,304, as against \$61,322,731 in 1929; the United Kingdom \$8,765,727, as against \$17,231,433; the Netherlands \$5,844,535, as against \$8,216,715; and Hong Kong at \$3,913,161 as against \$3,185,950 in 1929.

TIBOL, te-röl'. A former crownland of Austria in the Alps, divided between Italy and the new Republic of Austria by the Treaty of St. Germain. See AUSTRIA and ITALY under *History*.

TIRPITZ, ALFRED P. FRIEDRICH VON. Former grand admiral of the German Navy, died in Ebenhausen, Mar. 6, 1930. Born in Küstrin, Mar. 19, 1849, he became a cadet in the Prussian Navy in 1865. In 1874-76 he attended the Marineakademie. He was promoted through the grades to the rank of rear admiral in 1895, vice admiral in 1899, admiral in 1903, and was made Grand Admiral of the Imperial Navy in 1911. Admiral von Tirpitz commanded the cruiser division on the East Asia Station in 1896-97, after which he became Secretary of State for the Imperial Navy and plenipotentiary to the Bundesrat. After 1898

he was also Prussian Minister of State. He retired in 1916 and took part in the founding of the Vaterlandspartei. In 1921 he entered the Reichstag as German National Deputy.

TOBACCO. The 1930 tobacco crop of the United States was estimated at 1,510,308,000 pounds, 1 per cent less than in 1929, in spite of an increase of 3½ per cent in the acreage harvested, which totaled 2,110,300 acres. The average yield per acre, 716 pounds, was 31 pounds less than in the previous year. By types the estimated production was for flue-cured, 790,950,000 pounds; fire-cured, 158,559,000; air-cured, light, largely Burley, 323,756,000; air-cured, dark, 59,185,000; cigar types, 176,814,000, comprising filler 72,365,000, binder 92,919,000, and wrapper 11,530,000; and miscellaneous, 1,044,000 pounds. The average farm price per pound, December 1, was 14.4 cents, compared with 18.5 in 1929; the estimated total farm value was \$216,895,000 versus \$282,764,000 in the previous year. North Carolina continued to lead the producing States with 535,195,000 pounds and was followed by Kentucky with 331,699,000; Tennessee, 120,903,000; Georgia, 104,994,000; South Carolina, 94,170,000; Virginia, 88,200,000; Wisconsin, 52,000,000; Ohio, 46,376,000; Pennsylvania, 38,118,000; Connecticut, 32,105,000; Maryland, 18,190,000; and Massachusetts, 11,397,000 pounds.

Tobacco production throughout the world, as reported in December, 1930, by the International Institute of Agriculture, with available statistics, amounted to 2,101,697,000 pounds, as compared with 2,118,381,000 in the previous year. This did not take into account the crop of India, officially reported at 1,353,156,000 pounds from 1,314,840 acres in 1929, and 1,358,786,000 pounds from 1,289,766 acres in 1928. Following the United States with its 1,510,308,000 pounds, came Greece with 155,253,000; Japan, 145,175,000; Italy, 108,774,000; Bulgaria, 52,826,000; Canada, 36,713,000; Algeria, 36,509,000; and Czechoslovakia, 19,842,000 pounds. Of the Canadian crop, Ontario produced 28,078,000 pounds; and Quebec, 8,490,000; and Burley and flue-cured made up about two-thirds of the total. The 1929-30 tobacco production of Porto Rico was estimated at 26,786,353 pounds, and the 1929 crop of Cuba, at 65,000,000 pounds.

Receipts from internal revenue taxes on tobacco in the United States for the fiscal year 1930, as reported by the Commissioner of Internal Revenue, continued their upward trend to a new high level, \$450,339,060.50, an increase of \$15,894,517.29 or 3.66 per cent over the previous year. Collections from taxes on small cigarettes established another record, amounting to \$359,816,274.69, which was 79.9 per cent of the total tobacco taxes collected and \$17,864,723.47 over 1929. Taxes collected on smoking and chewing tobacco declined to \$60,098,186.23 in 1930 from \$61,159,178.09 in 1929; and on large cigars to \$21,141,015.19 in 1930, a decrease of \$1,407,552.40; whereas the taxes from snuff were \$7,542,105.43, an increase of \$415,196.44 over 1929.

The continued popularity of the cigarette was indicated by the Commissioner of Internal Revenue who reported that in the calendar year 1929, there were manufactured more than 122,392,380,000 of cigarettes weighing 3 pounds or less per 1000, nearly 13,687,000,000 more than in 1928. Leaf tobacco amounting to 579,704,000 pounds was exported during the 12 months ending December, 1930. Consult *Tobacco Markets and*

Conditions Abroad (weekly), a publication issued by the U. S. Department of Commerce.

TOBAGO. A West Indian island, included administratively in Trinidad. See **TRINIDAD**.

TOGOLAND, or Togo, tō'gō. A former German protectorate in West Africa; divided between Great Britain and France Sept. 30, 1920, as mandated territory of the League of Nations; situated between Dahomey and the Gold Coast. Total area, 34,933 square miles; total population, about 931,000 (380 Europeans).

TOLEDO, UNIVERSITY OF THE CITY OF. An institution of higher education in Toledo, Ohio; founded in 1872. The enrollment for the autumn of 1930 totaled 2339. The faculty had 64 full-time members. The income for the year amounted to \$315,150. The library contained 24,000 volumes, President, Henry John Doermann, Ed.D.

TOLEDO MUSEUM. See **ART MUSEUMS**.

TOLL BRIDGES. See **BRIDGES**.

TOMBS, ANCIENT. See **ARCHAEOLOGY**.

TONGKING (TONKIN), tōn'kēn. A French protectorate, constituting the northern chief division of the colony of French Indo-China. Area, 40,530 square miles; population in 1926, 7,401,912, of whom 9143 were Europeans, exclusive of military forces. The chief city is Hanoi, which is the capital of French Indo-China, with a population of 103,235 in 1926. See **FRENCH INDO-CHINA**.

TORONTO, UNIVERSITY OF. An institution of higher education in Toronto, Ont., Canada; founded in 1827 and supported by the provincial government. The 1930 autumn enrollment was 7189. The faculty numbered 825 members. The total expenditure for the year 1929-30 for salaries and maintenance was \$3,120,513. Total benefactions received during the year amounted to \$214,908. The library contained 252,486 volumes and 90,276 pamphlets. President, Sir Robert A. Falconer, K.C.M.G., D.Litt., LL.D., D.D., D.C.L.

TORPEDO BOAT. See **NAVAL PROGRESS**.

TOSCANINI, ARTUR. See **MUSIC**.

TOWN PLANNING. See **CITY PLANNING**.

TRADE, INTERNATIONAL. See **FINANCIAL REVIEW**.

TRADE FAIRS. See **EXPOSITIONS**.

TRADE UNIONS. Informed observers in recent years have commented on the fact that trade unionism in the United States had been practically at a standstill since the conclusion of the World War. There was no question that the continued organization of workers in unions had been confronted by a group of serious obstacles and that an extraordinary renewing of activity or reorganization on simple industrial lines was required in order to extend the benefits of collective bargaining to the great number of workers still unorganized in the United States. This pessimistic note was struck constantly during the year 1930 at labor conferences. Thus, at the autumn conference of Women Trade Unionists, held at the Mount Ivy Holiday School in October, M. H. Hedges, Director of Research of the International Brotherhood of Metal Workers, and Dr. Leo Wolman, the economist of the Amalgamated Clothing Workers' Union, both declared that organized labor was facing a crucial test for survival. Dr. Wolman saw the virtual bankruptcy of the American Federation of Labor with a steady loss of membership as a result of the inroads being made by the newer industrialism or mechanization.

Mr. Hedges listed the following elements in the American industrial situation that were seriously

threatening the continued existence of organized labor: The introduction of automatic machinery by conscious deliberation rather than by accident; instability in the lives of the wage earners, small business men and "white collar" workers generally; bank failures; the disappearance of businesses and home trades; the swift and constant shrinkage of jobs and professional work. Said Mr. Hedges in referring to the processes of mechanization that were robbing the workers of their old-time skill:

The process of production has become a job demanding a great deal more specialized knowledge and intelligence. It takes more brains to run industry and this specialized knowledge does not reside as it once did in the peculiar possession of the workers. It is committed to blue prints, read, interpreted and applied by engineers and specialists. There was a time after workers lost control of tools that they possessed the skill to command them. Now they have surrendered not only the tools but the specialized knowledge to specialists.

COMPANY UNIONS. The Supreme Court of the United States, in a decision rendered in June, 1930, based upon the interpretation of the Railway Labor Act of 1926, declared that railway labor was entitled to choose its own representatives in dealing with the employers. In other words, company unions, as far as railway workers were concerned, were not to have a monopoly of the field of trade-union organization. On the basis of this opinion, the Supreme Court issued a permanent injunction against interference or coercion by the railroad employers. The case arose on the Texas and New Orleans Railroad where the company, after negotiating with the Brotherhood of Railway Clerks, decided that it would no longer do business with this international union but would set up its own company union to act as the representative of the railways clerks in their service. The Brotherhood secured a District Court injunction against interference with its organizational activities. The District Court ordered the railway company to disestablish its union and reinstate the Brotherhood. The Supreme Court upheld this decree by a unanimous decision, written by Chief Justice Hughes, in which it said:

The legality of collective action on the part of employees in order to safeguard their proper interests is not to be disputed. Such collective action would be a mockery if representation were made futile by interference with freedom of choice. Thus, the prohibition by Congress of interference with the selection of representatives for the purpose of negotiation and conference between employers and employees, instead of being an invasion of the constitutional rights of either was based on the recognition of the rights of both.

Commentators were generally agreed that this decision of the highest tribunal of the land marked the death knell of the company union so far as the railways were concerned.

TRADE-UNION MEMBERSHIP. The International Federation of Trade Unions made the following estimates of trade-union membership for the more important countries of Europe as of December 31, 1928: Austria, 990,137; Belgium, 724,408; Czechoslovakia, 1,738,265; France, 1,200,600; Germany, 8,604,887; Great Britain, 4,073,144; Holland, 561,037; Italy, 3,000,000; Norway, 107,982; Poland, 512,317; Russia, 11,060,000; Spain, 291,000; Sweden, 564,009; Switzerland, 285,612. In the whole of Europe, according to this estimate, there were at the end of 1928, 35,392,086 trade unionists as compared with 33,936,784 at the end of the year 1927. The same source also placed trade-union membership as being the following in other important countries of the world: Argen-

tina, 112,000; Brazil, 116,500; Canada, 300,602; Mexico, 1,850,000; United States, 4,443,523; Australia, 911,541; New Zealand, 106,916; India, 273,621; Japan, 308,900.

The following are the estimated grand totals for the continents of the world for the year ending Dec. 31, 1928. The figures for 1927 follow in the parentheses: Europe, 35,392,086 (33,936,784); America, 6,947,291 (7,416,491); Australia 1,018,457 (991,652); Asia, 3,742,194 (3,697,800); Africa, 90,497 (144,333); grand total, 47,190,525 (46,187,060).

CANADA. At the close of the calendar year 1929 there were 319,476 trade unionists in the Dominion of Canada, grouped together in 2778 local branches of various trade unions. This represented an increase over 1928 of 18,874 trade unionists and 125 trade-union locals. The largest single group of trade unionists was to be found in the 85 international craft unions in the Dominion. In these craft unions there were 203,504 members grouped in 1953 locals. See **UNEMPLOYMENT**.

BRITISH TRADES-UNION CONGRESS. At Nottingham, from September 1 to 5, there was held the sixty-second annual meeting of the British Trades-Union Congress. A total of 606 delegates was in attendance, representing 3,744,320 members. The assembly devoted its attention largely to the questions of the organization of the British Empire as an economic bloc and the granting of family allowances. The delegates went on record as opposing the recommendation of the family allowance system at this time. Resolutions were adopted favoring the repeal of the trade disputes act of 1927, for a close guard being maintained over the processes of rationalization, for the reduction of hours in order to limit labor displacements, State pensions for persons over 60 years, holidays with pay for all workers, and for the consideration of the problems of the coal industry on a national basis. See **GREAT BRITAIN** under *History*.

TRANSFORMERS. See **DYNAMO ELECTRIC MACHINERY**.

TRANS-JORDAN. An Arab territory in Asia Minor; under British protection as a part of the Palestine Mandate, although governed by a local Arab administration under Amir Abdullah Ibn Hussein, elder brother of King Feisal of Iraq. It is bounded on the north by Syria, on the west by Palestine, on the south by the Gulf of Akaba and the Hejaz, and on the southeast and east by Iraq. The area is uncertain; the partly nomadic population is estimated at 260,000, of whom 220,000 are Arab Moslems, 30,000 Arab Christians, and 10,000 Caucasian elements. Capital, Amman, with 12,000 inhabitants.

TRANSVAAL. See **SOUTH AFRICA, UNION OF**.

TRAPSHOOTING. See **SHOOTING**.

TRAVEL. See **LITERATURE, ENGLISH AND AMERICAN**.

TREASURY FINANCE. See **PUBLIC FINANCE**.

TREATIES. See **ARBITRATION, INTERNATIONAL**; also sections on *History* under **GREAT BRITAIN** (for London Treaty); **NORWAY** (for "dual nationality" treaty with the United States); **ITALY** (for commercial pact with Russia); **GREECE** (for treaty of friendship and neutrality with Turkey); and under various other countries.

TREES. See **FORESTRY**.

TRENGGANU. See **NON-FEDERATED MALAY STATES**.

TRIBAL STUDIES. See **ANTHROPOLOGY**.

TRINIDAD. A West Indian island north of the mouth of the Orinoco River, constituting, with Tobago, a British colony. Area of Trinidad, 1862 square miles; of Tobago, 114; total population, according to the census of 1921, 305,913; estimated at end of 1928, 397,093. Capital, Port of Spain, with 66,836 inhabitants.

TRINITY COLLEGE. An institution for the higher education of men in Hartford, Conn.; founded by members of the Protestant Episcopal Church in 1823 as Washington College and changed to Trinity College in 1845. For the autumn term of 1930 the enrollment was 350. There were 42 members on the faculty. The endowment fund of the college was \$3,112,373, and the income totaled \$269,604. There were approximately 100,000 volumes and 40,000 pamphlets in the library. During 1930 a new chapel and a dormitory were under construction. President, Remsen B. Ogilby, Litt.D., LL.D.

TRINITY COLLEGE, DURHAM, N. C. See **DUKE UNIVERSITY**.

TRIPOLITANIA. An Italian territory on the north coast of Africa; until 1919 a part of Italian Libia. In that year, for administrative purposes, Libia was divided into Tripolitania and Cyrenaica. Area, estimated at 347,400 square miles; population, according to the census of 1921, about 550,000 natives, and 20,716 Europeans, of whom 18,093 were Italians. Tripoli, population about 60,000, is the capital and chief city. See **CYRENAICA**.

TROELSTRA, trool'strâ, PIETER JELLES. A Dutch Socialist leader and editor, died in Amsterdam May 12, 1930. He was born in Leeuwarden Apr. 20, 1860, and was graduated from the University of Groningen in 1888, becoming an attorney in his native city. He entered the lower chamber of the Netherlands Parliament in 1897, and until 1925 was the leader of the Social Democratic Workers in that body, causing the influence of the party to increase steadily. When the Social Democratic Workers' party established its daily paper, *Het Volk*, in 1900, Troelstra was made its chief editor. He also was active in the international socialist movement. His writings include: *De Sociaaldemokratische arbeiderspartij in Nederland* (1896); *Social christendom* (1902); *Theorie en beweging* (1902); *Inzake partijleiding* (1906); and *Lebenserinnerungen* (3 vols., 1927-29).

TROTTLING. See **RACING**.

TRUCK FARMING. See **HORTICULTURE**.

TRUCKS, MOTOR. See **AUTOMOBILES**.

TRUST COMPANIES. See **BANKS AND BANKING**.

TSANA. A lake in northern Ethiopia forming one of the sources of the Blue Nile. See **ETHIOPIA** under *History*.

TUBERCULOSIS. See **MEDICINE, PROGRESS OF**.

TUBERCULOSIS OF LIVESTOCK. See **VETERINARY MEDICINE**.

TUCKER, THE RT. REV. BEVERLEY DANDRIDGE. Protestant Episcopal Bishop of the Diocese of Southern Virginia, died in Norfolk, Va., Jan. 17, 1930. He was born in Richmond, Va., Nov. 19, 1846, and was educated in England, Switzerland, and at the University of Toronto, Canada. On graduation from the Virginia Theological Seminary in 1873, he was ordained deacon, and two years later was advanced to the priesthood. In 1906 he was consecrated Bishop Coadjutor of the

Diocese of Southern Virginia, succeeding to the bishopric upon the death of the Rt. Rev. Alfred M. Randolph in 1918.

TUFTS COLLEGE. A nonsectarian institution for the higher education of men and women in Medford, Mass.; founded in 1852. The registration for the autumn term of 1930 was 1910. There were 390 faculty members. The productive funds of the college amounted to \$8,212,004, and the income for the year was \$876,778. The library contained 95,000 volumes. President, John Albert Cousens, LL.D.

TULANE UNIVERSITY OF LOUISIANA, THE. An institution of higher education in New Orleans; founded in 1834. Although the professional schools are coeducational, there is a separate undergraduate department for women. Enrollment for the autumn of 1930 was 3225. H. Sophie Newcomb College for Women had 642 students. The faculty numbered 415. The productive funds of the university for the fiscal year ending Aug. 31, 1930, amounted to \$10,017,708.51; the income for the year to \$1,269,544.88; and gifts and bequests to \$1,005,287.17. The library contained 144,175 volumes. In the fall of 1930 a new medical clinic building, erected at a cost of \$1,250,000, was formally opened. President, Albert Blodsoe Dinwiddie, Ph.D., LL.D.

TUNGSTEN. The U. S. Tariff Act of 1930 increased the tariff on ore from \$7.14 to \$7.93 per short ton unit of tungsten trioxide, or 45 cents to 50 cents per pound of tungsten. In anticipation of this move, domestic consumers were heavy buyers in 1929, and the deliveries were carried through into 1930. The domestic production of tungsten ores in 1929 was 830 short tons of concentrated ore carrying 60 per cent of tungsten trioxide, with a total value of \$654,000, or an average per unit of \$13.13. The imports of tungsten and alloys, based on their tungsten content, in 1930 were 3,613,832 pounds valued at \$1,658,890, as against 6,809,965 pounds valued at \$2,510,270 in 1929.

TUNIS (TUNISIA). A French protectorate in North Africa, situated on the Mediterranean coast east of Algeria, west of Tripolitania, and north of the Sahara and Libian deserts. With an area of about 48,300 square miles, Tunis at the census of 1926 had a population of 173,281 Europeans (89,216 Italians, 71,020 French, and 8396 Maltese) and 1,986,427 natives (1,932,184 Arabs and Bedouins, 54,243 Jews). The capital city, Tunis, had 185,996 inhabitants in 1926 (106,860 Moslems, 44,076 Italians, 27,922 French, and 24,131 Jews).

PRODUCTION. Agriculture is the chief industry. Sixty-one mines in operation in 1928 exported ore (including phosphate) valued at \$41,644,000. The output of phosphate of lime was 2,789,000 metric tons.

COMMERCE. The trade of Tunis normally shows a surplus of imports over exports. Imports in 1928 were valued at 1,680,175,000 French francs (1,771,029,439 francs in 1927) and exports at 1,233,352,000 francs (1,026,673,482 francs in 1927).

FINANCE. In the ordinary budget for 1929, revenues were estimated at 450,093,400 francs and expenditures at 449,091,037 francs, as compared with respective budget figures of 439,542,956 francs and 439,430,489 francs in 1928. The public debt in 1928 was 542,051,000 francs.

GOVERNMENT. The government is under the direct supervision of a French Minister Resident-

General, acting on behalf of the French Foreign Office. Resident-General, M. Manoeiron, appointed Jan. 2, 1929. The International Eucharist Congress, held on the site of ancient Carthage, May 7 to 10, 1930, attracted thousands of Roman Catholics from various parts of the world to Tunis. For the Franco-Italian dispute over Italian citizens in Tunis and the Tunis-Tripolitania boundary, see FRANCE under *History*.

TUNNELS. Among the interesting events in this field during 1930 were the opening of the Detroit River Tunnel on November 1, the proposals for a tunnel at Seattle, the progress of plans for new subaqueous work at New York, and the proposal to build a new tunnel under the Thames at London.

SEATTLE. Proposals were made to build a subaqueous tunnel between Seward Park and Mercer Island at Seattle, Wash., under unusual conditions. It was planned to use the method followed in constructing the Oakland Estuary Tube in California—namely, building the tube in sections in dry dock and sinking these in place on a prepared foundation to form the tunnel. Due to the fact that the depth of water at Seattle is about 120 feet, construction by this method would be extremely difficult. It was proposed, therefore, to adopt the novel plan of filling the deeper section of the channel to reduce the depth and founding the tubes on piles driven into this submerged embankment.

NEW YORK CITY. Studies of the proposed Weehawken-38th Street vehicular tunnel, to connect with the 38th Street cross-town tunnel authorized by the City of New York, were brought to the point where the securing of test borings and other data, in preparation for the final contract, were in order.

THE CHANNEL TUNNEL. See GREAT BRITAIN under *History*.

LAND TUNNELS. While no record-breaking tunnels were under way in 1930, some very interesting developments occurred in tunnel practice, some of which are summarized below.

Brooklyn Subway. In building new subway tunnels under Prospect Park, Brooklyn, concrete block lining was used for the first time on large-scale work in the United States. While no air pressure was required in these tunnels they were shield-driven, and the usual cast-iron lining was replaced by a special concrete block lining 18 inches thick. The lining blocks fitted together with special interlocking lugs, or projections, and the joints were grouted. A considerable saving in cost was thus secured.

Hetch Hetchy, California. The work on the Coast Range tunnel of this water-supply system of San Francisco was delayed due to an explosion of natural gas in July. Twelve lives were lost in the explosion and work was immediately shut down until safety installations could be made.

Japanese Tunnels. On Dec. 29, 1929, the Shimizu Tunnel on the Joetsu line of the Japanese Government Railways, 6 miles long, was holed through. This is the longest bore of its kind in this part of the world. Unfortunately progress on the Tanna Tunnel of the Japanese Railways had not been so satisfactory. This work was begun in 1918, but had been held up due to the extremely difficult nature of the ground encountered. Volcanic rock with cracks and faults, bad clay, swelling ground, and unusual amounts of water were encountered in the course of construction.

TURBINES. See STEAM TURBINES.

TURBINES, WATER. See WATER POWER.

TURCOMAN REPUBLIC. See SOVIET CENTRAL ASIA.

TURKESTAN. See SOVIET CENTRAL ASIA.

TURKESTAN-SIBERIAN RAILWAY. See RUSSIA, under *Transport*.

TURKEY. A republic occupying a large part of Asia Minor and contiguous territory in the Balkan peninsula, which supplanted the Ottoman Empire on Oct. 29, 1923. The land frontiers touch Bulgaria and Greece on the north and west, the Soviet Union and Persia on the east, and Iraq and Syria on the south. The republic comprises also Imbros, Tenedos, and the Rabbit Islands in the Aegean Sea. Capital, Ankara.

AREA AND POPULATION. With an area of 294,416 square miles, including 285,102 square miles in Asia and 9254 square miles in Europe, Turkey at the census of October, 1927, supported a population of 13,680,275 (12,615,969 in Asia and 1,044,306 in Europe). The estimated population Dec. 31, 1928, was 13,850,000. The population of the principal cities, with suburbs, in 1927 was: Istanbul (Constantinople), 690,857; Izmir (Smyrna), 184,254; Balikesir (Karasi), 135,473; Bursa (Brusa), 127,251; Ordu, 113,899; Adana, 109,215; Ankara (Angora), 107,581. Moslems constitute the great majority of the population.

EDUCATION. According to Turkish statistics, the percentage of illiteracy decreased from 85 per cent in 1928 to 42 per cent in 1930.

PRODUCTION. Turkey is essentially an agricultural country, in which modern methods of farming are being introduced gradually. A succession of poor crops and the decline of agricultural prices resulted in a severe economic and financial crisis in 1920 and 1930. At the census of 1927, 67.7 per cent of the population were engaged directly in agriculture, the cultivated area was slightly under 10,000,000 acres, and 89.5 per cent of the arable land was devoted to cereals. In 1929, the production of tobacco was 90,389,000 pounds (94,762,000 in 1928); raisins, 79,917,000 pounds (78,263,000); figs, 48,226,000 pounds (70,547,000); wool, 5,000,000 pounds (8,000,000); and mohair, 6,944,000 pounds (9,921,000). Wheat production (1928) was about 611,000 metric tons; barley, 900,000 tons; corn, 417,090 tons; cotton, 140,000 bales (of 500 pounds); valonea, 45,000 tons; potatoes, 59,480 tons. Other products are dried fruits, nuts, olives, gums, and opium.

COMMERCE. While imports in 1929 increased 8 per cent over 1928 to \$123,131,000, exports declined 15 per cent to a total of \$74,736,000. The excess of imports over exports was \$48,395,000. The value of imports in 1928 was \$113,666,000; of exports, \$88,244,000.

FINANCE. The Turkish pound, which has a par value of \$4.40, declined steadily after the World War to a low exchange point of \$0.47 in December, 1929. Partly due to the declining exchange value of the pound, Turkish budgets during the same period showed a steady increase, despite unfavorable economic conditions. In the budget for the fiscal year ending May 31, 1931, revenues were estimated at £T222,732,000 (about \$104,680,000) and expenditures at £T222,647,000 (about \$104,640,000). Comparative estimates for 1929-30 were: Revenues, £T220,546,000; expenditures, £T220,408,000. The Ottoman Debt Commission was formally notified July 11, 1930, that the condition of the treasury was such that Turkey could pay only one-third of the amounts due.

The Ottoman debt in 1929 totaled £T107,528,000 (about \$473,123,000), including interest in arrears of £T21,550,000 (about \$94,820,000). In addition, there was an internal debt of about £T15,000,000 (approximately \$60,000,000).

COMMUNICATIONS. Of 3291 miles of railway line in operation at the end of 1929, 1806 miles were operated by the Government and 1485 miles by concessionary companies. An additional 800 miles were under construction. The final link, 32 miles long, of the Ankara-Sivas Railway was opened to traffic on Aug. 30, 1930.

GOVERNMENT. Under the Constitution of April 20, 1924, "the Grand National Assembly exercises the executive power through the President of the Republic elected by itself and through the Council of ministers chosen by him." The Assembly, elected for four years by the indirect suffrage of all citizens over 18, has power to dismiss the Government at any time. The National Assembly elected September, 1927, consisted of 315 deputies. Ghazi Mustapha Kemal Pasha, first President of the Turkish Republic, was reelected Nov. 1, 1927, for a four-year term. The Ministry appointed by him was headed by Ismet Pasha.

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INTERNAL DEVELOPMENTS. President Mustapha Kemal's seven years of vigorous effort to convert Turkey into a modern state on western lines appeared in 1930 to be approaching disaster on the rock of financial insolvency (see above under *Finance*). His extensive programme of internal development had resulted in a continued increase in the cost of government, while a consistently unfavorable balance of trade, a succession of poor crops, and declining agricultural prices had made it increasingly difficult to meet government expenses. The normal course of floating a foreign loan to tide over the crisis was rejected, because it involved the pledging of Turkish customs receipts, or other assets. The financial crisis was aggravated by a costly campaign necessary to crush a serious Kurdish revolt and by a ferment of internal unrest, chiefly political and religious in character.

The Kurdish rebellion, which broke out in May and required the balance of the summer to suppress, was reported to have cost Turkey the bulk of a \$10,000,000 loan received from the Swedish match corporation in exchange for a match monopoly. Approximately half of the Turkish army of 120,000 men were engaged in the campaign. The insurgent Kurds of Eastern Turkey received assistance from their kinsmen in Persia and Iraq, and Turkish troops pursued them into Persian territory. War between Turkey and Persia appeared likely for a time, after Persia had demanded compensation for the invasion of her territory and Turkey threatened to revise forcibly her eastern border in the vicinity of Mount Ararat unless Persia agreed to such a revision as would facilitate the subjugation of the revolting Turkish Kurds. On December 2, the Turkish Ambassador to Persia announced that Persia had agreed in principle to the exchange of Persian territory near Mount Ararat for Turkish territory further south.

Two days before Christmas occurred a second outbreak, this time among the Turks of the village of Menemen near Izmir (Smyrna). The outbreak was led by six fanatical dervishes of the outlawed Nakhshibend secret religious society, who appeared at the village wearing the forbidden

fez of the Caliphate. A widespread conspiracy for the restoration of the Caliphate was reported to have been uncovered. Martial law was declared in the disaffected district and numerous arrests followed there and in other parts of the country. At the end of the year a military court was conducting the trials of over 100 prisoners. Thirty-four alleged Communists were arrested at Istanbul in August and 17 were tried on conspiracy charges in December.

Undismayed by its difficulties, the Ankara Government vigorously pushed its nationalistic programme of social, political, and economic reorganization. In March, Parliament voted to permit women to vote for and to be elected as members of municipal councils throughout Turkey. Further legislation was introduced to allow women to participate in national elections. Turkey became the second European country to have women judges when two women were appointed associate judges of the equity courts in Ankara and Istanbul in April. A law strictly prohibiting the use of Arabic characters in writing or printing Turkish became effective June 1, the Latin alphabet having been substituted on Nov. 1, 1928.

THE TWO-PARTY MOVEMENT. The absolute control exercised by the People's party, since 1926 the only political organization permitted in Turkey, was ended temporarily on Aug. 13, 1930. A new party was launched under the leadership of Fethi Bey, Turkish Ambassador to Paris and a former Premier, with the expressed approval of President Kemal. Fethi Bey advocated the abolition of government monopolies, development of Turkey's economic resources with the assistance of foreign loans, freedom of speech and the press, a broader suffrage, full political rights for minorities, and membership in the League of Nations. After winning a by-election in Smyrna, Fethi Bey took his seat in the National Assembly September 24, rallied 15 deputies to his standard, and forced the reorganization of Ismet Pasha's Cabinet (September 27). The new Cabinet, containing four new members and six holdovers, was approved by a vote of 249 to 12.

Fethi Bey's Liberal Republican party showed its strength in the municipal elections ending October 18. While the People's party was everywhere successful, the new party polled about 25 per cent of all votes. For the first time under the Kemalist régime, candidates of the Greek, Jewish, and Armenian minorities were allowed on the electoral lists and women participated as voters and candidates. Extensive rioting accompanied the voting. The Liberal Republicans later voted to dissolve their party. Fethi Bey explained that he had expected the assistance of the President, but on the contrary he saw that the continuance of his party would inevitably lead to conflict with the President. A reorganization of the People's party into three groups of the Left, Middle, and Right was announced at the end of the month. Saraçoğlu Sükrü Bey, Minister of Finance, resigned from the Cabinet December 26 and was succeeded by Abdul Halik Bey, the Minister of National Defense.

FOREIGN RELATIONS. In addition to the difficulties with Persia, Turkish foreign relations during 1930 were marked by the successful conclusion of the long-drawn-out negotiations with Greece and with the signing in October of a treaty of arbitration and friendship between the former rivals during a visit by Premier Venizelos to Ankara (see GREECE under *History*). In September,

Tevfik Rüstü Bey, the Turkish Foreign Minister, visited Moscow and in November and December, Tevfik Rüstü Bey made trips to Rome and Sofia, which aroused much interest in Paris and the countries of the Little Entente. See GREECE, ITALY, PERSIA, IRAQ under *History*; also KURDISTAN. Consult Halidé Edib, *Turkey Faces West* (Yale University Press, 1930).

TURKMENISTAN, or TURCOMAN SOVIET SOCIALIST REPUBLIC. See SOVIET CENTRAL ASIA.

TURNER, CUTHBERT HAMILTON. A British theologian, died in Oxford, England, Oct. 10, 1930. Born in London July 7, 1860, he was educated at Winchester College and at New College, Oxford, and in 1889 was appointed fellow of Magdalen College. From 1888 to 1901 he was an assistant lecturer to Dr. W. Bright, Regius professor of ecclesiastical history; from 1906 to 1910, first Speaker's lecturer in Biblical studies in the University of Oxford; and from 1914 to 1920, university lecturer in early Christian history and literature. In 1920 he was appointed Dean Ireland's professor of exegesis of Holy Scripture. He was first editor of the *Journal of Theological Studies* from 1889 to 1902. His publications include numerous works on religion.

TURNER, HERBERT HALL. A British astronomer, died in Stockholm, Sweden, Aug. 20, 1930, while attending the International Geodetic Congress. He was born in Leeds in 1861 and attended Clifton College and Trinity College, Cambridge. In 1893 he was appointed fellow of New College, Oxford, and Savilian professor of astronomy in the university. His most important contribution lay in the field of determining photographically the positions of the stars. He published more than 200 papers, essays, and books, chief of which are: *Modern Astronomy* (1901); *Astronomical Discovery* (1904); *Halley's Comet* (1908); *The Great Star Map* (1912); and *A Voyage in Space* (1916).

TURTLE ISLANDS. See UNITED STATES under *Administration*.

TUSKEGEE NORMAL AND INDUSTRIAL INSTITUTE. A nonsectarian normal and industrial school for the higher education of Negro men and women in Tuskegee, Ala.; founded in 1881 by Booker T. Washington. The institute gave regular and systematic instruction during the year to a total of 3414 persons.

TUTUILA. See SAMOA.

TYPHOONS AND HURRICANES. See JAPAN and DOMINICAN REPUBLIC under *History*.

TYPHUS FEVER. See MEDICINE, PROGRESS OF.

TYROL. See TIROL.

UBANGI-SHARI. See FRENCH EQUATORIAL AFRICA.

UGANDA, oo-găn'dă, **PROTECTORATE.** A protectorate of Great Britain in East Africa; lying north of Tanganyika and Lake Victoria and south of the Anglo-Egyptian Sudan. Area, 94,204 square miles (1507 square miles of water); population, estimated December, 1928, at 3,255,367, including 3,241,543 natives, 11,846 Asiatics, and 1987 Europeans. Capital, Entebbe; commercial centre, Kampala. See KENYA.

U'KRAINE. A region in southwestern Russia known officially as the Ukrainian Socialist Soviet Republic, and forming (since July 6, 1923) a constituent part of the Union of Socialist Soviet Republics; including the autonomous Moldavian Socialist Soviet Republic (formed in September, 1924). See RUSSIA and POLAND under *History*.

UNDERWRITING. See **INSURANCE.**

UNDULANT FEVER. See **VETERINARY MEDICINE.**

UNEMPLOYMENT. Before the end of the year 1930 it was apparent that unemployment had taken on all the proportions of a world crisis. Next to Prohibition, the discussion of the problem was most before the attention of the American public. The greater part of the sessions of the American Federation of Labor (q.v.) was devoted to the subject; it was an important issue in the election campaigns; unemployment insurance was widely discussed; and Federal, State and municipal agencies were mobilized to cope with the situation. Particularly serious, was the growing realization that charity was inadequate to deal with the great army of the unemployed. It became necessary for public bodies to pass emergency legislation appropriating funds for public works and the cities particularly sought to give temporary work by engaging unemployed workers in parks, on docks, and on the like activities.

While there was unemployment in industrial nations before the depression of the fall of 1929, this catastrophe succeeded in heightening distress. Australia, Austria, Germany, Great Britain, Italy, Japan, Poland, and the United States showed particularly increased totals.

World-wide unemployment was attributed to a wide variety of motives. It was generally accepted that unemployment was a phase of the business cycle. Socialists and radicals generally were insisting that unemployment was a concomitant of the prevailing system of monopoly ownership with resulting low real wages and therefore underconsumption on the part of the great masses of the population. Other factors cited were: The too-rapid advance of mechanization with resulting technological unemployment; the collapse of the building and automobile booms; the crisis in raw materials caused by overexpansion with resulting drops in prices; high tariff walls being raised the world over; an increase in the labor supply; revolution in China and disturbances in India, cutting into the purchasing power of the people of these lands; drift from the farms to the cities.

The remedies proposed were equally diverse. Workers' representatives urged a shorter work day, higher wages, and unemployment insurance. Economists advocated the greater control of the business cycle, the stabilization of industry, regularization of employment, the opening of new markets, rationalization in older industries, more

credits abroad, freer trade, planned public works, and greater monopoly control of basic industries.

In November, the International Labor Office (q.v.) estimated the total of world unemployment to be from 12,000,000 to 15,000,000 persons. Only France among the great nations of the world was spared and in Russia unemployment was decreasing as the year closed. For the end of December the French government reported a total of 11,952 unemployed receiving government aid. There follows the estimates of the International Labor Office for the end of October. Germany's figure was put at 3,184,000 by Reich officials.

See **MEXICO** under *History*.

CENSUS OF UNEMPLOYMENT. In April, when the decennial Federal census was taken in the United States, an effort was also made to ascertain the number of persons "out of a job, able to work and looking for a job." This was the first federal census of unemployment ever taken in the United States. Preliminary figures released by the Federal Bureau of the Census in August reported the total of such unemployed persons as 2,508,151. At the end of the year full figures had not yet been made public, the Bureau of the Census contenting itself merely with the enumeration of the unemployed in some of the larger cities of the country.

It is important to note that the unemployment schedules included the following seven categories, and that the reported figure of 2,508,151 covered only Class A:

- Class A—Persons out of a job, able to work and looking for a job.
- Class B—Persons having a job but on lay off without pay, excluding those sick or voluntarily idle.
- Class C—Persons out of a job and unable to work.
- Class D—Persons having jobs but idle on account of sickness and disability.
- Class E—Persons out of a job and not looking for work.
- Class F—Persons having jobs but voluntarily idle without pay.
- Class G—Persons having jobs and drawing pay though not at work (on vacation, etc.).

The accompanying table issued by the Census Bureau indicated the persons' in the Class A category above. It will be noted that the percentage of unemployed is on the basis of total population and not on the number of persons in the country who make up the working population.

EUROPE. Reports received through the year indicated that unemployment was continuing to roll up great totals during 1930. The *Monthly Labor Review* (U. S.) reported that from data it had examined it was apparent that the situation in 1930 was considerably more serious than it had been in the previous year. Thus, unemployment was three and one-half times greater in Finland and Rumania in the spring and summer of 1930, as compared with the same periods in 1929; had almost trebled in Belgium in 1930, as compared with 1929; was probably two and one-half times greater in France in 1930, as against the previous year; and was twice as great in Germany, the Netherlands, and Poland. The increase in Italy had been 65 per cent over 1929, in Great Britain and Sweden also 65 per cent, in Czechoslovakia 60 per cent, in Hungary 50 per cent, in Austria 40 per cent. There were also increases in the Irish Free State and in Sweden. Interestingly enough, three countries, despite world-wide unemployment showed decreases, these being Denmark, 9 per cent; Norway, 4 per cent; and Jugoslavia, 18 per cent. The following indicates the number of persons unemployed in the

UNEMPLOYMENT

| | Unemployed | Population |
|----------------------|------------|-------------|
| Austria | 156,000 | 6,526,661 |
| Belgium | 64,000 | 7,923,077 |
| Canada | 20,000 | 9,396,800 |
| Czechoslovakia | 37,000 | 14,523,186 |
| Denmark | 25,000 | 3,434,555 |
| Danzig | 15,000 | 386,000 |
| Finland | 4,000 | 8,582,406 |
| France | 1,000 | 40,745,874 |
| Great Britain | 2,100,000 | 44,173,704 |
| Hungary | 20,000 | 8,368,273 |
| Italy | 400,000 | 30,796,000 |
| Jugoslavia | 7,000 | 12,017,323 |
| Netherlands | 25,000 | 7,625,933 |
| Norway | 20,000 | 2,649,775 |
| Poland | 240,000 | 30,212,962 |
| Palestine | 5,000 | 852,268 |
| Rumania | 23,000 | 17,393,149 |
| Russia | 1,150,000 | 150,000,000 |
| Saar | 7,000 | 770,000 |
| Sweden | 26,000 | 6,087,923 |
| United States | 4,000,000 | 122,000,000 |

NUMBER OF PERSONS OUT OF A JOB, ABLE TO WORK, AND LOOKING FOR A JOB, BY STATES
[U. S. Bureau of the Census, 1930]

[The figures in the column headed "Persons out of a job, etc.," represent persons usually working at a gainful occupation who were returned on the unemployment schedule as out of a job, able to work, and looking for a job. Returns were also made for other classes of persons not at work on the day preceding the enumeration, such as those having a job but sick or temporarily laid off; data for these other classes will be given out later. All figures are preliminary and subject to correction.]

| State | Population 1930 (preliminary) | Persons out of a job, able to work, and look- ing for a job | Per cent of popu- lation |
|----------------------------|-------------------------------------|---|-----------------------------------|
| New England: | | | |
| Maine | 800,056 | 13,244 | 1.7 |
| New Hampshire | 465,293 | 8,493 | 1.8 |
| Vermont | 359,092 | 5,419 | 1.5 |
| Massachusetts | 4,253,646 | 115,987 | 2.7 |
| Rhode Island | 687,232 | 22,193 | 3.2 |
| Connecticut | 1,604,711 | 32,192 | 2.0 |
| Middle Atlantic: | | | |
| New York | 12,619,503 | 364,617 | 2.9 |
| New Jersey | 4,028,027 | 127,615 | 3.2 |
| Pennsylvania | 9,640,802 | 211,877 | 2.2 |
| East North Central: | | | |
| Ohio | 6,639,837 | 168,277 | 2.5 |
| Indiana | 3,225,000 | 66,390 | 2.1 |
| Illinois | 7,607,684 | 236,926 | 3.1 |
| Michigan | 4,842,280 | 100,506 | 3.3 |
| Wisconsin | 2,930,282 | 49,780 | 1.7 |
| West North Central: | | | |
| Minnesota | 2,566,445 | 47,987 | 1.9 |
| Iowa | 2,467,900 | 22,633 | 0.9 |
| Missouri | 3,620,961 | 62,031 | 1.7 |
| North Dakota | 682,448 | 5,937 | 0.9 |
| South Dakota | 690,755 | 3,600 | 0.5 |
| Nebraska | 1,378,900 | 15,440 | 1.1 |
| Kansas | 1,879,946 | 22,236 | 1.2 |
| South Atlantic: | | | |
| Delaware | 238,380 | 2,741 | 1.1 |
| Maryland | 1,629,321 | 23,973 | 1.5 |
| District of Columbia .. | 486,869 | 8,870 | 1.8 |
| Virginia | 2,419,471 | 30,355 | 1.3 |
| West Virginia | 1,728,510 | 21,396 | 1.2 |
| North Carolina | 3,170,287 | 29,114 | 0.9 |
| South Carolina | 1,732,567 | 12,226 | 0.7 |
| Georgia | 2,902,443 | 27,406 | 0.9 |
| Florida | 1,466,625 | 33,887 | 2.3 |
| East South Central: | | | |
| Kentucky | 2,623,668 | 31,153 | 1.2 |
| Tennessee | 2,608,759 | 21,402 | 0.8 |
| Alabama | 2,645,297 | 21,400 | 0.8 |
| Mississippi | 2,007,979 | 10,758 | 0.5 |
| West South Central: | | | |
| Arkansas | 1,853,981 | 12,591 | 0.7 |
| Louisiana | 2,094,496 | 31,444 | 1.5 |
| Oklahoma | 2,391,777 | 42,392 | 1.8 |
| Texas | 5,821,272 | 79,552 | 1.4 |
| Mountain: | | | |
| Montana | 536,332 | 11,808 | 2.2 |
| Idaho | 445,837 | 6,367 | 1.4 |
| Wyoming | 224,597 | 4,245 | 1.9 |
| Colorado | 1,035,043 | 22,793 | 2.2 |
| New Mexico | 427,216 | 5,436 | 1.3 |
| Arizona | 435,833 | 7,232 | 1.7 |
| Utah | 502,582 | 9,886 | 2.0 |
| Nevada | 90,981 | 2,850 | 3.1 |
| Pacific: | | | |
| Washington | 1,561,967 | 36,089 | 2.3 |
| Oregon | 952,691 | 24,849 | 2.6 |
| California | 5,672,009 | 172,556 | 3.0 |
| Total | 122,698,190 | 2,508,151 | 2.0 |

more important European countries in the last quarter of 1930: Germany (persons registered, December 31), 4,357,000; Great Britain and Northern Ireland (persons registered, November 31), 2,274,338; Italy (persons registered, November 31), 534,356; Czechoslovakia (persons in receipt of trade-union insurance funds, October 31), 61,213; Denmark (trade-unionists), 44,200; Netherlands (persons aided by unemployment-insurance societies, November 31), 46,807; Poland (persons in extractive and manufacturing industries, September 30), 146,642; Rumania

(persons registered, October 31), 36,147; Sweden (trade-unionists, October 31), 43,927.

ENGLAND. An official report of the English Ministry of Labor for the year 1929 showed that there were 11,700,000 persons between the ages of 16 and 64 affected by the unemployment insurance code. This was an increase of insured persons of 8.1 per cent over the year 1928. The report indicated that the year 1929 had seen some improvement in the unemployment situation largely due to increased activity in the coal-mining industry. By the end of December, 1929, the percentage of unemployed coal miners varied from 10.4 per cent in Northumberland to 22 per cent in Wales, with 14.6 per cent representing the total in the whole industry. In textiles the situation continued to be unsatisfactory and in December 1929, 44 per cent of all the workers in this industry were unemployed.

The unemployment insurance system in England provided for government registry offices and the maintenance of employment exchanges. The figures collected by the Labor Ministry showed that in 1929, 1,779,434 vacancies were reported to the exchanges and that 1,554,443 positions were filled. The number of positions filled in 1929 was the highest of any year since 1917. In 1929, 227,215 more positions were filled than in the previous year. See GREAT BRITAIN under *Mining and Manufacturing*.

GERMANY. It was reported that on Feb. 1, 1930 there were 2,378,193 persons unemployed and in receipt of unemployment benefits in this country and that on Mar. 31, 1930 the number was 2,053,387. This shows a considerable increase over the number of persons receiving unemployment benefits at the end of March, 1929, when the total was 1,899,121. By the end of October the total unemployed has grown to 3,184,000. All agencies, public and private, during the year expressed concern over the seriousness of the situation, and the fear that the unemployment insurance fund could not stand up under the severe strain it was being subjected to was general. Serious attention was being given to a series of countervailing proposals in an effort to cope with the situation. Among them are to be noted the following: (1) The introduction of a one year compulsory labor service similar to compulsory military service. (2) The prohibition of over time and home work and the prohibition against husband and wife both being employed. (3) Shortening of the working day. (4) Allocation of funds to the systematic creation of work. (4) Increase of exports (6) Expansion of the vocational school system. (7) Extension of trade-union cooperative enterprises in order to relieve the unemployment situation. See GERMANY under *Industry*.

JAPAN. In April, 1930, of 7,081,898 persons investigated, 372,127 were found to be unemployed. This was an increase of 20,538 as compared with the unemployed in the month of March. The percentage of unemployed for April was 5.25. It is to be noted, however, that certain localities were suffering more severely than others. For instance, in Tokyo 29.3 per cent of the day laborers were idle in April, 1930, while 7.9 per cent of the other laborers and 10.3 per cent of the salaried workers were unemployed. See JAPAN.

PORTO RICO. In Porto Rico, in 1929 there were 170,519 persons unemployed, according to estimates submitted by Porto Rican officials early in the year. The seriousness of the Porto Rican situation may be gauged from the fact that au-

thorities in the Island listed a total of 460,940 persons as available for employment. In other words, at least 30 per cent of the available workers of the Island were out of work in the year 1929. See PORTO RICO.

EMPLOYMENT TRENDS. Index figures collected by the Federal Bureau of Labor Statistics indicated the continuous decrease of employment among a large group of industrial plants examined, for the months of 1930 as compared with previous years. Thus, in manufacturing, the Bureau of Labor Statistics covered 13,613 establishments that were on July 30 employing 3,108,843 workers. With the monthly average for 1925 as 100, the index figures of employment for the first seven months of 1930 were as follows: January, 90.2; February, 90.3; March, 89.8; April, 89.1; May 87.7; June, 85.5; July, 81.6. The payroll decreases were even greater. With the monthly average for 1926 as 100, the payroll totals for the same group of manufacturing industries for the first seven months of 1930 were as follows: January, 87.6; February 90.7; March, 90.8; April, 89.8; May, 87.6; June, 84.1; July, 75.9.

FEDERAL ACTION. On October 17, President Hoover announced the creation of a Federal programme to cope with the unemployment emergency. Naming Secretaries Lamont, Davis, Wilbur, Hurley, Hyde, and Mellon and Governor Meyer, of the Federal Reserve Board, the President created the President's Emergency Committee for Unemployment to formulate a programme. Mr. Hoover's statement indicated that there were three directions into which Federal activities might be directed: First, there was co-operation with the governments and employment organizations of the States; second, there was development of methods with national industries; and third, there was indirect federal employment in public works. Col. Arthur Woods, of New York, who in 1921 had been appointed director of a similar committee by President Harding, was chosen by the Hoover committee to manage its programme. In a statement issued by Colonel Woods it was established that the Federal committee would work only indirectly and would devote most of its activities to stimulating the creation of unemployment programmes among the States and local communities and in industry. Colonel Woods declared that the chief purpose of this committee was to find jobs for idle men, and that the secondary one was to advise communities in supplying relief to the needy.

There was general criticism against the Census Bureau's estimate of 2,508,000 unemployed. The American Federation of Labor, for example, placed the number at 3,700,000, and the People's Lobby, headed by Prof. John Dewey, put the figure at 4,000,000 to 4,500,000. In line with the presidential suggestions a number of States and municipalities announced the speeding of public-works projects in order to cope with the problem. Too, private charitable groups indicated that they would seek to raise extraordinary budgets in order to furnish at least part-time work for the large number of unemployed in their communities. Thus, in New York a group of bankers reported that they were prepared to raise \$150,000 weekly for six months in order to pay the wages of 10,000 heads of families weekly so that these might be employed in non-production activities in public parks and the like.

THE WAGNER BILLS. Senator Wagner of New York was the champion of a group of bills de-

signed to widen the sphere of activity of the Federal Government. See UNITED STATES under *Congress*.

UNEMPLOYMENT INSURANCE IN THE UNITED STATES. Out of the 4,331,251 trade unionists in the United States not more than 109,000 were enjoying the benefits of insurance protection against unemployment. There were three types of plans in operation, viz., trade-union out-of-work benefits; plans jointly agreed upon by employers and employees; and plans instituted by the employees themselves at their own expense. In the first group and confined only to the printers, bakers, lace operatives, wood carvers and lithographers, were some 35,000 trade unionists. The second group of joint-agreement insurance funds covered approximately some 65,000 employees mostly in needle trades, 55,000 of whom were members of the Amalgamated Clothing Workers Union. In 1930 the General Electric Company announced a programme for the adoption of unemployment insurance covering its 100,000 employees. The General Electric Company's plan called for the payment of 1 per cent of wages into a trust fund to which the Company will make similar payment. Benefits to employees were to run as high as 50 per cent of the average full time earnings with the maximum set at \$20 a week. In the event that an emergency should exhaust the fund, every employee of the corporation was to be called upon to contribute 1 per cent of earnings to build it up again. As part of the plan, there was to be incorporated a stabilization programme for the purpose of reducing unemployment to a minimum throughout the year. The lack of success of funds operated by employers alone was demonstrated during the year when two companies, the Consolidated Water Power and Paper Company and the Leeds and Northrup Company of Philadelphia, abandoned their plans because of the business depression. The Dennison Manufacturing Company, of Massachusetts, continued to be the only outstanding company still employing this device at the end of the year 1930.

In view of the great public attention which was being devoted to unemployment insurance, a committee made up jointly from representatives of the National Association of Manufacturers and the National Industrial Council applied itself to a study of such proposals and various systems being employed. A report filed by this committee expressed itself as disapproving of public unemployment insurance on the grounds that there did not exist adequate data on unemployment, that various State legislatures had already rejected such measures, and that the costs of handling such projects were prohibitive, as evidenced by the experiences of such European countries as Great Britain and Germany.

As an alternative the committee proposed a series of schemes that it indorsed as worthy of extensive trial before public unemployment policies were launched upon. It proposed the following eight plans: (1) Unemployment insurance in industry. There were at the present time at least eight large concerns in which such programmes had been set up, among which were to be found the Dennison Manufacturing Company and the Procter Gamble Company. Included in this group were the employers' union unemployment funds for the men's clothing industry. (2) A dismissal wage. (3) Stabilization of industry and employment. (4) Planned public works for

the stabilization of employment (5) Stabilization of the dollar. (6) Unemployment insurance through insurance companies. (7) Reduction of taxation in industry. (8) Seasonal wage adjustments.

UNEMPLOYMENT INSURANCE FUND IN THE HOSIERY INDUSTRY. On Aug. 1, 1920, there went into effect an agreement providing for the creation of an unemployment fund in the Full Fashioned Hosiery Industry. By the terms of the agreement members of the Manufacturers' Association were to contribute to the unemployment fund a sum equal to 1 per cent of the weekly wages paid to the workers in the factories. Beginning one year later the employees are to contribute an amount equal to one-half of the sum contributed by the manufacturers. These contributions are to be deducted from wages. It will be recalled that this unemployment fund is comparable to the system set up in the men's clothing industry of which men has been made in 1928 YEAR BOOK. Thus, a system of unemployment insurance had been in existence in the Chicago markets since 1923 and in the Rochester and New York City markets since 1928. The Amalgamated Clothing Workers' Union reported that more than 50,000 employees were being covered under the workings of these funds. In the Chicago market a new agreement was written in 1928 which fixed the employers' contribution at 3 per cent of the weekly payroll and maintained the employees' contributions at 1½ per cent. From May 1, 1923, until Dec. 15, 1928, there was disbursed in the Chicago Market in unemployment benefits a total of \$4,025,000. In May, 1929, covering the previous 6 months, a total of \$370,000 was paid out in benefits and in November of the same year a total of \$466,850 was paid out. In New York the whole cost was being borne by the employers who contributed 1½ per cent of the total weekly payrolls covering both their own shops and those of contractors working for them. Between Apr. 11, 1929, and Mar. 6, 1930, a total of \$305,000 was paid out by the unemployment fund. In the Rochester market the employers' contribution was fixed at 1½ per cent of the weekly payrolls and the employees' contribution was set at the same figure except that their payments were not to begin until the elapse of one year after the establishment of the fund. It was estimated that on May 1, 1932, the Rochester fund would be ready to disburse \$100,000 in such payments.

CINCINNATI'S PROGRAMME. In an effort to cope with the unemployment situation the city government of Cincinnati in 1929 created a permanent committee on stabilizing unemployment for the purpose of studying stabilization and to set up machinery to cope with the problem. In line with this programme, in October, 1929, one of the sub-committee sought to have local industry distribute the work available among as many employees as possible through the employment of a system of reduction of hours and of staggering employment. It was reported that many Cincinnati establishments had accepted this principle and were assisting in preventing unemployment from spreading by furnishing continuous work for their entire forces. On the recommendation of another sub-committee a programme of increased public works was pushed. A third sub-committee, concerned with temporary employment, applied itself to the task of developing temporary jobs and an effort was made to obtain positions for heads of families who because of unemployment had

been applying for relief. This relief programme was financed by the Cincinnati Department of Public Welfare assisted by the local Community Chest and was able to obtain temporary positions for the 500 heads of families.

The Federal Bureau of Labor Statistics reported that the programme was meeting with considerable success and that Cincinnati's City Manager's Committee on Stabilizing Employment had had a very definite part in reducing the seriousness of the unemployment emergency. How serious the situation was, was demonstrated by a local census of unemployment taken in May, 1930. The census, a result of a house-to-house canvass, which covered 108,396 persons available for work, showed a total of unemployment of 12,792 persons and a total of 15,288 persons employed part time. That is to say, 8.2 per cent of the employable population had no jobs and 9.8 per cent was employed part time. A similar census conducted in May, 1920, showed that less than 5 per cent of the employable population was out of work and that the part-time working population was one-half the size of this same group in 1930.

AMERICAN FEDERATION OF LABOR. Foreshadowing the action which the American Federation of Labor's annual convention took at Boston in October with regard to unemployment programmes, was a statement made by President William Green in September with regard to the present agitation for unemployment insurance. Attacking compulsory unemployment insurance as a form of dole and declaring that he regarded the proposal as paternalistic, Mr. Green indicated that organized labor's programmes was as follows: Establishment of voluntary joint unemployment insurance funds in seasonal industries; division of work instead of wholesale discharge; a shorter work day and work week; and a guaranteed yearly wage. It is important to appreciate that Mr. Green's stand did not go uncontested. So, the New York State Federation of Labor, meeting early in September, adopted a resolution favoring a system of unemployment insurance. Governor Franklin Roosevelt, of New York, gave his support to the same programme when he advocated a system of contributory unemployment insurance made up on the basis of contributions of employers, employees and the State. Consult the article LABOR, AMERICAN FEDERATION OF, for a list of the resolutions adopted at the annual convention in connection with the problem of unemployment.

SOCIALIST PROGRAMME. The Socialist party of America, through its congressional candidates, during the year advocated the following Federal programme for the purpose of coping with the unemployment situation: Immediate assembling by the Federal government of adequate unemployment statistics; an extensive public-works programme; Federal unemployment insurance, the cost to be defrayed by the Government and the employers; a 5-day week and a 6-hour day for workers in industry; increased taxation of inheritances and of incomes in the higher brackets to supply the funds needed to carry the programme into effect; a nation-wide system of employment exchanges under the auspices of the Federal government in cooperation with the States and cities.

GOVERNOR ROOSEVELT'S PROGRAMME. In an address before the convention of the New York State Federation of Labor at Buffalo, held in September, Governor Roosevelt aligned himself with the

social-insurance advocates when he proposed a system of State insurance to cope with the problem of unemployment. Said the Governor:

I hope that the next administration and the next legislature will take up a practical definite study of unemployment insurance, avoiding of course any form of dolo, and basing their investigation on sound insurance lines under which the State, the employer, and the employee would all be joint premium payers.

UNION COLLEGE. A nonsectarian college for men in Schenectady, N. Y.; founded in 1765. The 1930 enrollment of regular students, totaled 821. The faculty numbered 85. The amount of endowment and income for the year was more than \$3,000,000. During the year a new electrical laboratory was erected at a cost of more than \$150,000. The library contained 75,000 volumes. President, Frank Parker Day, LL.D.

UNION OF SOUTH AFRICA. See SOUTH AFRICA.

UNIONS. See TRADE UNIONS.

UNITARIAN CHURCH. Unitarianism, as a type of belief, is ancient. The Unitarian Church in the United States developed as a modification of Congregationalism in New England, which led to the formation of the American Unitarian Association in 1825. This association is the executive organization of the Unitarian churches today. Each church is an independent congregation, and the denomination requires no adherence to a formal creed in its worshipers and no profession of a particular doctrine on the part of its ministers.

The one hundred and fifth annual meeting of the American Unitarian Association was held at Tremont Temple, Boston, May 20, 1930. On Jan. 1, 1930, the denomination had 419 churches, 376 of which were active. The Unitarian constituency was reported to number 127,320. There were 3170 Sunday-school officers and teachers and 20,823 pupils. Receipts for current church activities, as presented in the treasurer's statement for 1930, amounted to \$437,000.

The denominational publications are the *Christian Register* (weekly); the *Beacon* (weekly); and the *Unitarian News Letter*. The officers of the association in 1930 were: President, the Rev. Louis C. Cornish, D.D.; secretary, the Rev. Walter R. Hunt, D.D.; treasurer, Henry H. Fuller. Headquarters are at 25 Beacon Street, Boston.

UNITAS FRATRUM. See MORAVIANS.

UNITED BRETHREN IN CHRIST. A denomination which resulted from the religious awakening of Philip William Otterbein, Martin Boehm, and their co-workers. The church had its beginning at a "great meeting" held about 1766 in the Isaac Long barn near Lancaster, Pa. The first conference was held in Baltimore, Md., in 1789, and the church was formally organized in Frederick County, Md., in 1800. Its theology is Arminian, while its beliefs are those of the earlier, evangelical denominations; baptism is administered by any mode desired by the applicant. The church is divided into 34 annual conferences, including those in China, Japan, the Philippines, Porto Rico, and West Africa. In 1930 there were 1678 charges, 2983 organized churches, 1840 active ministers, 406,442 church members, 2835 Sunday schools with an enrollment of 420,639, including teachers and officers. The amount raised by the church for all purposes in 1930 was \$6,151,130. Conference missionary appropriations amounted to \$103,489, and general home-missionary appropriations to \$210,643. The valua-

tion of church buildings and other property was estimated at approximately \$31,477,772.

Headquarters of the church are located in Dayton, Ohio.

UNITED CHURCH OF CANADA. See CANADA, UNITED CHURCH OF.

UNITED METHODIST CHURCH. See METHODISTS.

UNITED PRESBYTERIAN CHURCH. See PRESBYTERIAN CHURCH, UNITED.

UNITED STATES. AREA AND POPULATION. The area of the United States, exclusive of Alaska, is 3,026,789 square miles. The area of the non-contiguous lands, which include Alaska, Guam, and certain Pacific Islands, Hawaii, the Panama Canal Zone, The Philippine Islands, Porto Rico, American Samoa, and the Virgin Islands, is 711,582 square miles. Thus, the total area of the United States and its possessions is 3,738,371 square miles. The population of the Continental United States (understood to exclude Alaska) was 122,775,046 on Apr. 1, 1930, by the Fifteenth Federal Census. According to the previous census it was 105,710,620 on Jan. 1, 1920. The gain of population in the intervening period of 10 years and 3 months was 17,064,426, and held the ratio of 16.1 per cent to the population of 1920. The populations of the several States and insular possessions in 1930 may be found in the articles on each.

More than one-fourth of the gain over the period 1920-1930 occurred in two States, California, the highest gross gainer, of which the population increased by 2,250,390, and New York, second in this respect, which scored a gain of 2,202,839. Illinois gained 1,145,374; Michigan, 1,173,913; Texas, 1,101,487. California's gain was also the highest proportionately for any State; it came to 65.7 per cent; Florida, second in this respect, gained 51.6 per cent through the accession of 499,741 to its population. Save for a slight decrease in the case of Montana, every State increased in population.

AGRICULTURE. Farm Census of 1930. As enumerated by the Federal Census of 1930 the farms in the United States numbered 6,297,877 on April 1 of that year. This indicated a decline of 73,763 from the 6,371,640 farms of 1925 and likewise a decrease of 150,466 from the 6,448,343 farms of 1920. For the period 1925-30 the proportionate decrease was 1.2 per cent; for the period 1920-30 it was 2.3 per cent. In the category of farms were included tracts even of less than 3 acres, in cases in which the land had yielded agricultural products in the year previous to the value of at least \$250.

In most cases the trend of the number of farms, by individual States, conformed roughly with that by the sections to which the several States belonged. The New England, Middle-Atlantic and East-North-Central States showed losses without exception both for the five-year and for the ten-year period. Missouri alone in the West-North-Central group exhibited loss for both periods. North and South Dakota, Nebraska, and Kansas, somewhat unexpectedly in view of the decline in profits from wheat culture, all gained in both periods. The South-Atlantic States all lost save Florida, and with the partial exceptions of Georgia, which gained for the five-year period but still remained below 1920, and of North Carolina where the reverse result occurred. Among the Mountain States, Montana regained in 1925-30 only a part of the heavy loss in number of farms

sustained in the period 1920-25. California alone of the Pacific States achieved even a trifling gain in 1925-30; but all the Pacific States remained in 1930 well above the total for 1920.

See also AGRICULTURE; AGRICULTURE, U. S. DEPARTMENT OF; sections on *Agriculture* under the various States; and articles on separate crops, as CORN, WHEAT, ETC.

INDUSTRY AND COMMERCE. The year was adverse to domestic industry and commerce in almost every branch. It was marked by the prostration of many classes of manufacture, mining and construction; by the decline in transportation, and the severe reduction of both commodity prices and capital values; and by the steady rise of unemployment, the increasing distress both of the personally destitute and of the commercially involved, and the appearance, toward the end of the year, of disorder in the affairs of financial institutions.

This deluge of economic troubles was variously traced to a diversity of possible causes. Among the adverse influences were the following: similar depressions in a large number of other countries engaged in international trade; the entry of Russia into that trade for the first time subsequent to 1914 as a great exporter of goods; the fact that the world generally, and the United States in particular, had caught up with the arrears in its economic needs occasioned by the World War, the further fact that the terms of the international arrangements subsequent to the War had rendered it necessary for Germany to produce goods on an increased scale in the effort to meet her obligations to other European nations and thus enable them to meet theirs to America; the particular inability of American agriculture to dispose of its surplus products at the prices prevailing in the export markets; the tendency of improved mechanical methods of production in many lines to render many employees superfluous and so to narrow the consumers' demand at its base; the fact that consumption had gone on for some years on an inflated basis, from which recession was unduly easy and could run to a great extent without carrying consumption to the bounds of general and absolute need. See BUSINESS REVIEW; FINANCIAL REVIEW.

In terms of employment the depression was reflected by the lowest rate of activity subsequent to the slump of 1920-1922. As reported by the United States Labor Bureau, the year's highest monthly rate of manufacturing employment, that for February, given as 90.3 per cent of the average for 1926, was lower than the lowest rate for any previous month subsequent to 1922 while the rate of such employment for November, 1930, 76.5 per cent, marked the further decline to that time. The percentage of monthly payroll totals for manufacturing industries fell from 90.8 for March, the year's high, even more steeply to 68.3 for November. See UNEMPLOYMENT; STRIKES AND LOCKOUTS.

MANUFACTURES. A census of manufactures was taken in 1930 by the Bureau of the Census. It covered the results of the calendar year 1929. Preliminary figures on this census indicated that the aggregate value of the yearly manufactured product of the United States had increased considerably for 1929 as against 1927. This total was, for 1929, \$68,453,486,518; for 1927, \$62,718,347,289; for 1919, \$62,041,795,316. For 1929, the percentage of excess over 1927 was 9.1. Less than one-tenth of the gross increase of some \$5,700,000,000

in value of products went to the manufacturing wage earners. The total of the year's wages paid in the manufactories was, for 1929, \$11,271,016,618; for 1927, \$10,848,802,532; for 1919, \$10,401,786,869. The yearly total of wages was thus but 3.9 per cent higher for 1929 than for 1927.

The number of the wage earners increased for the period from 1927 to 1929. Their number was, for 1929, 8,550,284; for 1927, 8,349,755; and for 1919, 9,000,059. Proportionately, the increase in the number of wage earners for 1929 over 1927 was 2.4 per cent. Consequently the average yearly remuneration of the manufacturing wage earner increased only very slightly; by 1.4 per cent.

Cost of manufacturers' materials, containers, fuel, and purchased electric current rose to \$37,357,631,108 for 1929, from \$35,133,136,889 for 1927; they were about the same as the total for 1919, which was \$37,232,702,390. The totals for 1927 and 1919, moreover, both included certain mill and shop supplies excluded from the total for 1929. Therefore the relative increase, for 1929 over 1927, of the cost of manufacturers' materials and kindred supplies, roughly 6 per cent, was actually somewhat larger than appeared.

Much the greater part of the expansion in the total value of the yearly manufactured product found its way into the category of "value added by manufacture." Here again the discrepancy as to the cost of mill supplies and the like rendered exact comparison impracticable. The total of value added by manufacture was, for 1929, \$31,095,855,410; for 1927, \$27,585,210,400; for 1919, \$24,809,092,926. The apparent, though not the exact, actual increase of the total for 1929, over 1927, was about \$3,510,600,000. The value added by manufacture included not only the manufacturing profits but such capital charges as interest on investment, rent, depreciation, insurance, and property taxes, and such general business charges as income taxes and advertising.

With regard to the number of the manufacturing establishments in the country there occurred a substantial rise. The total of such establishments was, for 1929, 199,268; for 1927, 191,866; for 1919, it had been 214,383. All the leading manufacturing industries are discussed under separate articles, such as AUTOMOBILES; BOOTS AND SHOES; IRON AND STEEL; PAPER; RUBBER; SILK; TEXTILE MANUFACTURING; ELECTRICAL INDUSTRIES; etc. For engineering works, see BRIDGES; CANALS; PORTS AND HARBORS; SHIP-BUILDING; etc. See also CHEMISTRY, INDUSTRIAL.

FOREIGN TRADE. Exports and imports alike, for the calendar year 1930, fell below the totals for the year previous by an amount, as measured in value, beyond that in any previous year save 1921. While the exports of 1929 had attained the highest total by value and the imports almost the highest subsequent to 1920, the totals for 1930 were below any subsequent to 1922, as to exports, and below any year subsequent to 1921, as to imports. The value of the exports of 1930 totaled \$3,841,207,000; that of the imports, \$3,061,369,000; both totals being preliminary as to December.

The corresponding totals for 1929 had been: Exports, \$5,240,995,000; imports, \$4,399,361,000. Thus the deficiency of the foreign trade of 1930, as compared with that of 1929, was equivalent to 27 per cent of the total of 1929, as to exports; and to 30.4 per cent of the total of 1929, as to imports. The absolute favorable balance of trade merchandise, for 1930, fell moderately below that

for 1929; it was, for 1930, \$779,838,000; for 1929, \$841,635,000. Both relatively to the both-ways total of foreign trade—\$6,902,576,000 for 1930 and \$9,640,456,000 for 1929—the favorable balance was augmented, as its proportion to the trade total was higher for 1930. A factor in this relatively greater decline of the import total was the imposition of new and higher tariff duties at the middle of the calendar year.

To a great and presumably predominant extent the fall in both exports and imports represented a decline in the prices of goods. As to the gross decline in quantity of goods, an estimate of the director of the Bureau of Foreign and Domestic Commerce placed the quantity of the exports of 1930 at about 80 per cent of that of 1929, and the quantity of the imports about 85 per cent of that of 1929. As quantities in divers classes of goods were not strictly comparable, and as the variation, as to each class, in the respective years was not fully set forth, the value of the estimate was limited. Some of the decline in the quantity of exports was attributable to the policy of the Farm Board in 1930, in maintaining wheat and certain other farm products above the export price. In the case of cotton, while exports continued extensive, the consuming markets abroad showed a tendency to increase greatly their takings of cotton from other sources than the United States and thus to reduce their requirements of the domestic product. The sorts of goods of which the exportation for 1930 fell most conspicuously below that of 1929 were automotive goods, cotton, machinery, petroleum products, wheat and flour, manufactured tobacco, fruits and nuts, photographic supplies, and rubber goods.

By months, the course of foreign trade exhibited a fairly steady diminution throughout 1930. Both exports and imports for January made higher totals than for any other month of the year. December provided the lowest total by value for any month but one (July), in the case of exports and the lowest but one (November) in the case of imports. The accompanying table presents the foreign trade of 1930 and 1929 by months.

| <i>Exports</i> | 1930 | 1929 |
|-----------------|-----------------|-----------------|
| January | \$ 410,849,000 | \$ 488,023,000 |
| February | 548,852,000 | 441,751,000 |
| March | 569,549,000 | 489,851,000 |
| April | 331,732,000 | 425,264,000 |
| May | 320,034,000 | 385,013,000 |
| June | 294,659,000 | 393,186,000 |
| July | 266,650,000 | 402,861,000 |
| August | 297,765,000 | 380,564,000 |
| September | 312,207,000 | 437,163,000 |
| October | 326,900,000 | 528,514,000 |
| November | 289,008,000 | 442,254,000 |
| December | 273,000,000 | 426,551,000 |
| Total | \$3,841,207,000 | \$5,240,995,000 |

Imports of merchandise by months follow:

| <i>Imports</i> | 1930 | 1929 |
|-----------------|-----------------|-----------------|
| January | \$ 310,968,000 | \$ 388,897,000 |
| February | 281,707,000 | 369,442,000 |
| March | 300,480,000 | 383,818,000 |
| April | 307,824,000 | 410,666,000 |
| May | 284,683,000 | 400,149,000 |
| June | 250,343,000 | 353,403,000 |
| July | 220,558,000 | 352,980,000 |
| August | 218,417,000 | 369,358,000 |
| September | 226,352,000 | 351,304,000 |
| October | 247,339,000 | 391,063,000 |
| November | 203,718,000 | 338,472,000 |
| December | 209,000,000 | 309,809,000 |
| Total | \$3,061,869,000 | \$4,399,861,000 |

The net importation of gold in 1930 was \$280,-087,000, as against \$175,006,000 in the year 1929.

MINERAL PRODUCTION. The article **MINERAL PRODUCTION AND RESOURCES** gives the latest available official figures for mineral production in the United States. The more important minerals mined in the United States are treated in separate articles. There are also paragraphs on mineral production in the articles on the individual States.

RAILWAYS. See separate articles on **RAILWAYS** and **RAILWAY ACCIDENTS**.

SHIPPING. For statistics and other information in respect to the shipping of the United States during the year, see articles **SHIPPING** and **SHIP-BUILDING**.

FINANCE. For a discussion of Federal finances during 1930, see the article **PUBLIC FINANCE**.

EDUCATION. See the articles **EDUCATION IN THE UNITED STATES AND UNIVERSITIES AND COLLEGES**. Separate articles on the most important universities and colleges also are given under their respective titles. Sections on education are included in the articles and the several States.

PENSIONS. According to the annual report of the Bureau of Pensions the total of disbursements for pensions in the fiscal year ended June 30, 1930, was \$219,203,541, as against \$229,889,986 for the fiscal year 1929. The number of recipients on the pension rolls declined to 464,257 at the end of the fiscal year 1930, from 477,915 at the year's beginning. Some groups of pensioners diminished while others increased. The number of veterans of the Civil War dropped to 48,991, from 59,945; that of Civil War veterans' widows, to 167,674, from 181,235. The total of veteran pensioners of the Spanish War increased to 186,365, from 178,804; of such veterans' pensioned widows, to 30,919, from 28,643. There were also on the roll, at the end of the fiscal year 1930, 5454 former soldiers of divers Indian wars, 4191 of such soldiers' widows, 15,661 other former soldiers and 3830 widows pensioned on account of disabilities received in soldiers' connection with military service, 630 Mexican War widows, and 10 widows of men who served in the War of 1812.

The gross loss to the pension rolls by death amounted to 35,792 pensioners, of which number 11,082 were Civil War veterans, 18,353 Civil War widows, 4242 Spanish War veterans, and 554 Spanish War widows. Those remaining on the rolls were classified as 256,515 veterans, 199,704 widows, 2262 minor children, 877 helpless children, 4426 dependent parents, and 473 Army nurses.

Separate from the military pensions, the Civil Service retirement and disability fund, also administered by the Pension Bureau, paid out during the fiscal year \$13,107,732 for annuities to retired or incapacitated civil servants. The fund held at the end of the year a credit balance of \$156,795,476.

The filing of claims for pensions on account of military service continued active during the year. There were at the outset 41,282 active claims holding over from the previous fiscal year. There were subsequently received in the course of the year 190,742 other claims, and disposition was made of 121,791 claims. There remained 110,233 pending claims at its close. The number of pension certificates issued in the year was 71,096 exclusive of reissues on account of loss of certificate.

PATENTS. Effective June 1, 1930, Congress increased the filing fee on patent applications from

\$20 to \$25 and on trade-mark applications from \$10 to \$15. The final fee on patent applications was raised from \$20 to \$25. Applications for patents for inventions, designs, and for reissues of patents reached a record total of 96,227 for the fiscal year ended June 30, 1930, as compared with 92,029 in the previous fiscal year. Applications for registration of trade-marks, labels, and prints numbered 21,342 (22,567 in 1928-29). The Patent Office granted 46,599 letters patent for inventions during the fiscal year 1929-30 and received 91,430 applications; in 1928-29 there were 43,617 letters patent for inventions granted and 87,039 applications received.

Post Office. Another heavy postal deficit incurred in the fiscal year ended June 30, 1930, gave Postmaster General Walter F. Brown occasion in his annual report to dwell on the asserted need to render the strictly postal portion of the operations of his department self-sustaining as a whole; to that end he recommended the increase on the minimum postage for first-class letters to 2½ cents, from 2 cents. He maintained that, while the second-class rate had risen by 82 per cent since 1916, the third-class by 21 per cent, and the parcel-post by 10 per cent, the first-class rate had stood at 2 cents since 1885, except for a brief period in the course of the World War.

Finances. The deficit to which Postmaster-General Brown alluded was higher for the fiscal year 1930 than for 1929, whether figured on the basis of the audited postal receipts and expenditures or net of the rebates or credits granted against expenditures for non-postal purposes by an act of June 9, 1930. The rebates provided by the act put to the credit of the Postal Department \$39,669,718; yet even so there remained a deficit of \$58,779,064 for the fiscal year exceeding that of 1929, as correspondingly figured, by \$1,913,346. The straight deficit on the basis of the audited receipts and expenditures attained \$98,215,987 for the fiscal year 1930, as against \$85,461,176 for the year preceding. The revenues of 1930, from all sources, were \$705,484,098, as against \$696,947,578. The gain thus registered in the yearly revenues was more than offset by a rise in expenditures, to \$803,700,086 for 1930 (fiscal year), from \$782,408,754 for the previous year.

Postage. Revenue derived from the sale of postage stamps and other stamped paper decreased slightly to \$575,286,569 for the fiscal year 1930, a total less by \$153,053 than that for the year preceding.

Rural Free Delivery. There were established during the year 112 new rural free delivery routes and 75 existing routes were extended. The total number of rural free delivery routes operating at the close of the fiscal year was 43,278; their aggregate length was 1,334,842 miles, as against 1,316,420 a year earlier. The number of miles covered in the course of the year by carriers serving these routes was 404,738,397.

Air Mail. Greater activity of the air-mail service was marked by the carrying in the fiscal year 1930 of an increased aggregate poundage and by the performance of a greater number of miles of flight carrying air mail. A Federal appropriation of \$15,000,000 to help maintain and develop the air mails was expended, all save some \$309,000. The number of miles actually flown in the air-mail service in the course of the year was 14,939,-

468, out of a total of 16,228,543 that had been scheduled. There were transported by air 7,719,698 pounds of mail.

Postal Savings. The total sum held in trust for postal-saving depositors increased to \$179,905,224 at the end of the fiscal year 1930, a sum \$21,849,685 in excess of that at the end of the fiscal year 1929. There were in operation, at the end of the fiscal year 1930, 6795 places where postal savings deposits might be made.

VETERANS' ADMINISTRATION. According to the annual report of the Veterans' Bureau the number of the patients under treatment in its hospitalization system rose to 30,541 on June 30, the end of the fiscal year 1930, from 27,784 on June 30, 1929. The increase for the year was nearly 1000 greater than that for the year previous. The hospital patients at the end of the fiscal year 1930 included 6341 suffering from pulmonary tuberculosis, 15,020 neuro-psychiatric cases, and 9180 under treatment for other medical or surgical conditions.

The Government converted life insurance policies in force numbered 648,044. They carried an aggregate of \$3,041,601,101 of insurance, as of June 30, 1930. In the course of the fiscal year there were reinstated 4766 policies, carrying \$22,944,310. There were approved, in the year, 16,404 applications for policies to the aggregate of \$70,584,363.

Payments in compensation, to disabled veterans and to widows, children and dependent parents of veterans, totaled \$188,000,000, approximately. Of that total about \$155,000,000 was disbursed in compensation for disability. Veterans receiving compensation at the close of the year numbered 279,539, all classed as disabled as a result of injury or disease incurred in service in the war with Germany or presumed so to have been incurred. The number of these recipients increased by 17,401 in the fiscal year. Tuberculosis was the major disability in 20 per cent of the cases, and neuro-psychiatric disease in 21 per cent.

Death compensation was paid in the fiscal year 1930 to 90,954 deceased veterans' widows, children, or dependent parents; the amount of such payments was \$32,965,000.

The net disbursements of the Veterans' Bureau for all purposes in the course of the fiscal year 1930 amounted to \$452,150,622. They exceeded the total for the fiscal year previous by \$19,407,653. The amendment of the World War Adjusted Compensation Act, by Act of June 5, 1930, extended to Jan. 2, 1935, the limit of time for making applications for the benefits of the act; it also allowed families of veterans to file claim for benefits in cases in which such veterans had been absent, without explanation, for seven years. Legislation of 1930 did not take effect in time to influence the expenditures of the Bureau for the fiscal year ended June 30, 1930.

By authority of an Act of Congress the President on July 8 ordered the Veterans' Bureau, the Pension Bureau, and the Soldiers' Home united as a single administrative organization, by name the Veterans' Administration. Gen. Frank T. Hines, head of the Veterans' Bureau, was elevated to the direction of the new unit, with the title of Administrator of Veterans' Affairs.

ARMY AND NAVY. The Army and Navy are treated separately in the articles **MILITARY PROGRESS** and **NAVAL PROGRESS**. See **AERONAUTICS**

ADMINISTRATION

THE PRESIDENT. President Hoover had before him in 1930 a number of serious problems. The chief were those that arose from the prolonged business depression that extended over the country for the entire year and from such contributing troubles as the long-standing difficulties of the farmers and the occurrence of a destructive drought in midsummer. In the opening months of the year he maintained the hopeful attitude that he had taken near the outset of the business depression.

With regard to Federal expenditure the President's policy was shaped on the one hand by faith in the doctrine that large public expenditure would help keep up the incomes of the people in the ordinary ranks of life and would thus stimulate a renewal of business demand; on the other hand, by the prospect that excessive Federal expenditure would leave the Treasury insufficiently supplied and thus compel the imposition of heavier taxation by the December session of Congress. He accordingly approved bills carrying hundreds of millions in excess of the usual authorizations for public construction. But he found it necessary to protest to Congress on the perils of excessive appropriations. He expressed on April 4 his expectation that the fiscal year would close with a moderate surplus, as proved at the end of June to be the case. But on April 22 he addressed to a leading Senator and a leading Representative a letter proposing a close restriction of further appropriations, which he thought likely to cause a deficit, otherwise, in the fiscal year to follow. As a feature of his efforts to overcome industrial depression, President Hoover requested the Department of State to apply more strictly the clause of the Immigration Law for the exclusion of those likely to become public charges.

When reports from Federal sources indicated early in August that the farms in many parts of the country were afflicted by an unusually severe drought the occasion offered for the President's employment of his familiar policy of resort to conferences and coöperative action with elements outside the Federal governmental organization. He conferred on August 14 with the governors or executive representatives of about one-third of the States and with the Federal farm officials and announced a resulting plan of which the main features were State and Federal assistance in the granting of loans to farmers, Red Cross aid, the acceleration of public works where the drought had caused lack of employment, and the reduction of rates for the transportation of feed and livestock, particularly between areas having a surplus or a deficiency of either. Relief in some 250 counties judged to be most acutely affected was to be organized by the counties themselves or the States in which they lay. The main purposes of the plan, according to the President, were to help sufferers through the winter, protect health, and prevent avoidable sacrifice of livestock. Fairly general rains, supervening, greatly simplified the drought problem.

President Hoover maintained in 1930 the plan that he had followed in 1929 of letting Congress work out the tariff rates without interference from him. In the campaign for the elections of members of the Congress Mr. Hoover took no active part.

FOREIGN AFFAIRS. *The London Conference.* The chief event of the year in the field of foreign affairs was the participation of the United States

in the London Conference on Naval Armaments. The President selected seven delegates to represent the United States Government at this conference. These were: Henry L. Stimson, Secretary of State, and chairman of the delegation; Charles Francis Adams, Secretary of the Navy; David A. Reed, Senator from Pennsylvania; Joseph T. Robinson, Senator from Arkansas; Dwight W. Morrow, Ambassador to Mexico; Charles G. Dawes, Ambassador to Great Britain; and Hugh S. Gibson, Ambassador to Belgium. The delegation was thus composed in fairly even proportions of members of the Cabinet, of members of the Senate that must ratify any agreement executed, and of diplomats. The conference itself convened on January 23.

A treaty was speedily drawn up with important articles particularly affecting the navies of the three remaining powers, the United States, Great Britain, and Japan, and was signed on April 22, by all five powers. The United States undertook to reduce its armament of battleships by disposing of four capital ships, the *Florida*, *Utah*, *Arkansas*, and *Wyoming*; the United Kingdom, of five; Japan, of one. These three powers undertook not to lay down any other capital ships until after the end of 1936, but France and Italy were to be allowed to build replacement tonnage. See *NAVAL PROGRESS* and *GREAT BRITAIN under History*.

Relations with Germany. A settlement of the obligations of the German to the United States government was made through an agreement executed by Secretary of the Treasury Mellon and signed on June 23 (later ratified; see *Congress*). See *GERMANY under History*.

The Department of State facilitated early in the year the flotation of the German government's loan in pursuance with the programme arranged at the time of the adoption of the Young plan, by giving its informal consent to the subscription of approximately \$100,000,000 of the issue in the United States.

Tax Issue with France. The Treasury Department sent to France two representatives to seek an arrangement for the termination of the so-called double taxation of American-owned companies operating in that country. Conferences took place during the summer, but the American representatives were unable to obtain from the French government any acceptable undertakings and withdrew in September.

Turtle Islands. By a convention executed on January 2 by Secretary of State Stimson and the British Ambassador the sovereignty of the United States was recognized as extending over the Turtle Islands, a group of eight small isles with a population of 200 persons, off the eastern coast of British North Borneo. It was arranged that the administration of the islands should remain for the time being with the British North Borneo Company.

Canada and the St. Lawrence Waterway. Soon after the Canadian elections, which brought into power a Conservative government, the Department of State transmitted to the Dominion government through the Minister to Canada, Hauford J. MacNider, early in September, a note proposing a renewal of negotiations for an agreement to develop an international waterway through the Great Lakes and the St. Lawrence River, for the passage of ocean vessels of considerable tonnage. The negotiations had been in abeyance since 1928, at which time an under-

standing with the former Liberal Dominion government had been found unattainable. See CANADA under *History*.

Consult C. P. Howland, *Survey of American Foreign Relations*, 1930 (Yale University Press, 1930).

DOMESTIC AFFAIRS. Unemployment Measures. The policy of the Administration to remedy unemployment by the organized acceleration of public works and private construction throughout the country had been adopted at the appearance of economic depression late in 1929. In the hands of the Department of the Interior was placed much of the work of organizing this movement. A division of construction was created in the Department. This division announced in January that there were in prospect plans of construction that would involve the expenditure during the year of about \$7,000,000,000, exclusive of the building of residences, private places of commerce, and factories. The prospective expenditure of the railroads was \$1,050,000,000; of electric, gas and street-railway companies, \$1,400,000,000; of telephone and telegraph companies, \$800,000,000; of the State governments, \$3,053,743; of the Federal Government, \$275,000,000.

The Federal works pushed forward during the year included some of the numerous public buildings in Washington and other cities, for which Congress made large provision; the operations along the course of the Mississippi River and its chief tributaries, both for the improvement of waterways and for the system of flood prevention that had been authorized under the administration of President Coolidge; and the damming of the Colorado River in accordance with the so-called Boulder Dam project. The work on this project was started on July 7, by an order of Secretary of the Interior Wilbur, with the aid of an initial appropriation of \$10,660,000. With regard to the project of works of flood prevention along the Mississippi River the Army Engineers, directing the work, were delayed in Louisiana and elsewhere by local opposition to the plans of the engineers, which were alleged not to assure proper compensation to owners whose lands would be subjected to flooding, on account of their lying between the intended levees and the river.

Tariff Commission. The Tariff Act of 1930 terminated the existing commission and created a new one, to consist of six members, not more than three of them of any one political party, each to serve a term of six years, except for original nominees whose terms should end at the rate of one a year for the first five years, thus providing for the nomination of one member in every successive year. The task of manning this commission fell to President Hoover, in whom was vested the power of appointment, subject to the advice and consent of the Senate. As the complaint had been made of the previous tariff commission that it had been packed with a high-tariff majority through the introduction of protectionist Democrats, and as the possibility of rectifying any tariff rates that might be found excessive rested in the new commission, much importance was attached to the nominations. Henry P. Fletcher of Pennsylvania, a Republican and former Ambassador, was nominated for chairman; Thomas Walker Page of Virginia, a Democrat, who had served on the Tariff Commission under Taft, Wilson, and Harding, was next nominated. Two members of the outgoing commission, Edgar H. Brosard of Utah, Republican, and Alfred P. Dennis

of Maryland, regarded as a protectionist Democrat, were then named, and with them Dr. John Lee Coulter, Republican, of North Dakota, who had been the Commission's chief economist. Thus was apparently assured the continuation of the majority that had ruled in the old commission.

Administrative Measures of Drought Relief. After the President (see **PRESIDENT**, above) had taken the initiative in organizing measure of relief for drought-stricken parts of the country, Secretary of Agriculture Hyde undertook to stimulate State highway construction in the sections afflicted. He authorized on August 16 the immediate apportionment among the States and Hawaii of \$121,875,000 which had been allowed by Congress as the Federal contribution to such work for the next subsequent fiscal year. The date for such apportionment was thus advanced by more than four months. Although the funds thus allotted would not become available for payment until July 1, 1931, it was the theory that the States to benefit by them could go ahead immediately with construction work, getting temporary accommodation if necessary, against contributions that were assured to them.

The Interstate Commerce Commission ordered in August a set of reduced freight rates, chiefly on grains, feed, and cattle, for application during the emergency, to help areas where drought prevailed.

Federal Farm Board. Apart from the agricultural difficulties brought on by the drought was the depression in the prices of a great number of farm products which ran on with increasing intensity until late in 1930. The course of the agricultural markets is related under *Agriculture*. The administrative measures to cope with this price collapse were carried on by the Federal Farm Board. They were in the main unproductive of the desired recovery in prices, the best to be said of them being that matters might conceivably have gone worse had none of the measures been taken. See *AGRICULTURE* under *Federal Farm Board*.

Fiscal Policy. The fiscal year 1931, beginning with July 1, 1930, brought for the first time in many years difficulties in maintaining at an adequate level the funds of the Treasury. The reduction in the rates of the Federal income tax, which had been enacted at the close of 1929 in the effort to stimulate an early recovery from the consequences of that year's collapse in the stock markets, did not make any serious diminution in the income tax payments of the early part of 1930. Later, the current receipts of the Treasury, largely made up of the proceeds of the customs, ran heavily behind those of corresponding periods of 1929, particularly after the going into effect of the new Tariff Act. Before the middle of September the current receipts of the Treasury were running behind 1929 at the rate of some \$400,000,000 a year. The apprehension was added that at the advent of the calendar year 1931 the total of incomes paying income tax would be much reduced by reason of adverse business in 1930.

Department of Justice. Among the important actions brought by the Attorney-General in the course of the year was that against the merger of the Standard Oil Company of New York with the Vacuum Oil Company. He sought to have the Federal courts declare this move to reunite former members of the old Standard Oil combination illegal under the decree by which they

had been separated. Another suit relating to the law against corporate combinations was brought by the Department of Justice against a proposed merging of the chief interests of the radio industry with the Radio Corporation of America. It was planned that this corporation should acquire the radio manufacturing business of the General Electric, and Westinghouse companies and should in turn come under the control of these companies by their holding of a majority of its voting stock. An agreement as to use of patent rights, including other companies, was involved. The suit brought by the Government was not only against the proposed corporate combination but also against this pooling of patents.

The transfer of the Prohibition Bureau to the Department of Justice, as provided by enactment (see *Congress*) was effected with the close of the fiscal year on June 30. It was designed to promote more efficient enforcement of the Prohibition law. The Bureau was placed under a new director, Col. A. W. W. Woodcock, who made extensive changes in personnel and adopted a policy of concentrating efforts on the greater violators. See PROHIBITION.

Administrative Reapportionment. The President issued on November 18 the schedule of the representation of the several States in the House of Representatives under the tentative reapportionment, through administrative action, for which the act of 1929 had provided. State representation was worked out according to two alternate systems, that of major fractions, which had been employed in the previous reapportionment, and that of equal proportions; both yielded the same results.

CONGRESS

SEVENTY-FIRST CONGRESS, FIRST REGULAR SESSION. The opening of the year 1930 found Congress with the chief task of the session, which had convened on the preceding December 2, still before it. This task was the enactment of a revised system of tariffs. There were also on the legislative programme large appropriations for public works of divers sorts, an alteration in the status of the administrative force for the enforcement of the Federal Prohibition laws, a reorganization of the Federal Power Commission and a number of lesser measures. Both Houses reassembled after the year-end recess on January 6. In advance of that date it was agreed at a conference of the Republican members of the Senate to give the right of way to the Tariff Bill, in preference particularly to Prohibition matters, which some of the Progressive Senators had been disposed to put in the lead.

The Tariff Act. The Senate, which had had the tariff under consideration, with intervals of other business, ever since receiving the redrafted bill from its Finance Committee on Sept. 12, 1929, in the course of the special session, resumed its consideration of the bill, point by point. The members in sympathy with the interests of the beet and cane sugar States sought to introduce a bounty for domestic beet and cane growers in connection with the duty on imported sugar. An amendment was offered to this effect by Howell of Nebraska. It called for payments to be made to these growers and to refiners at the rate, jointly, of 0.44 cents on every pound of sugar produced from domestic material; the growers were to receive 90 per cent of such payment, the refiners, 10 per cent. The amendment did not in-

clude Philippine or Porto Rican sugar in its provisions. It was defeated on January 17 by a vote of 54 to 22, despite the anticipation that this action would generate support for a move to release the Philippine Islands from American sovereignty.

On January 25 the Senate accepted an amendment to put an end to the practice of allowing special courtesies at the customs to members of Congress and other Federal officials returning from abroad.

The duty on sugar, which had formed one of the most persistent subjects of Senate controversy, was finally settled on March 5 by a vote of 47 to 39. This vote was in reconsideration of action taken January 16, on which date, by 48 to 38, it had been voted to leave the sugar duties of the Fordney-McCumber act unchanged. The action of March 5 raised the duty on Cuban sugar to 2 cents a pound, from 1.76 cents, and that on other foreign sugar to 2.50 cents a pound, from 2.20. The opposition to these increases, chiefly Democratic, had been whittled down in the interval between the two votes by what the opponents of the increases charged to be trading bargains.

The activity of Grundy of Pennsylvania, a newcomer in the Senate, who had taken his seat by appointment late in the previous year, to the vacated seat of Vare, was one of the determining influences to the success of the partisans of a higher tariff level. Grundy, although a newcomer to the Senate, employed himself effectively in speeding action and in maintaining in favor of the higher duties, on successive votes, a fairly stable majority. A duty of 6 cents a hundred-weight on cement was approved by 45 to 37 on March 7.

The supporters of a duty on hides and the advocates of protection for shoe producers being at cross purposes, an amendment of Oddie of Nevada, to place duties on both, was defeated on March 17. An amendment of Smoot of Nevada, as to censorship of books imported into the country, replaced the Cutting amendment that had been adopted in 1929. Smoot's amendment vested the judgment as to the obscenity or treasonable statements of imported books in the district courts. It was adopted March 18. A schedule of tariffs on lumber, favorable to the views of the Grundy group, was adopted March 20.

The bill in its completed form came to a vote in the Senate on March 24. At the last hour Thomas, Democrat, of Oklahoma, offered a motion to recommit, with instructions to the committee to restrict increases of duty to the farm schedule; this motion was sweepingly defeated by 70 votes to 9. The bill itself was then passed by 53 votes to 31. Of the majority voices 46 were Republican and 7 Democratic; of the minority, 5 insurgent Republicans and 26 Democrats. Eight insurgent Republicans who had opposed the bill at many points in its progress supported it on the final vote on the theory that its passage would do less harm than the failure to pass any bill.

Altered by no less than 1253 amendments, the measure was returned to the House. The "steering" committee of that body shaped a plan for sending the bill to a conference committee of the two chambers after reopening a limited discussion within its own body of three schedules alone, sugar, cement, and lumber. Representatives favorable to the domestic sugar interests opposed reopening the sugar schedule. Consequently, after

several days of discussion in committee, the bill was sent, without further House discussion, to conference, under a special rule making provision to that effect. The vote of the House on this proceeding was 241 to 153. Nineteen Republicans of the Farm Bloc voted with the minority.

The Conference Committee of the two houses labored with the bill until early in June. The House, which had voted a higher duty into its original bill, accepted the 2-cent rate for Cuban sugar on May 2; differences in the chemical schedule had previously been composed. But the Senate twice returned the reports of its delegation in the conference as not acceptable. After accepting the conference report on the majority of disputed matters, the House by vote of May 3 refused to concur with the Senate amendments providing for export debentures, a form of indirect payment out of the Customs to domestic growers of agricultural products, and for administrative provisions relating to the flexible-tariff plan.

The Senate asked for further conference on these points. Despite the opposition of a strong minority the Senate released its committee members on May 19 from the obligation to insist on its version of the bill with regard to the two points. In conformity with a ruling of Vice-President Curtis the Senate rejected on May 27 a compromise by which the Tariff Commission was to have the power to put altered rates into effect, pursuant to its decisions, should the President fail to take any action of his own on these within 60 days. On June 5 a corrected report was received from the Conference Committee. There followed a debate in which the objections of the Senate minority to the bill as a whole were put on the record by Harrison of Mississippi. The Senate finally passed the bill as reported by the conference, on June 13. The vote was exceedingly close, being 44 to 42; up to within a short time of its being taken, uncertainty prevailed as to whether a majority could be mustered to its support. Five Democrats voted for the bill; these were Broussard, Fletcher, Kendrick, Ransdell, and Trammel. Eleven Republicans, Blaine, Brookhart, Borah, Frazier, Howell, LaFollette, McMaster, Norbeck, Norris, Pine, and Schall, voted against it; and there were five pairs. The House voted enactment on June 14 by 222 in favor to 153 opposed.

The President gave notice on June 15 that he intended to sign the measure. He thus checked rumors that he would veto it as not in consonance with his recommendations of 1929. Two days later, on June 17, the act was signed, and it became effective on June 18.

The act as passed raised the duties generally on agricultural products, including cattle, meats, dairy products, breadstuffs, fruits, nuts, legumes, and other vegetables; it placed a duty of 7 cents a pound on cotton of $1\frac{1}{8}$ inch staple or over. For sugar the general duty was raised to 2.5 cents, from 2.2; for Cuban sugar, to 2.0 cents, from 1.76 cents, raw. Duties on wool were increased in most cases, in some cases doubled. Outside of the products of husbandry, the increases, though common, were scattered rather than general.

In the wood schedule logs of the chief softwoods were placed on the free list. Among building materials, cement, previously free, was subjected to duty of 6 cents a hundredweight; bricks, likewise removed from the free list, were put under duty of \$1.25 a thousand. Duty was raised on most

sorts of glass, building and other, and on most sorts of earthenware and porcelain. Manufactures of wool, generally, and those of cotton, in a considerable degree, were put under increased rates. For watches and clocks the classifications were rewritten and new rates, unwelcome to the importers, were imposed. Hides were removed from the free list and made dutiable at 10 per cent. Conforming changes were made with regard to leather. Boots and shoes, formerly free, became dutiable at 20 per cent.

Grants to Veterans. The approach of a Congressional election gave occasion in the spring of 1930 to an unusually strong demand for further extension of Federal aid to large classes of veterans. The proposed aid took the form of two chief measures. One of these, designed specifically to benefit veterans of the Spanish-American War, and commonly styled the Spanish War Veterans' Pension Bill, carried \$11,712,000 to provide pensions at rates up to \$60 a month for veterans of that war on the basis of simple disability, whether the disability were incurred in the service or not, and without exception for cases where it had resulted from vicious habits. Both houses passed this sweeping grant by large votes. President Hoover thereupon vetoed it, exercising the veto for the second time in the course of his administration. He appended to the veto a message explaining his views as opposed to the omission of the customary exception of cases of vicious habits; to the allowing of disability as a sole qualification, though the applicant were not in need; and to a lowering, in the bill, of the period of war service necessary for qualification. Both Houses, June 2, overrode the veto by overwhelming votes of both parties. The vote in the Senate was 61 to 18; in the House of Representatives, 298 to 14.

The second of the measures to aid veterans was a much more ambitious project. It was presented in the House by Johnson of South Dakota, chairman of the committee on World War veteran legislation. Later amended in accordance with the proposals chiefly of Rankin of Mississippi, it became known as the Rankin bill. It extended the term of years after the war within which certain disabilities, on their appearance, might be presumed to have arisen from service; it also greatly extended the list of disabilities, the cases of which might benefit, for pension purposes, by such presumption. This measure, passed by both Houses, was vetoed by the President on June 26; his veto message estimated that the measure would have given war-disability benefits to 75,000 or 100,000 men not actually disabled as a result of the war. Director Hines of the Veterans' Bureau estimated that the bill would have cost the Government \$102,000,000 at the outset and \$225,000,000 a year at its ultimate maximum.

The House, by a vote of 188 to 182, taken on June 26, failed to override the veto. It then immediately passed a substitute bill of Representative Johnson, providing a disability pension to the maximum of \$40 a month for veterans of the war, without regard to the origin of the disability. The substitute obtained 365 votes, to 4 opposed. The Senate quickly passed the measure on July 1, but amended it by raising the maximum monthly rate to \$60 a month. The House refused on the next day to consider the Senate amendments on the floor and sent the bill to conference. There it was reduced in the main to the terms of the House bill. The measure was then promptly

passed by both Houses and President Hoover affixed his signature to the bill on July 4.

Prohibition and Law Enforcement. A report rendered by the Wickersham Commission on Law Observance furnished the basis for legislation designed to improve the administration of the Prohibition laws. The Commission, after seven months of study, presented to the President early in January a preliminary report offering suggestions for legislation. The foremost of these was that the organization for the enforcement of Prohibition be transferred from the Treasury Department to the Department of Justice.

The President transmitted the Commission's recommendations to Congress. A measure to transfer the enforcement organization as proposed was offered in the House and was passed without roll call on February 8, opposed only by a handful of New York City Democrats. Subsequently passed by the Senate, it was signed May 27, to become effective July 1. By its terms the enforcement unit of the Treasury Department was transformed into the Bureau of Prohibition under the Department of Justice and the post of Director of this Bureau was created, to be filled by Presidential appointment. The intention was to correlate more closely the administrative and prosecutory activities.

Other acts created a Bureau of Narcotics in the Treasury Department and authorized a Bureau of Prisons in the Department of Justice. As a remedy to the overcrowding of the Federal Prisons provision was made for the construction of two more Federal penitentiaries. Funds were voted, in spite of opposition in the Senate, to the amount of \$250,000 to defray further work on the part of the Wickersham Commission.

Public Works. In conformity with the policy of the President to help mend the economic situation by heavier expenditure on public works, a large programme of Federal construction was adopted.

The Elliott-Keyes Act (signed March 31) was the foremost feature of the programme of construction. It authorized the appropriation of \$230,000,000 to defray the cost of erecting a list of public buildings covering all sections of the country. Half of the total was to be expended within the District of Columbia. The expenditure was to stretch over a term of years. This act, combined with earlier measures, raised the total of authorizations in force, for Federal building construction, to about \$500,000,000, which it was expected would be used at the rate of \$50,000,000 a year.

The Dowell-Phipps Act (signed April 4) provided for further yearly Federal contribution in aid of highway construction carried on by the States. It authorized the expenditure of \$300,000,000 in all, this amount to take the form of yearly highway contributions of \$125,000,000 for each of the fiscal years, 1932 and 1933, and of \$50,000,000 for 1931 to bring that year to the same figure. There was thus effected an increase of \$50,000,000 a year in the rate of yearly contributions. Otherwise the terms of Federal assistance to States in highway building were left by the bill substantially as they had been.

Waterway Legislation. The course of legislation for the improvement of water communications differed from that of other legislation for public works in that it was beset with controversy. A River and Harbor Bill of a very general character was drawn. In its final form it provided for

expenditure of \$144,881,902. This total was distributed among more than 170 projects. The chief group of these was that designed to furnish the interior with a 9-foot waterway from the Great Lakes through the Illinois River and from the points on the upper navigable waters of the Mississippi River and its tributaries to the Gulf of Mexico. The bill met with opposition in the Senate because of the apprehension of some of the Lake States that the waterway southward from Lake Michigan would involve an excessive diversion of lake water for the carrying of water traffic, thus upsetting the limitations that had recently been put on the diversion of water by that route, through a decision of the Supreme Court. The Senate adopted finally on June 19 an amendment offered by Blaine of Wisconsin limiting the rate at which water might be diverted.

There was also incorporated into the bill, despite the opposition of Senators from States inimical to the project of a ship canal by the Erie Canal route, a provision that the United States might take over from the State of New York its State canal system, without payment to the State therefor. But this proceeding was limited by specifications calculated to prevent the Government from developing the canals in New York into anything more than a light-draft waterway unsuitable for ocean-going vessels.

Aid for the Unemployed. Wagner of New York introduced in the Senate a series of bills to provide a system of Federal assistance for the unemployed, to operate particularly in times of depression. One of these, to require monthly statistics on unemployment, was duly passed by both Houses and was signed July 7, but awaited the forthcoming of funds to render it effective. A second, to require the planning of public works in advance, with a view to carrying them out at such times chiefly as would enable them to furnish employment when it was most needed, was passed by both Houses. The lower House, however, voted it just before the close of the session and made amendments as to which the conference committee had not reached an agreement before adjournment. This bill therefore failed of enactment. A third Wagner measure, for the institution of a National unemployment system, passed the Senate but did not emerge from the House. See UNEMPLOYMENT.

Federal Power Commission Reorganized. In agreement with the wishes of the President a new Federal Power Commission, different in its character, was created by the Parker act, to take the place of the existing one. The existing commission consisted of three ex-officio members: the Secretaries of War, the Interior and Agriculture. The measure provided a commission to be composed of five appointed members to serve only in that capacity and to receive salaries of \$10,000 each.

Colorado River Development. Although the project of a dam in the Colorado River had been authorized in a previous session, further legislative action was required to furnish the initial appropriation for carrying on the work. President Hoover requested on May 2 that Congress appropriate \$10,600,000 for this purpose. Of this amount, \$5,000,000 was sought for the beginning of the actual work toward the damming of the river, while the rest was required for building a railroad to the site, for the erection of a power plant and for other purposes. The appropriation was made part of the Second Deficiency Bill,

Immigration. The Harris Bill, introduced in the Senate, undertook to apply the system for the restriction of the number of immigrants into the United States from each country by yearly quotas to the Western Hemisphere. The purpose back of this move was particularly to check the heavy immigration from the contiguous republic of Mexico. After considerable debate and amendment the Senate voted to recommit this measure to committee. But on May 13 it reconsidered the motion to recommit and voted an amendment placing Mexico alone among the New-World nations under the quota. The House Committee on Immigration and Naturalization, in spite of opposition on the part of the Department of State, reported the bill favorably; but the House did not dispose of it during the session.

The O'Connell Bill, reducing passport fees, was enacted into law. See IMMIGRATION.

Deadlock on Muscle Shoals. As in previous sessions, the two Houses failed to agree on any plan for the permanent status of the Federal power development at Muscle Shoals. The Senate passed a resolution providing for the governmental operation of the plant, while the House voted a measure for the leasing of the plant to private concerns. Efforts to reconcile the two proposals in conference committee came to naught. See also ALABAMA.

Farm Relief. Congress supported the efforts of the Farm Board by appropriating for its use, in addition to earlier appropriations, \$100,000,000, included in a deficiency supply bill. See AGRICULTURE.

German Reparations Approved. The plan for the settlement of reparations due from the German government to that of the United States, agreed upon by the Administration, was submitted by the President to Congress on March 5. The House passed on May 22 the Hawley Bill, authorizing the plan of settlement as it had been negotiated. The Senate passed the Hawley measure June 2 and the President signed it June 6. See GERMANY under History.

Status of the Philippines. Preparatory work was done by the upper Chamber toward providing for the eventual independence of the Philippine Islands. The Senate Committee on Territories and Insular Affairs held hearings on the subject, running over the first five months of the year. The committee reported on June 2, by majority vote of eight to four, the Hawes-Cutting Independence Bill. This measure did not reach disposal during the session. See PHILIPPINES.

Investigations. Following the precedent of several preceding years of National elections, the Senate created in April a committee of five of its members to investigate the campaign expenditures of candidates for the Senate. Johnson of California declined the nomination of the President of the Senate to be chairman of this committee, and Nye of North Dakota was appointed to the post.

Investigation of Lobbying. Continuing its work begun in 1929 a special Senate committee investigated activities connected with alleged lobbies seeking to affect Senate action. In connection with a report that he filed on behalf of the committee, Robinson of Indiana asserted that the National Council of Importers and traders, according to testimony, had spent \$188,039 in the first eleven months of 1929 in efforts to promote lower tariffs. W. F. Doane, editor of the *Manufacturer*, testified in March that Grundy of Pennsylvania had retained him in Grundy's personal

pay for tariff work at Grundy's office in the Senate building. Investigating alleged lobbying related to Muscle Shoals, the committee obtained testimony that Claudius H. Huston, shortly before his becoming chairman of the Republican National Committee, and while connected with the Tennessee River Improvement Association, had received from the Union Carbide Company checks to the total of \$36,100 for the use of that association, and that these checks had been deposited in margin accounts with brokers, of which Huston was the beneficiary. It was testified that Huston had later paid the money to its intended destination, but there resulted a widespread demand that he should resign from the party chairmanship on account of these transactions. Huston resigned the party chairmanship on August 7, after conference with President Hoover.

The committee gave much attention to allegations of lobbying for or against Prohibition. The operations of the Association Against the Prohibition Amendment, to which John J. Raskob was alleged to have given liberally, were studied, while on the other hand the affairs of the Anti-Saloon League and of the Commission on Temperance and Social Service of the Methodist Church, South, were also investigated. Henry H. Curran of the anti-prohibition association testified that his society had received contributions of \$427,213 in 1929. Representative Tinkham of Massachusetts testified before the committee on April 15 to the effect that the Anti-Saloon League had not made full reports of its expenditures as required by the Corrupt Practices Act of 1912. He asserted also that Bishop James J. Cannon of the Methodist organization had not fully credited to one of its donors, E. C. Jamieson, contributions of \$65,300 made during the Presidential campaign of 1928. Cannon, testifying, admitted having received the full amount but denied the authority of the committee to require testimony from him on his activities in the anti-Smith campaign of 1928. See PROHIBITION.

Senate Action on Appointments. Two vacancies in the Supreme Court were produced by the resignation of Chief Justice William H. Taft on February 3, during his last illness and by the death of Justice Edward T. Sanford on March 8. President Hoover's nominations of successors for both the vacant seats met with more than usual opposition in the Senate. Charles Evans Hughes, who had resigned from the Court in 1916, was the President's nominee for the chair of Chief Justice. Borah of Idaho and Norris of Nebraska led the opposition to his confirmation. The anti-Hughes group charged the nominee with having been in too close relations with large corporations and with being likely to bring to the Court conservative rather than liberal opinions. The debate, forming the chief business of the Senate for three successive days, gathered to a head much of such antagonism to the administration of President Hoover as had grown up within his own party. It created an issue of whether the judgment of Mr. Hoover was to be rejected. The vote, taken on February 13, gave an ample though not striking majority in confirmation of the appointment. The Yeas numbered 52 and the Nays 26. Among the latter were 11 Republicans. The voting Democratic members were almost evenly divided.

For the second vacancy in the court the President nominated Judge John J. Parker of North

Carolina. The result in this case was less happy. Parker was unpopular with colored leaders on account of utterances attributed to him regarding the Negro in politics, and with union labor interests because of a decision that he had rendered on the bench in his home State. The Judiciary Committee reported unfavorably on him, April 21. Though a vote was delayed for more than two weeks the opposition could not be overcome. On May 7 the Senate rejected the nomination by 41 votes to 39. President Hoover then nominated Owen J. Roberts, a Philadelphia lawyer, who was duly confirmed.

Naval Treaty and Special Senate Session. The treaty of naval limitation signed at London on April 22 by the representatives of Great Britain, Japan, and the United States was submitted by President Hoover to the Senate for ratification on May 1 with a brief transmitting note. It went into the hands of the Committee on Foreign Relations. Before this body Rear-Admiral Bristol, U.S.N., head of the executive committee of the General Board of the Navy, testified that in his belief the treaty did not give the United States parity with Great Britain nor preserve the 5-3 ratio with regard to Japan. Rear-Admiral Hilary P. Jones, U.S.N., who had attended the naval conference at London, testified that his protests to Secretary of State Stimson at the Conference, as to the reduction proposed for the allowance of United States cruisers carrying 8-inch guns, had been overruled. In spite of efforts to obtain a vote of confirmation before the close of the session, a caucus of Republican Senators elected on May 26 to defer consideration of the treaty until after the session had ended.

The President accordingly, at the close of the regular session, summoned the Senate to convene in special session on July 7. On that day he issued a message to the Senate, urging ratification of the treaty, lest the world "be again plunged backward from its progress towards peace."

On the supposition that the Administration might in some way have engaged itself informally to other governments, to a greater degree than the treaty itself revealed, McKellar of Tennessee offered a resolution to request the President to transmit to the Senate all documents and other data bearing on the treaty. The Senate adopted the resolution, whereupon the President replied on July 11 that as the submission of such papers would betray foreign confidence needful to the "protection of future negotiations," he thought such a step incompatible with the public interest.

Norris of Nebraska offered a resolution to render ratification of the treaty conditional to there being no "secret files, documents, letters, understandings or agreements" of a nature to modify it. This resolution, backed by considerable sentiment against the withholding of the confidential papers, was carried. The Senate ratified the treaty itself on July 21 and adjourned for the summer.

SEVENTY-FIRST CONGRESS, SECOND REGULAR SESSION. The Congress convened on December 1 in its second regular session. Its composition was changed to some extent by the November elections. Notably, in the Senate were admitted the Democrats Bulkley of Ohio, McGill of Kansas, and Williamson of Kentucky and the Republicans Cary of Wyoming, and after brief intervals, Morrow of New Jersey and Davis of Pennsylvania. The

organization of both houses remained essentially the same as during the first regular session.

The situation facing Congress at its opening was an unusual one with respect to National finances and economic depression. In advance of the session the Administration had sought Democratic coöperation to the end that pressing measures might go through without fail before the expiration of the Congress on March 4. Robinson of Arkansas, as Democratic floor leader in the Senate, had favored this course, thus assuring weighty if not unanimous Democratic support for majority measures deemed essential. The difficulty in agreement on a programme of such measures lay in the accepted need of increasing Federal expenditure for the sake of promoting public works and thus dispensing work to the needy, coupled with the difficulty of raising requisite revenue to meet such expenditure and likewise cover an existing deficiency in revenue, without raising taxation in such wise as to depress business farther.

The President's Message. Delivered to Congress on December 2, the President's message was devoted in chief part to the kindred topics of the economic situation, the unemployed, the unfavorable condition of agriculture, and the position of the Federal finances. Apart from these matters the message indicated that a programme for the authorization of the construction of naval cruisers would be offered by the Navy Department; that much pending legislation, including the determination of policy with regard to the Muscle Shoals power development, should be completed; that the transmission of electric current between States should be regulated; that further measures should be taken to promote the consolidation of railroads; that an inquiry should be undertaken into the workings of the anti-trust laws; that the income tax on capital gains should be mitigated; that the admittance of immigrants should be made more selective; that methods should be provided to keep alien criminals out of the country; that leased post offices in large cities should be replaced by Government buildings; that Congress should study inequalities in the service allowances to veterans.

With regard to the economic depression the message dwelt in congratulatory vein on the organized coöperation that President Hoover had put in motion a year earlier, to enlist great public and private organizations in the maintaining of building activity as a means to reduce unemployment. Business activity and the general total of income were represented as measuring between 80 and 85 per cent of normal, 1929 being taken as the norm. The number of the unemployed was set at 2,500,000 as of April 1, on the basis of the Census figures, and was admitted to have subsequently somewhat risen.

With regard to taxation the message asserted that "to increase taxation for the purposes of construction work defeats its own purpose, as such taxes directly diminish employment in private industry." Nevertheless it was recommended that Congress seek to increase employment within the ensuing six months, eschewing new plans that would not bear their results within that time. As to agriculture it was pointed out that under the dispensation of the Farm Board the prices for wheat, Indian corn, wool, and other products were far above those in leading foreign markets. An appropriation to the Department of Agriculture to enable it to lend to drought-stricken farmers to buy seed and stock feed was recommended.

As to the general situation of the Federal finances the message candidly stated that in place of the surplus of revenue to the amount of \$48,000,000 that the Administration had anticipated when it had recommended the cutting down of the income tax in the previous December, the government now estimated for the fiscal year a deficiency of \$607,000,000 in the relation of revenues to expenditures, as reckoned on the accepted constituents of each. This great deficiency resulted from the estimated reduction of revenues by about \$430,000,000 below the earlier estimate and from the estimated expansion of expenditures, under existing provisions, by some \$225,000,000. Against the huge resulting deficiency were offset the \$123,000,000 of the Treasury surplus for the fiscal year, as estimated in December, 1929; the payments received from foreign governments to cover interest on their debts to the Treasury, in all about \$185,000,000, to be converted by administrative action to cover expenditure; and a sum of \$100,000,000 represented by the President as available from the Farm Board. By administrative "economies and deferments" he hoped to reduce expenditure by yet another \$67,000,000. He looked forward to an effective deficit of \$180,000,000 for the current fiscal year, as thus reduced by divers expedients. With regard to the ensuing fiscal year, 1932, as well as 1931, he intimated that the cuts in the income tax in operation in the calendar year 1930 would have to be abandoned.

Budget Message. The President's budget message, delivered to Congress on December 3, submitted plans for a total ordinary Federal expenditure, in the fiscal year 1932, of \$3,618,335,563 which was about \$225,000,000 in excess of the appropriations (\$3,393,344,355) to date for the fiscal year current. The chief positive items toward this increase were an additional proposed appropriation of \$100,000,000 for the Farm Board, about \$110,000,000 more for the Veterans' Bureau, an approximate \$50,000,000 additional for the Department of Agriculture, and a further \$33,000,000 approximately for the Shipping Board and the Fleet Corporation. The postal expenditure, though as usual included in the estimates, was to be covered in the main by receipts, so that the actual budgetary estimate of ordinary expenditure for the fiscal year 1932 might be set in the neighborhood of \$3,000,000,000. The total for service of the public debt, constituting extraordinary expenditure, was estimated at \$1,049,509,905. The general fund receipts for 1932 (fiscal year), exclusive of postal revenues and after segregation of special and trust fund receipts, were estimated at \$3,852,401,738, or about \$250,000,000 higher than those already provided for the fiscal year 1931.

With regard to the finances of the current fiscal year 1931 the Budget Message expressed the President's disapproval of proposals to meet the impending deficit by reducing the statutory redemption of the public debt. Temporary borrowing on the part of the Treasury was suggested as the possible alternative. The President further predicted that "it will probably be necessary for Congress to appropriate additional money for expenditure within the present fiscal year in order to increase employment and to provide for the drought situation."

Special Message of December 4. The phrase last quoted prepared the ground for a further message from the President, delivered to Congress on

December 4. Herein was requested \$151,603,780 to be appropriated, chiefly to the use of the Federal-Aid highway system (\$80,000,000) and the Army Engineers (\$25,500,000), for expenditure on public works in the course of the ensuing six months. Appended was a letter of Budget Director Roop vouchsafing that the scheme of appropriations had been prepared with a view to supplying, through public works, only direct and immediate benefits to those needing them. The apparent effect of this plan of added expenditure was that it must increase the Federal deficit for the fiscal year 1931 by a further large sum, to approximately \$331,000,000.

Bills to Relieve the Needy. The opening days of the session witnessed the introduction of a flood of bills carrying appropriations to aid the needy part of the population. A Senate measure from Glenn of Illinois provided an emergency fund of \$150,000,000 for an emergency fund to accelerate public works; one from Robinson of Arkansas, McNary and Caraway, \$60,000,000 for the succor of drought-stricken farmers; from Capper of Kansas, a resolution to distribute 40,000,000 bushels of the Farm Board's wheat to relief organizations for food; from Senator Brookhart a bill to increase appropriation for public roads to \$500,000,000 a year for two years; from Senator Keyes and Representative Elliott, a bill to expedite work on public buildings; from Representative Huddleston a measure to create a Destitution Fund of \$50,000,000 for expenditure by the President.

Further Needs of the Farm Board. President Hoover embodied in a letter of December 8 to the Speaker of the House a demand for the appropriation of a further \$150,000,000 to the use of the Farm Board. He stated that he had included this appropriation in the estimates of expenditure for the current year to which the government was already committed, and that it would consequently not swell the estimated deficit of about \$180,000,000 for the current year, on that basis, to which he had alluded in his budget message. This proposed appropriation for the Farm Board made up two-thirds of the \$225,000,000 by which the President had estimated that expenditures for the current year would outrun appropriations already made.

Progress of Appropriation Measures. There was a disposition among some members in either branch of Congress to exceed greatly the supplementary appropriations that had been recommended for the current year. This was particularly evident with regard to the sum sought for further relief to drought-stricken farmers. Where the President had sought \$25,000,000 to furnish loans to supply these people with seeds for their next season and the like, the Senate on December 9 passed a measure to grant \$60,000,000 for drought relief, and the House voted for a total of \$30,000,000 for this purpose. There followed a settlement of the difference by conference committee. Finally, on December 19, both houses adopted a resolution and appropriating \$45,000,000 for advances to the farmers, to be administered by the Secretary of Agriculture.

The Federal emergency construction bill as passed by the House appropriated, for use in the current fiscal year, \$110,000,000 for expenditure in divers specified forms of construction, but chiefly for advances to such States as would not or could not make up their own shares of the sums to be spent on road work in accordance with the

Federal-aid road programme. The House bill, at the same time, empowered the President to transfer any part of the appropriated money from one to another of the specified uses. The Senate passed a much altered bill, to appropriate \$118,000,000 for emergency construction, giving the President no power to alter the allocation of the items, and required that construction work under the appropriations be done by local labor at the highest wages prevailing in each community. The differences between the two houses were not readily composed in conference committee. Finally, however, on the night of December 20, both houses enacted a compromise measure placing the total appropriation at \$110,000,000, retaining the power granted the President to shift items, and eliminating the provision as to rates of pay. As initially allocated in the act, the appropriation provided \$80,000,000 for the Federal-aid highway system; \$22,500,000 for rivers and harbors; \$3,000,000 apiece for flood control in the Mississippi Valley, highways in the National forests, roads, trails, and bridges in the National forests, and roads in the public lands; \$1,500,000 for roads and trails in the National parks.

A bill appropriating \$150,000,000 for the further requirements of the Farm Board in the current fiscal year was likewise enacted just before the year-end recess. It brought to \$400,000,000 the total of appropriations on account of the revolving fund of \$500,000,000 that Congress had authorized in 1929 when it created the Board.

Appropriations for 1932. House and Senate both passed before the holiday an appropriation bill of \$1,083,000,000 to cover the needs of the Treasury and of the Post Office for the ensuing fiscal year, but differences on amendments remained to be adjusted by conference. The house passed an appropriation of \$213,000,000 for the Department of Agriculture and one of \$68,500,000 for the Department of the Interior.

Court of International Justice. The President, in a message of December 10, submitted to the Senate for its ratification the two protocols for the revision of the statutes of the Court, designed to meet the stipulations of one of the reservations that the Senate had made on Jan. 27, 1926, as condition to the United States' accession, and also the protocol for accession. He recommended ratification, stating that "these protocols permit our withdrawal from the court at any time without reproach or ill-will." The anti-court group gave evidence of intention strongly to oppose ratification. The Committee on Foreign Relations adopted on December 17 a motion of Reed of Pennsylvania to postpone consideration of the protocols until December of 1931. Reed explained his motion as prompted by the desire to obviate a special session in the spring, which he feared might result if the issue were immediately pressed. See *WORLD COURT*.

Nominations Ratified. The Senate confirmed, prior to recess, the President's nominations of all five members of the reconstituted Federal Power Board. The nominees were Ralph B. Williamson of the State of Washington, Claude L. Draper of Wyoming, Dr. George Otis Smith, Marcel Garsaud, and Frank R. McNinch of North Carolina. McNinch's name encountered Democratic opposition on the ground that he had worked on behalf of Hoover in the campaign of 1928 and consequently could not qualify as a Democratic member of a bipartisan board. His confirmation was regarded as an Administration victory. The President

nominated, to succeed James J. Davis as Secretary of Labor on the latter's entering the Senate, William N. Doak, a prominent official of the Railroad labor unions. As these were not affiliated with the American Federation of Labor, there arose opposition within the Federation, but this was withdrawn and Doak was duly confirmed.

Investigation of the Norris Campaign. The special Senate committee investigating campaign expenditures of 1930 went farther, in December, into the intrigue against the renomination of Norris of Nebraska. Seeking to trace to Washington the inspiration of the maneuver by which another and obscure Norris had been put up for the State Republican Senatorial primaries with the apparent purpose of invalidating the Norris vote, it elicited information to the effect that Robert H. Lucas, executive director of the Republican National Committee, had secretly expended money for the printing of circulars adverse to Senator Norris, and had in so doing used the fictitious name of John M. Feters. Mr. Lucas rejoined with a public statement on December 20, that he had sought the defeat of Norris and defending this course on the ground that Norris in supporting Smith for President in 1928 had ceased to be a Republican.

ELECTIONS

Elections to Congress were held on November 4 in all States except Maine, which held to its practice of September elections. There were elected in the Nation Representatives to the Seventy-second Congress from every State, to the number of 435, the reapportionment on the basis of the Census of 1910 still prevailing; Senators for full terms to the number of 34; Senator for a partly expired term ending in 1935 and thus holding over into the new Congress, one (from Kansas). Thirty-two States elected Governors and other chief officers; all States but four chose Legislatures.

The results in their national aspect were: the apparent election of 14 Republicans and 21 Democrats to sit in the Senate of the Seventy-second Congress in 1931; the apparent election of 216 regular Republicans, 1 Independent Republican, 1 Farmer-Laborite, and 217 Democrats to the House of Representatives for that Congress; the election of 17 and probably of 18 Democratic Governors, of 12 Republican Governors, of one Farmer-Labor Governor (Floyd B. Olson of Minnesota), and one Independent Governor (Julius L. Meier of Oregon). As to the current Congress, the Seventy-first, elections for unexpired terms brought to the Senate three more Democrats, raising the Democratic strength to 41 and lowering the Republican to 53; while in the House the Democrats filled eight and the Republicans five vacancies, thus bringing the Republican superiority below 100 votes.

By comparison with the composition of Congress before the November election the result was a severe setback for the Republican party and for the Administration. Fourteen Republican and 21 Democratic Senators were apparently elected to sit in the ensuing Senate. But in many of these cases the result was settled in advance by the invariable party predominance. A more accurate gauge of the implications of the election lay in the indication that Democratic Senators had been elected to replace Republicans actually sitting in nine elections to seats in the future Senate, among these nine being seats from such States as

Illinois, Kansas, Ohio, and South Dakota. Only one Democratic Senator was replaced by a Republican, this being Steck of Iowa, who owed his original election to a Republican division in that State, normally rockribbed in its Republican affiliation. In the House of Representatives as elected for the Seventy-second Congress approximately 40 Republican seats were lost to Democrats.

The occasion for this remarkable political overturn was somewhat widely attributed to dissatisfaction with the condition of business. Republicans averred that their party had been made the scapegoat for hard times, while Democrats asserted that the Republican policy in dealing with the depression had been faulty and inadequate. A secondary but important part in shaping the outcome was played by the Prohibition question. The alignment on this issue was not partisan, both of the major parties having numerous candidates on either side of it. An estimate of the alignment of Congress on Prohibition, published in the *New York Times* on November 5, represented the newly elected House as having 298 supporters of Prohibition, 117 opponents, and 21 doubtful, as against 344 supporters and 91 opponents in the old House. In the case of the Senate the alignment was estimated to be: new Senate, 75 for Prohibition, 17 against, and 4 doubtful; old Senate, 78 for, 18 against.

Within a few days after the election President Hoover addressed to Senator Robinson of Arkansas, Democratic leader, an appeal for Democratic cooperation to the end that necessary appropriation and revenue measures in the forthcoming session be not delayed by the introduction of new measures. The proposal was diversely taken by Democratic members of Congress. The President also informally discussed in mid-November the prospect of the accumulation of a deficit in the Federal finances by reason of diminished revenue and higher expenditure. It was intimated that the situation would be likely to lead to the imposition of a heavier rate of taxation on incomes, an issue that neither party had undertaken to canvass systematically in the political campaign. Consult Charles P. Howland, *Survey of American Foreign Relations, 1930* (Yale University Press, 1930). See NICARAGUA; POLAR RESEARCH; EXPLORATION.

JUDICIARY

SUPREME COURT. The United States Supreme Court rendered in 1930 two decisions of high importance with regard to the Federal Prohibition law. The first of these, in the case of *Ike Danovitz*, was given on May 5. Its general trend was to support the contention that the Government might seize goods that, although not in themselves alcoholic, were offered in such a way as to attract purchasers seeking them for illicit purposes in violation of the National Prohibition act. *Danovitz*, as surviving partner of a bottle company, had maintained an action against the seizure of such goods as barrels, bottles, corks, and labels, which the government Prohibition agents undertook to seize under the Prohibition act. Justice Holmes wrote an opinion sustaining the lower court's decree of seizure. He held that the containers and other objects seized had been offered for sale in such a way as purposely to attract purchasers who wanted them for unlawful manufacture. There having been no formal waiver of jury trial, the facts on this point, as originally

established, were held to stand. All the Court concurred. The decision was widely regarded at the time as laying a foundation for a wide extension of the activities of the enforcement organization.

An effort to extend these activities still further, so as to render the purchaser of prohibited beverages legally liable with the seller, was checked by a decision of the Court rendered on May 26, in the case of the United States against James E. Farrar. Justice Sutherland wrote the opinion, in which there was unanimous concurrence. Farrar had been indicted under the Federal law in Massachusetts for the unlawful and knowing purchase of intoxicating liquor. The District Court had sustained a motion to quash the indictment, and the government had carried the matter to the higher courts on appeal. It sought to base the liability of the defendant on Section 6 of the Prohibition Act, which detailed the need of having a permit or prescription for the purchase of liquor. It thus differed from the earlier case of the United States vs. Katz, in which had been charged a conspiracy to effect a sale of liquor in violation of Section 10 of the act, requiring a permanent record of sale. The opinion held that in Farrar's case, as in the Katz case, the section of the law cited against the defendant had application to other types of liquor dealings. No opinion was given as to the question whether Farrar's acts constituted a participation in conspiracy, this not having been the basis of the indictment. The quashing of the indictment against Farrar as a purchaser of liquor was therefore affirmed.

On November 24 the Supreme Court rendered its decision in two cases affecting groups of producers in the moving-picture business, the one headed by the Paramount-Famous-Lasky Corporation and the other by First National Pictures. The Government had brought action against both groups for violation of the Sherman Act, and both cases had come up on appeal, the one by the defendants and the other by the government. Justice McReynolds wrote the decision on the two cases. He held that the uniform credit and contract system upon which producers and distributors of moving pictures had settled amounted to an unlawful restraint of trade. He found that the arrangement had the obvious purpose of coercing purchasers. The decision was without dissent. It was commonly regarded as basically unsettling the marketing organization of the motion-picture industry.

On May 19 the Supreme Court declined to take jurisdiction in the matter of a complaint of the United States Navigation Company, which alleged that the Cunard line and 13 other British shipping companies were engaged in a conspiracy to monopolize shipping in the United States. The Court affirmed that it had discretion whether to entertain such a complaint or not, and it chose not to do so. On the same date the Court declared, in the appeal of the North Dakota Board of Railroad Commissioners, to set aside a Federal injunction to prevent the putting into effect of certain railroad rates that the Commission had declared and that the Interstate Commerce Commission had not yet reviewed, that the Federal tribunals were without authority to prevent State railroad rates from going into effect.

A unanimous decision of the Court, rendered on June 2, in an appeal of the Ann Arbor Railroad Company upon freight rates affecting Cali-

fornia territory, was adverse to the Interstate Commerce Commission's interpretation of the Hoch-Smith resolution, passed by Congress in 1925. The Court held that this resolution, so far as contrary to the guaranties in the Railroad act, gave the Commission no authority to lower railroad rates as a measure for the special benefit of farmers.

OTHER FEDERAL COURTS. The Court of Customs and Patent Appeals ruled on April 10, in the case of *Frischer and Company et al. vs. the Bakelite Corporation*, that the President had the power to fix duties on imports of commodities whenever he found unfair business methods to obtain in their importation. This power the Court held to be not a delegation of the legislative function, such as might render it unconstitutional, but a true administrative power.

The legal issue over the course of the Administration in refusing further permits for the working of petroleum and natural-gas deposits on the Western public lands was brought into the Supreme Court of the District of Columbia by application for a writ of mandamus to reinstate the application of certain individuals in California and New Mexico. The Court held that the act of 1920 did not give the power that the Secretary of the Interior had sought to exert, and announced on April 9 that it would issue the writ. The Government prepared an appeal.

The Court of Appeals of the District of Columbia by a decision rendered on December 1 upheld the authority of the Secretary of the Interior to reject and refuse applications to the Federal Government for permits to prospect for oil and natural gas on lands of the Federal public domain. It thus supported the legality of the policy that had earlier been declared by President Hoover to enforce complete conservation of the oil resources in the government lands during the course of his administration.

Edward L. Doheny, accused of having bribed Albert B. Fall, Secretary of the Interior in the Harding Cabinet, to influence the leasing of the Elk Hills Naval Oil Reserve to the Doheny interests in 1922, was acquitted in the Supreme Court of the District of Columbia on the charge of bribery on March 22. The appeal of Fall, who had been convicted earlier and separately for his part in the alleged offense, remained pending until the close of the year.

Validity of Eighteenth Amendment. In the Federal District Court of the district of New Jersey, Judge William Clark ruled on December 16 that the Eighteenth Amendment to the United States Constitution was invalid. The decision was appealed in due order. While it caused much and immediate anxiety to the enforcers and supporters of the Federal system of Prohibition, it did not affect the operation of that system, the decision being temporarily disregarded even in New Jersey. See **PROHIBITION**; **TRADE UNIONS**.

UNITED STATES MILITARY ACADEMY. A government institution at West Point, N. Y., for the theoretical and practical training of cadets for the military service of the United States, opened in 1802. On Sept. 1, 1930, the total number of cadets was 1254. There were 215 members on the faculty. The academy is a component part of the Regular Army of the United States and is maintained solely by appropriations from the War Department, which in 1930 amounted to \$2,361,335 for salaries and maintenance of public works. The library contained

over 110,000 volumes. The Superintendent in 1930 was Wm. R. Smith, Major General, U. S. Army.

UNITED STATES NAVAL ACADEMY. A school for the education and training of midshipmen in Annapolis, Md.; founded in 1845. The total number of midshipmen at the beginning of the academic year 1930-31 was 2057. The faculty numbered 244. The library contained 71,000 volumes. Midshipmen, after graduation, are commissioned as ensigns in the U. S. Navy. Superintendent, Rear Admiral S. S. Robison, U. S. N.

UNITED STATES OF EUROPE. The project for a European federal union, advocated as early as the Hague Peace Congress of 1898-99, assumed tangible form in 1930 with the issuance on May 17 by Foreign Minister Aristide Briand of France of his "Memorandum on the Organization of a Régime of European Federal Union." The memorandum was addressed to 26 European governments, excluding Russia and Turkey. In their replies all agreed: (1) That the principle of European union merited further study; (2) that the European states should meet in September to consider further action; (3) that the proposed union should not conflict with or impair the value of the League of Nations; and (4) that it should not be directed against any other continent or group of nations.

In accordance with the second point, the Foreign Ministers and delegations of all the European states met behind the closed doors of the council room of the League of Nations in Geneva September 8. M. Briand submitted a report, which included a summary of the replies received by the French Foreign Office, as well as the respective texts. Largely through the influence of Foreign Secretary Arthur Henderson of Great Britain, the project for European union was placed on the agenda of the League Assembly, where an extended public discussion took place September 11. On September 17, the Assembly authorized the appointment of a committee to study, with the League Secretariat, means of "closer collaboration" among the nations of Europe. The various nations were instructed to inform the League Secretariat by December 15 of concrete proposals which they desired to place on the agenda for the first meeting of the committee, scheduled for Jan. 19, 1931.

For the text of the Briand Memorandum of May 17, in French and English, see the special bulletin of *International Conciliation* (published by the Carnegie Endowment for International Peace) for June, 1930. The texts of the replies of the 26 governments, together with the summary by the French Foreign Office, were published in *International Conciliation*, No. 265, for December, 1930. For a general discussion of the problem consult Paul Hutchinson, *The United States of Europe* (Chicago, 1929). See **LEAGUE OF NATIONS**; **INTERNATIONALISM**; **INTERPARLIAMENTARY UNION**; and **FRANCE** under *History*.

UNITED TEXTILE WORKERS. See **LABOR**, **AMERICAN FEDERATION OF**; **STRIKES** AND **LOCKOUTS**.

UNIVERSAL CHRISTIAN COUNCIL ON LIFE AND WORK. See **INTERNATIONALISM**.

UNIVERSALISTS. A religious denomination, existing chiefly in the United States, Canada, Japan, and Korea, which holds as parts of its doctrine the universal fatherhood of God and the final harmony of all souls with God; established in the United States in 1770 by the Rev. John Murray in Good Luck, N. J. The ecclesiastical

organization of the church is under the jurisdiction of the general convention, which meets biennially. In polity, the parish or society is independent in the management of its temporal affairs and worship. The different parishes within a State are organized into a State convention, which meets annually, and these in turn constitute the general convention. In 1930 there were 28 State conventions and two State conferences. The number of churches was 609; ministers in fellowship, including lay licenses, 530; church members, 50,078; and Sunday schools, 405. The denominational periodical, the *Christian Leader*, is published weekly. The Rev. Frank D. Adams, D.D., of Detroit, was president of the general convention in 1930. Headquarters are at 176 Newbury Street, Boston.

UNIVERSES. See ASTRONOMY.

UNIVERSITIES AND COLLEGES. STATISTICS. The United States Office of Education reported that the enrollment in colleges, universities, and professional schools for 1927-28 was 868,793. To this should be added 239,570 in summer sessions, 292,074 in extension courses, 206,799 in Teachers Colleges, and 67,549 in normal schools. The grand total is 1,443,141. This was an increase of nearly 100 per cent since 1920.

During the early part of the year 1930 there was much speculation regarding the effect that the changed economic conditions would have upon enrollments. Many predicted that there would be marked decreases. The opposite was true. Dean Raymond Walters of Swarthmore College collected enrollment figures from 431 institutions having a total registration of 578,671 full time students. He reported in *School and Society* (Dec. 13, 1930) that the enrollment of full-time students in these institutions on Nov. 1, 1930, was three and a half per cent greater than at the same date in 1929. This was more than twice the increase shown between 1928 and 1929. The total registration including part-time, and summer session students showed an increase of only one per cent. Dean Walters attributed this relatively small increase to the smaller attendances in summer schools in 1930.

The ten largest Universities in the United States and their enrollment of full-time students are as follows:

| | | | |
|---------------------|--------|-------------------|--------|
| California | 17,322 | Ohio State | 10,709 |
| Columbia | 14,958 | Michigan | 9,431 |
| Illinois | 12,709 | Wisconsin | 9,401 |
| Minnesota | 12,490 | Harvard | 8,446 |
| N. Y. University .. | 12,149 | Univ. of Wash. .. | 7,368 |

The ten largest institutions ranked according to complete enrollment of resident students, including part-time and summer students, are:

| | | | |
|---------------------|--------|------------------|--------|
| Columbia | 33,144 | Hunter College | |
| N. Y. University .. | 29,214 | (N. Y. City) .. | 15,447 |
| College of City of | | Illinois | 14,169 |
| New York | 24,752 | Northwestern .. | 14,152 |
| California | 22,797 | Pennsylvania .. | 13,928 |
| Minnesota | 18,505 | Ohio State | 13,780 |

The enrollments of full-time students in the larger women's colleges rank as follows:

| | | | |
|---------------------|-------|---------------------|-------|
| Hunter | 4,614 | Florida State Col- | |
| Smith | 1,986 | lege for Women . | 1,676 |
| North Carolina Col- | | Wellesley | 1,550 |
| lege for Women .. | 1,704 | Texas State College | |
| | | for Women | 1,467 |

Among the largest technical institutions or departments and professional schools are the following:

| | | | |
|--------------------------------------|-------|--|-------|
| Engineering, Purdue University | 2,775 | Commerce and Finance, Pennsylvania | 2,267 |
| Law, Harvard University | 1,597 | Education, Columbia | 5,587 |
| Medicine, Northwestern | 740 | Theology, Yale | 258 |
| Dentistry, Northwestern | 440 | Forestry, Syracuse .. | 420 |

The largest summer schools were:

| | | | |
|------------------|--------|------------------|-------|
| Columbia | 13,887 | Chicago | 5,810 |
| California | 7,849 | Washington | 5,171 |
| Minnesota | 6,015 | | |

PROPERTY. The United States Office of Education reported that the value of property belonging to 1076 colleges, universities, and professional schools in 1928 was \$2,413,748,981. The estimated value of property belonging to all such institutions was: grounds, \$298,318,209; buildings, \$1,018,047,321; libraries, apparatus, furnishings, etc. \$245,589,390; and productive funds \$1,150,112,251. Three privately controlled universities had productive funds exceeding \$50,000,000. They were Harvard, \$86,702,843; Columbia, \$63,597,416; and Yale, \$58,024,459.

CHANGES IN ORGANIZATION. The attention of educators was focused upon the changes taking place in Chicago University (q.v.). In November the trustees and faculty sanctioned the beginning of a radical change in educational and teaching methods, as proposed by President Robert Maynard Hutchins. Among the outstanding features of the new plan was the elimination of the four-year undergraduate course, requiring 120 credits, followed by a degree. The traditional college was to be replaced by one from which the student would be graduated whenever he was able to pass a comprehensive examination. This may take four or even five years, or it may be done by a genius in one year. The present graduate school was to be abolished and in place of it and the undergraduate courses the non-professional training was to be divided into five main sections, each with its own dean. These are: the social science section, the physical science section, the biological science division, the humanities division and the college. These divisions will award all non-professional degrees, including the equivalent of the present bachelor's, master's, and doctor's degrees.

The assignment of the various departments to the divisions was as follows:

Humanities—Philosophy, art, comparative religion, Oriental languages, New Testament, comparative philosophy, Greek, Latin, Romance, Germanics, English.

Social Sciences—Psychology, education, economics, political science, history, sociology, anthropology, home economics, geography.

Physical Sciences—Mathematics, military science, astronomy, physics, chemistry, geology.

Biological Sciences—Botany, physical culture, zoölogy, anatomy, physiology, physiological chemistry, hygiene and bacteriology, pathology, the clinics group.

Those who manifest fitness during the time they are obtaining their general education may pass into an upper division, or professional school.

The University of California (q.v.) changed its entrance requirements so as to require that the student in the high school complete "subjects which are regarded as important prerequisites for

university work." In general, the university designates eleven or twelve of the points that the entering student must present. Plans for the opening of the Institute for Advanced Study were progressing. This will be exclusively a postgraduate institution.

The George Washington University (q.v.) inaugurated a change in administration at its opening in September. It places freshmen and sophomores in a junior college where their work is under the close supervision of advisers. If they cannot or do not care to go on into the senior college, they can terminate their work at the end of the sophomore year and receive a Junior College Certificate. There are four divisions of study. They are languages and literatures, mathematics and the physical sciences, the natural sciences and the social sciences.

At the University of Minnesota (q.v.) there was established what was described as an all-university curriculum. A general committee has charge of the supervision of this work. Such students as the committee selects may study the things they want in any part of the university where they are found.

CRITICISM OF COLLEGES. In November there appeared a book entitled *Universities—American, English, German*, by Dr. Abraham Flexner. For many years Dr. Flexner was a director of the General Education Board, and in 1930 was made head of the new Institute for Advanced Study recently established by Louis Bamberger and his sister, Mrs. Felix Fuld. Dr. Flexner criticized severely many of the educational practices in American universities. He objected to the numerous extensions that have been made to the offerings, and also to correspondence, home study, and extension courses which offer college credit toward a bachelor's degree. He considered such courses as competing with the high-school offerings.

Dr. Flexner praised the graduate school as contrasted with the undergraduate departments. He also commended the provisions that had been made for libraries in American universities. He charged that enrollments have been "padded." He stated that by eliminating extension, correspondence, home study, and certain other groups of students, enrollments of 25,000 to 48,000 would be reduced to less than 5000. The criticisms that Dr. Flexner has offered called forth but few statements from the institutions concerned. It was reported that Dr. Flexner characterized this quietness as representing "discretion as the better part of valor."

ATHLETICS. During the year there was much discussion regarding college and university affairs. The report on college athletics which the Carnegie Foundation for teaching published in 1929 received much attention, but the effects were not evident to any marked degree. Athletic coaches in some places continued to receive salaries that were equal to or greater than those paid to the presidents in their respective institutions. Gate receipts continued to be large and the profits from football were the chief means of support for other less spectacular sports within the colleges.

Dr. Nicholas Murray Butler, in his annual report as President of Columbia University, stated some proposals that have received wide attention. He recognized the abuses that exist, and offers suggestions that look toward their elimination. He said that possibly "an academic League of Nations" should take jurisdiction over the entire

field of academic athletic endeavor. An additional proposal advanced by Dr. Butler was as follows:

Perhaps the one satisfactory and permanent solution of these problems is that athletic sports, being a well-recognized part of undergraduate life and undergraduate training, should be suitably and adequately endowed by the alumni. Were this done, it would then be possible at one stroke to bring to an end the importance and influence of gate receipts and to put baseball and football, for example, on the same excellent plane that rowing has long occupied.

EDUCATIONAL BOARDS AND FUNDS. *The Commonwealth Fund Scholarships.* Thirty-three students from British and Colonial Universities and the British Colonial Service received scholarships from the Commonwealth Fund for study in the United States. The scholarships are awarded annually. The students are expected to enter upon their studies in September. They travel, through the United States during the next summer and complete a second year of study before they return. The students for 1930-32 elected to study in sixteen different institutions.

Charles and Julia Henry Fund Scholarships. This fund was established by a bequest of Lady Julia Lewisohn Henry who died in 1927. She stated that the fund was established "in the earnest hope and desire of cementing the bonds of friendship between the British Empire and the United States." To this end scholarships amounting to about \$2500 each were to be offered annually to four American students for study at Oxford and Cambridge, and like amounts to four British students to study at Harvard and Yale. The scholarships were for undergraduates and are open to both men and women. Normally they are for one year only, but they may be extended. The first appointments were to be made not later than Apr. 18, 1931.

The John Simon Guggenheim Memorial Foundation. This foundation with an endowment of \$3,500,000 provides scholarships that usually amount to \$2500 for one year to such American advanced students as desire to carry on researches in other countries, or such students from foreign countries as desire to do advanced study in the United States. The foundation was established in 1925. Up to 1930 it had assisted 295 persons. During 1930 it supplied fellowships to eighty-four scholars, novelists, poets, composers, sculptors, painters, and other creative workers.

The Josiah Macey Junior Foundation. This foundation was created by an initial gift of \$5,000,000 by Mrs. Walter Graeme Ladd. The purpose was to assist in medical research which would concentrate on "fundamentals of health." The donor stated her wishes, in part, as follows:

It is my desire that the foundation in the use of this gift should concentrate on a few problems rather than support many undertakings and that it should primarily devote its interests to fundamental aspects of health, of sickness and of methods for the relief of suffering; in particular to such special problems in medical science and medical arts as require for their solution studies and efforts in correlated fields as well, such as biology and the social sciences. To these ends the foundation might give preference in the use of this fund to integrating functions in medical sciences and medical education for which there seems to be particular need in our age of specialization and technical complexities.

The Milbank Memorial Fund. The report of this fund for the year 1929 showed that the total appropriations up to the end of 1929 were \$9,422,460. The money was used for health, social welfare, and education. The officers of the fund announced that thereafter greater emphasis would be placed upon health research and education.

Rhodes Scholarships. The trustees of the Rhodes Scholarships changed the method of selecting the scholars who were appointed in December, 1930. Prior to this time two scholarships were appropriated to each State every three years. This year as an experiment they created eight districts of six States each. The 32 scholars were selected by permitting each State to recommend its best two candidates. From the 12 men thus recommended by each district the four best were chosen without regard to State lines.

A Trust Created by the late Charles F. Ruggles. Mr. Ruggles who died in August, 1930, left an estate estimated at about \$50,000,000 "for such charitable, benevolent, educational, and public welfare uses as said trustees shall elect." Both the principal and the interest may be used. His will contains the following statement:

It is my desire and interest that such trust estate and the income thereof shall be devoted to charitable, benevolent, educational and public welfare uses in the State of Michigan, and that the trustees may, in their discretion, organize a Michigan corporation to hold said trust estate and disburse the proceeds and income thereof for such purposes. It is my desire and intent that the reasonable needs and requirements of the inhabitants of Manistee County and of the charitable, benevolent, educational and public welfare institutions serving the inhabitants of said county, shall at all times be given preference over the like needs and requirements of other persons and institutions in the disbursement of said trust estate and of the income thereof.

GIFTS AND BENEFACTIONS. The year was noteworthy in the number of gifts that were made to colleges and universities. Among those of \$100,000 or more the following were announced:

Alfred University received gifts and pledges totaling \$1,020,000. **Atlanta University** received a grant of \$450,000 from the General Education Board for a Library. A fund of more than \$1,000,000 provided by William Curran, who died fifty years ago, was awarded to **Beaver College**. The will stipulated that the money should be used as a "foundation for the education of females in or adjacent to Philadelphia." **Boston University** received a trust fund of \$500,000 for the establishment of a school of journalism by the will of the late Mrs. Mary E. Taylor. **Bowdoin** received a gift of \$500,000 from Cyrus H. K. Curtis. The **Clarkson Memorial College of Technology** was to receive a bequest of \$1,145,531 through the action of Mrs. Emilie V. Moore in renouncing all interest in this sum which was left her for life by the late Mrs. Annie Clarkson.

Columbia University received \$600,000 from Edward S. Harkness to increase the endowment of the department of surgery. Mr. Harkness also supplemented a previous gift for a residence hall at the Medical Centre by a further gift of \$500,000. By the will of the late Miss Euretta J. Schlegel, Columbia was to receive \$173,232. **Dartmouth College** received a gift of \$1,000,000 from George F. Baker for the maintenance and support of the Baker Memorial Library, and a bequest of \$100,000 from the estate of the late Richard Crawford Campbell. **De Pauw University** received a legacy of \$200,000 for a chair of philosophy from James Nelson, a bequest of \$150,000 from the estate of the late Marion B. Stultz, and the major part of an estate valued at \$2,000,000 by the will of the late John H. Harrison. **Drexel Institute** received a gift of \$300,000 from Cyrus H. K. Curtis toward the erection of a women's dormitory.

George Washington University was to receive more than \$500,000 "for the promotion of athlet-

ics" by the will of the late Richard E. Pairs. **Harvard** received \$100,000 by the will of the late William Amory Gardner. **Haverford College** received a gift of \$150,000 from Charles Wharten Stook. **Johns Hopkins** received two gifts amounting to \$250,000 for the Institute of Law. **Lafayette College** received gifts of \$400,000 from John Markle, \$500,000 from Fred Morgan Kirby, and \$100,000 from Thomas Fisher. **Knox College** received gifts totaling more than \$900,000. **Lehigh University** received a bequest of \$100,000 by the will of the late Langdon C. Stewardson. **Leland Stanford** received a bequest of \$150,000 for a chair in American History, by the will of the late James William Byrne.

New York University received a bequest of \$2,000,000 by the will of the late William H. Nichols; also a bequest of \$1,000,000 by the will of the late Mrs. Emma Baker Kennedy. \$250,000 from the estate of the late Conrad Hubert, and \$100,000 from John P. Munn. **Notre Dame University** received \$200,000 from Edward N. Hurley for the foundation of a College of Foreign and Domestic Commerce. **Oberlin College** received a gift of \$100,000 from John D. Rockefeller, Jr., to be used toward a building for a Graduate School of Theology, and a gift of \$150,000 from the Carnegie Corporation for a librarianship endowment. **Princeton** received a gift of \$300,000 from John D. Rockefeller, Jr., for the endowment of the industrial relations section of the department of economics and social institutions; a bequest of \$500,000 for an Alumni Trust Fund by the will of the late Thomas Davies Jones and \$400,000 from the estate of the late Frank Hartley as an endowment fund for scholarships.

The **Polytechnic Institute** of Brooklyn received a bequest of \$250,000 by the will of the late William H. Nichols. **Ripon College** received \$100,000 from Rolin B. Lane for a new library. **St. Louis University** received a gift of \$1,000,000 from Firmin Desloge for the erection of a hospital. **Syracuse University** received a gift of \$500,000 from George H. Maxwell for a School of Citizenship and Public Affairs Building. **Teachers College** of Columbia University received a gift of \$103,882 from the International Education Board; \$100,000 from the Laura Spelman fund; \$2,000,000 from the General Education Board for the endowment of the Lincoln School; and a bequest of \$500,000 contained in the will of the late V. Everit Macy.

The **University of California** received a bequest of \$150,000 by the will of the late James William Byrne; and a gift of \$100,000 from the family of the late Ross and Jacob Stern to develop a department of music. The **University of Chicago** received \$250,000 from the estate of the late Conrad Huber. The **University of Michigan** was to receive the income from a trust fund of \$12,000,000 which was willed to it by the late William Wilson Cook. The university also received a gift of \$200,000 from Charles Lathrop Pack for the establishment of a foundation to be known as the George Wallis Pack Forestry Foundation. The **University of North Carolina** received a gift of \$100,000 from Rufus L. Patterson and John M. Morehead for the erection of a memorial Carillon tower. The **University of Pennsylvania** received a bequest of \$1,094,923 by the will of the late James L. Wood, to be used as an endowment fund. The **University of Texas** received a gift of \$205,000 from E. D. Farmer to endow exchange fellowships with the University of Mexico.

The *University of Virginia* received a gift of \$350,000 from William A. Clark, Jr., for a law building, \$120,000 from the General Education Board, and \$100,000 from Mrs. Evelyn M. B. Tiffany and a bequest of \$140,000 by the will of the late John B. Cobb for building. *Vassar College* received a bequest of \$200,000 by the will of the late Eva March Tappan. *Washington University* received a gift of \$250,000 from Edward Malinekrodt for the construction of a radio building. *Wesleyan University* was to receive more than \$1,000,000 from the estate of the late Charles Land Denison.

Yale University received \$3,000,000 from the trustees of the estate of the late John Sterling for the Yale Graduate School quadrangle and a fund estimated at \$1,000,000 was added to the gift for buildings. The University was to receive \$1,741,174 as residuary legatee under the will of Otto T. Bannard, also the major part of the estate of the late Samuel Rossiter Betts, valued at \$1,000,000. The announcement of gifts included \$400,000 from the General Education Board for buildings, \$100,000 from Paul Block for a programme of studies in the field of journalism, and \$166,000 by the will of the late Henry H. Strong.

Several schools and academies received large gifts and bequests. The *Groton School* received a bequest of \$500,000 by the will of the late William Amory Gardner. *Phillips Exeter Academy* received a gift of \$1,000,000 from William Boyce Thompson. *Deerfield Academy* received a gift of \$100,000 from Thomas Cochran for buildings and endowment. The will of the late Mrs. Grace Salisbury Foote provides a fund of \$250,000 "for preparatory and college scholarships for promising grammar school graduates." The will of the late Harvey C. Woodward provides a fund estimated at \$7,500,000 for a foundation for the establishment of "a chain of boarding schools for white boys in the South." The donor placed various restrictions upon the location and character of these schools. "Teachers must come from a line drawn east to west through Cincinnati." If after seventy-five years the schools are failures, one-half of the fund is to go to the Massachusetts Institute of Technology and the remainder is to be used as a loan fund for students in schools other than those supported or partly kept up by religious denominations.

NEW PRESIDENTS. New presidents announced in 1930 are listed in the accompanying table.

SURVEYS. *Land Grant Colleges*. A comprehensive survey of land-grant colleges was started July 1, 1927, by authorization of the Congress. An appropriation of \$117,000 was voted for expenses. The U. S. Office of Education conducted the survey and reported its findings in two volumes of more than 1800 pages. The 52 institutions established under the first Morrill Act in 1862 were each studied in detail. Among the phases reported are the following: The sources of revenue, student fees, the success of graduates, the training of the teaching staff, salary, schedules, athletics, student activities, library facilities, scholarships, student loans, and fraternities.

The report shows that the original purpose was to provide a system of education in which a child might pass from the elementary school to the high school and then to the State Land-Grant college or university without the payment of tuition or equivalent charges. This did not hold true at the time of the report, for only 50 per cent of the total revenues were received from State

| <i>Name of Institution</i> | <i>Name of President</i> |
|-----------------------------------|-------------------------------|
| Central College | Dr. Robert H. Ruff |
| Connecticut Agricultural College | Dr. Charles C. McCracken |
| Eastern Nazarene College | Dr. R. Wayne Gardner |
| Eureka College | Dr. Clyde Laten Lyon |
| Fordham University | Reverend Aloysius J. Hogan |
| Goucher College | Dr. David Allan Robertson |
| Hiram College | Dr. Kenneth Irving Brown |
| Juniata College | Dr. Charles C. Ellis |
| Maryland College for Women | Dr. George A. Steele |
| Newberry College | Dr. James C. Kinard |
| North Dakota Agricultural College | Dr. John H. Shepperd |
| Oklahoma Baptist University | Dr. Edgar Goldbold |
| Piedmont College | Reverend Henry Newell |
| Rhode Island State College | Raymond G. Bressler |
| Rose Polytechnic Institute | Dr. Donald Bishop Prentice |
| Shenandoah College | Dr. Vernon L. Phillips |
| Tarko College | Reverend Robert N. Montgomery |
| Tusculum College | Reverend Charles A. Anderson |
| University of California | Dr. Robert G. Sproul |
| University of Idaho | Dr. Mervin Gordon Neale |
| University of Illinois | Dr. Harry Woodburn Chase |
| University of Missouri | Dr. Walter Williams |
| University of North Carolina | Dr. Frank P. Graham |
| University of Pennsylvania | Mr. Thomas S. Gates |
| Valparaiso University | Reverend Oscar C. Kreinheder |
| Wake Forest College | Dr. Thurman D. Kitchin |
| Washington and Lee University | Dr. Francis Pendleton Gaines |
| Western College for Women | Dr. Ralph H. Hickok |

sources. The report disclosed the fact that many students do not take up or continue the profession for which they were trained in college. It appears that 45 per cent of those who studied agriculture did not follow this work after they left college. About the same proportion of those who registered in education failed to teach. Even among those who were trained for engineering, 32 per cent went into some other work.

The total amount received by 41 of the institutions for athletics in 1928 was \$4,545,217. The report offers some adverse criticisms regarding the manner in which some of the institutions allow student bodies to handle the large financial affairs involved in athletics. The methods employed in many of these institutions in looking after the welfare of the students are also criticized.

NATIONAL ADVISING COMMITTEE ON EDUCATION. This committee was appointed by President Hoover to "investigate and present recommendations as to policies which should be pursued by the Federal government with respect to education." The committee was organized in May, 1929. It reported in July, 1930. Among the proposals that are of greatest interest to the public are the following: The "repeal of all laws that give annual Federal grants in any form to the States for special phases of education of interest to special groups of the people—." The other proposal was to "provide one unallotted annual grant to the States of \$2.50 per child under 21 years of age with the sole restriction that these Federal funds be used for the support of educational operations." The adoption of the first proposal would require the repeal of all acts that provide Federal aid for the land-grant colleges, agricultural extension, agricultural experiment stations, vocational education, and civilian industrial rehabilitation. The adoption of the second proposal would bring about a considerable increase in Federal appropriations to educational activities.

The committee believed that "the Federal Government has an obligation to aid public education in the States." It asserted that "in the field of education, at least, matching Federal money grants, whether general or special, with State funds is a policy not to be favored."

The committee did not recommend the establishment of a Department of Education with a secretary in the President's cabinet. It did urge increased Federal appropriations for educational research and informative science. It also recommended the creation of "an adequate Federal headquarters for educational research and information."

THEOLOGICAL EDUCATION. Early in 1930 the Conference of Theological Seminaries, and the Institute of Social and Religious Research began a three-year study of the condition of theological education in the United States. It was planned to make this a thoroughly comprehensive study. It is the first time that such an effort has been made. All denominations are represented, as are all the schools that are considered either radical or conservative. See **EDUCATION IN THE U. S.**; and articles on the individual universities and colleges.

UR. See **ARCHÆOLOGY.**

URAL AREA. See **SIBERIA.**

URIBURU, JOSÉ FRANCISCO. Provisional President of Argentina. See **ARGENTINA under History.**

UROSELECTAN. See **SURGERY, PROGRESS OF.**

URUGUAY, ū'ru-gwā or ō'rōo-gwī'. A republic on the southeast coast of South America, bounded by Brazil on the north and Argentina on the west. Capital, Montevideo.

AREA AND POPULATION. Uruguay's area of 72,172 square miles make it the smallest state in South America. The population on Jan. 1, 1930, was estimated at 1,850,129 (1,429,585 in 1918). For the period 1925 to 1929, births averaged 43,392 annually, deaths, 19,166; the excess of births, 24,226. Persons entering the country in 1929 numbered 201,781; persons leaving, 184,514. The estimated population of the chief cities in 1928 was: Montevideo, 430,000; Salto, 35,000; Paysandú, 35,000.

EDUCATION. In 1929, there were 1288 public schools, with 4023 teachers, an enrollment of 158,465 pupils, and an average attendance of 127,566. The University of Uruguay at Montevideo enrolled 10,072 students in 1927.

PRODUCTION. Livestock raising and agriculture are the principal industries, with about 60 per cent of the total area devoted to stock raising, 20 per cent to mixed stock and crop ranches and farms, and 5 per cent to crop farms. Livestock products constitute over 80 per cent of all exports. In 1929 there were 9,153,000 cattle and 23,000,000 sheep. Cattle slaughtered during the year ended June 30, 1930, totaled 1,363,727 and sheep 2,284,201. The wool clip for 1929-30 reached 64,000,000 kilos, or about 148,000 bales, but wool prices were 50 per cent less than in 1928-29. In March, 1930, industrial establishments numbered 7700, with 96,000 employees.

COMMERCE. Foreign trade in 1929 resulted in the first adverse trade balance since 1923. Imports were valued at \$93,509,167, or \$796,018 (1 per cent) more than in 1928, while exports declined to \$96,466,537, or \$8,784,734 (8.3 per cent) less than in 1928. The United States furnished 31.3 per cent of all imports, as compared to 15.9 per cent by the United Kingdom and

10.2 per cent by Germany. The United Kingdom took 23 per cent of all exports, Germany 14.8 per cent, and the United States 12.1 per cent. In the year ended June 30, 1930, imports from the United States declined 15 per cent to \$24,605,697 and exports to that country declined 7.3 per cent to \$15,645,889. Preliminary returns for 1930 showed total exports of 100,864,000 pesos and imports of 87,202,000 pesos.

FINANCE. Revenues and expenditures of the National Government during the fiscal year 1928-29 totaled 58,576,428 pesos and 57,565,207 pesos, respectively, a surplus of 1,011,221 pesos resulting. As compared with 1927-28, revenues increased 2,050,059 pesos and expenditures about 3,000,000 pesos. In the President's message to Congress of Mar. 15, 1930, a deficit of about 355,000 pesos was forecast in 1929-30; the budget for the year estimated revenues at 58,041,562 pesos and expenditures at 58,547,252 pesos. The 1930-31 budget provided for expenditures of 64,415,000 pesos. The public debt on Dec. 31, 1930, totaled \$239,434,826 converted to United States currency, an increase of \$22,244,487 during the year. The foreign debt Jan. 31, 1930, was 134,550,000 pesos. The Uruguayan peso (par value \$1.0342) declined steadily in terms of foreign currency in 1929 and 1930, reaching an exchange value of \$0.7499 in December, 1930.

COMMUNICATIONS. Uruguay in 1930 had 1700 miles of railway line, most of it privately owned, and 22,487 miles of highways, of which 709 miles were macadam. A total of 18,225 vessels of 16,678,000 net registered tons entered the ports in 1929. A radiotelephone circuit linking Uruguay with the United States was opened Apr. 3, 1930.

GOVERNMENT. Under the constitution of Jan. 3, 1918, legislative power is vested in the Parliament of two Houses, the Chamber of Representatives, elected by universal suffrage of males over 18 years of age, and the Senate, chosen by an electoral college which is elected by popular vote. Executive power is vested in the President elected by direct popular vote and a national administrative council of nine members. President in 1930, Dr. Juan Campisteguy, elected for the term Mar. 1, 1927-Feb. 28, 1931.

HISTORY. After one of the most bitter and acrimonious campaigns in recent Uruguayan history, Dr. Gabriel Terra, candidate of the Batllista, or radical wing of the Colorado (Liberal) party, was elected to succeed President Juan Campisteguy at the election of Nov. 30, 1930. Events of the campaign served to increase the widespread unrest due to economic depression, the continued decline in the exchange value of the peso, and the growing breach between capital and labor.

The Colorado party, which had controlled the Presidency and the National Administrative Council for over 50 years, split into four factions, each of which entered a candidate for President. Despite these divisions, the party retained its control through the Uruguayan electoral law, which gives the entire party vote to the candidate of the faction polling the largest number of ballots. The Colorados polled 147,073 votes, as against 132,553 by the Blancos (Nationalist Conservatives). A pre-election agreement among the Colorado factions provided that Dr. Pedro Manini Rios, candidate of the Riverista faction, would win the Presidency if he polled 17.5 per cent of the total Colorado vote. He failed by 115 votes to secure the necessary percentage, and Dr. Terra, who received 136,186 votes out of the total Colorado

vote, was declared elected. Dr. Luis Alberto Herrera, the Blanco candidate, received 131,777 votes. Both the Riverista faction of the Colorados and the Blancos subsequently demanded the annulment of the election on the ground of fraud. Since the Blancos retained their control of the Senate, under the Constitution the final judge of elections, they held the power to enforce their demand. A recount previous to submitting the returns to the Senate, was under way at the end of the year, with the country in a state of extreme tension.

An incident of the campaign was the "business strike" of October 6 and 7, during which business concerns and industries closed their establishments and held demonstrations against the proposed extension to private business of minimum-wage and old-age pension legislation in force for government employees. Many commercial and industrial organizations pledged themselves not to obey or pay taxes to support the proposed laws. In his message to Congress of Mar. 15, 1930, the President warned that social legislation was being enacted in advance of the state's capacity to support it. In other fields the Government nevertheless assumed new financial burdens. Laws for the relief of agriculture adopted during the year authorized the National Administrative Council to acquire the exportable surplus of wheat and corn direct from the farmers and resell it. Importations of foreign wheat were prohibited and an unsuccessful effort made to peg domestic prices.

In the field of foreign affairs, Uruguay gained much prestige during 1930 by the successful mediation of Foreign Minister Dominguez in the settlement of the dispute between Bolivia and Paraguay arising from the Fort Vanguardia incident in the Chaco region in 1928 (see BOLIVIA and PARAGUAY under *History*). A section of the press continued its demands for tariff retaliation against the United States. The centenary of Uruguay's first Constitution, proclaimed July 18, 1830, was celebrated with elaborate ceremonies in Montevideo, participated in by representatives of Argentina, Brazil, and Great Britain.

UTAH. POPULATION. According to the Fifteenth Census, the population of the State on April 1, 1930, was 507,847. The population on Jan. 1, 1920, was 449,396. The capital is Salt Lake City.

AGRICULTURE. The following table gives the acreage, production, and value of the principal crops in 1929 and 1930:

| Crop | Year | Acreage | Prod. Bu. | Value |
|---------------|------|---------|------------|--------------|
| Hay | 1930 | 686,000 | 1,580,000* | \$11,770,000 |
| | 1929 | 657,000 | 1,626,000* | 16,734,000 |
| Wheat | 1930 | 268,000 | 8,999,000 | 4,610,000 |
| | 1929 | 268,000 | 6,403,000 | 6,527,000 |
| Sugar beets . | 1930 | 48,000 | 557,000* | 3,986,000 |
| | 1929 | 45,000 | 565,000* | 2,160,000 |
| Potatoes | 1930 | 20,000 | 3,600,000 | 3,330,000 |
| | 1929 | 18,000 | 2,310,000 | 947,000 |
| Oats | 1930 | 55,000 | 2,436,000 | 1,462,000 |
| | 1929 | 58,000 | 1,763,000 | 917,000 |
| Barley | 1930 | 41,000 | 1,560,000 | 1,217,000 |
| | 1929 | 39,000 | | |

* Tons.

Farms in the State numbered 27,048 in 1930, as against 25,992 in 1925 and 25,662 in 1920. The area of lands under irrigation totaled 1,323,703 acres for 1929, as against 1,371,651 in 1919.

MINERAL PRODUCTION. Much the greater part of the total value of the yearly mineral yield was derived in 1928, as normally, from the mining of the five metals gold, silver, copper, lead, and zinc. The total mine production of recover-

able metal of these five sorts rose to the value of \$95,985,201 for 1929, from \$79,258,904 for 1928.

The mines of Utah in 1930 produced gold, silver, copper, lead, and zinc valued at about \$46,777,600, a decrease of more than \$49,000,000 from the record output of 1929, according to estimates of the U. S. Bureau of Mines. Large decreases were recorded in the output of all metals, particularly in copper and lead. Utah remained first in the United States in the production of silver, but it ranked third in copper after Arizona and Montana, and third in lead after Missouri and Idaho. The dividends reported paid by mining companies in Utah in 1930 amounted to about \$18,630,000. The dividend total compares with \$38,167,339 paid in 1929 and \$18,307,894 in 1928.

Gold production decreased considerably from \$4,969,915 in 1929 to about \$4,121,900 in 1930. The silver output decreased from 17,592,396 ounces in 1929 to about 12,940,260 ounces in 1930, and the total value of the silver output decreased from \$9,370,747 to about \$4,892,000, largely as a result of the decline in the average price of silver from 53.3 cents an ounce in 1929 to 38.5 cents an ounce in 1930. Copper decreased from 318,282,523 pounds in 1929 to about 178,278,226 pounds in 1930, the smallest output since 1922. The value decreased from \$56,017,724 to about \$22,106,500 as a result of a decrease in the average price of copper from 17.6 cents a pound in 1929 to 12.4 cents a pound in 1930.

FINANCE. State expenditures in the year ended June 30, 1929, as reported by the United States Department of Commerce, were: for maintenance and operation of governmental departments, \$9,267,378 (of which \$3,761,360 was for local education); for interest on debt, \$445,900; for permanent improvements, \$1,806,832; total, \$11,520,110 (of which \$3,502,630 was for highways, \$1,775,061 being for maintenance and \$1,727,578 for construction). Revenues were \$12,234,686. The State's funded debt outstanding on June 30, 1929, was \$9,696,000. Net of sinking-fund assets, it was \$5,331,899. On property bearing an assessed valuation of \$700,705,295 were levied in the year State taxes of \$5,222,295.

TRANSPORTATION. Mileage of railroad line under operation on Jan. 1, 1930, was 2193.78. There were built, in 1930, 14.28 miles of second track.

EDUCATION. An important influence on public education was exerted at a special session of the Legislature, which passed in January a measure to provide a State equalization fund.

The number of individuals of school age in the State in the year 1929-1930 was stated as 146,526. There were enrolled in the public schools, in the year, 138,046 pupils. Of these, 108,335 were ranked in grades from one to eight, inclusive, and 29,711 in the higher grades. Expenditures for public-school education totaled \$12,359,392. Salaries of teachers, principals, and supervisors averaged \$1330.

LEGISLATION. The Legislature, summoned in special session by Governor Dern, convened on January 20 and adjourned on February 26. It passed 20 measures, of which six proposed amendments to the State constitution. The chief were those having to do with taxation. It was proposed to classify tangible and intangible property separately for taxation, to create an income tax and to allow exemptions and limitations in the taxation both of incomes and of intangibles. Provision was made for a State Tax Commission of four members, and for a revision of the system

of taxation of metal mines according to net proceeds. It was provided that the State Prison might be removed from Salt Lake County.

POLITICAL AND OTHER EVENTS. Although Utah had been one of the six States to sign the Colorado River compact that formed the necessary preliminary to the Federal Government's undertaking the construction of the Hoover Dam, Governor Dern in a statement on March 27 asserted that Utah had not been fairly treated in the development of the project. He declared that the State had been neglected in the intended allocation of power from the dam, and that it would be necessary for the Government to develop the Flaming Gorge and Dewey projects on the upper Colorado River in order to give equal treatment to the States of the upper basin.

ELECTIONS. No elections for Governor or United States Senator were held on November 4. Two Republican Representatives and a prevailing Republican Legislature were elected. Several proposed amendments to the State constitution were adopted by popular vote. The four chief ones provided that intangible property might be classified for taxation at differing rates on the several classes; that the authority of the State Tax Commission be extended in certain respects; that the system for the taxation of metal mining might be altered; and that the State provide greater aid to local public schools by the creation of an equalization fund of \$750,000. Other amendments, also adopted, dealt with the method for filling vacancies in the Legislature and permitted the removal of the State prison from Salt Lake County.

OFFICERS. Governor, George H. Dern; Secretary of State, Milton H. Welling; State Auditor, Ivor Ajax; State Treasurer, A. E. Christensen; Attorney-General, George P. Parker; Superintendent of Public Instruction, C. N. Jensen.

JUDICIARY. Supreme Court: Chief Justice, James W. Cherry; Associate Justices, Daniel N. Straup, Elias Hansen, William H. Folland, Ephraim Hansen.

UTAH, UNIVERSITY OF. A State institution of higher education in Salt Lake City; founded in 1850. The total enrollment for the autumn of 1930 was 3216 and for the summer session of the same year, 731. The faculty numbered 179. The endowment of the university amounted to \$802,000, and the income for 1929-30 was \$888,000. The library contained 102,821 volumes and 29,326 pamphlets. President, George Thomas, Ph.D.

UZBEKISTAN, or **UZBEK SOVIET SOCIALIST REPUBLIC.** See **SOVIET CENTRAL ASIA.**

VACCINES. See **VETERINARY MEDICINE.**

VALENTINE, EDWARD VIRGINIUS. An American sculptor, died Oct. 19, 1930, in Richmond, Va., where he was born Nov. 12, 1838. He studied under Couture and Jouffroy in Paris, Bonaiuti in Florence, and Kiss in Berlin. His most prominent work is the recumbent figure of Gen. Robert E. Lee in the memorial chapel of Washington and Lee University, Lexington, Va. There also were cast from his models the bronze statues of Gen. Thomas J. (Stonewall) Jackson in Lexington, Va., and of Jefferson Davis, with allegorical females symbolical of the South, in Richmond, Va. The most beautiful example of his work in marble is the classic group, "Andromache and Astyanax," in the Valentine Museum, Richmond.

VANCOUVER. See **EXPOSITIONS.**

VANDERBILT UNIVERSITY. A non-sectarian institution of higher learning for men and women in Nashville, Tennessee; founded in

1873. The enrollment for the autumn term of 1930 was 1527 students. The faculty numbered 206. Productive funds of the university amounted to \$19,574,277; the annual income was approximately \$1,300,000; and the value of the property was estimated at \$6,434,645. The library contained 145,000 volumes. Chancellor, James H. Kirkland, Ph.D., LL.D., D.C.L.

VANNUTELLI, VINCENZ, CARDINAL. A prelate of the Roman Catholic Church and Dean of the Sacred College, died in Vatican City, July 9, 1930. He was born in Genazzano, Italy, Dec. 5, 1836, and attended the Gregorian and Apollinare Universities in Rome. Following his ordination in 1860, he was appointed professor of theology in the Vatican Seminary. After serving as Papal Nuncio in Brussels, he was appointed in 1875 by Pope Pius IX Under-Secretary of State, and three years later became Auditor of the Rota. In 1880 he was consecrated Archbishop of Sardes and was appointed Apostolic Delegate in Constantinople. In 1883, he was appointed Papal Nuncio to Lisbon, where he remained nearly a decade. In 1889 Pope Leo XIII created him a Cardinal Priest. Later, in 1900, he became Cardinal Bishop of Palestrina and Ostia, and on the death of his brother, Serafino Vannutelli, in 1915 was appointed Dean of the Sacred College.

VAN TYNE, CLAUDE HALSTEAD. An American historian, died in Ann Arbor, Mich., Mar. 21, 1930. He was born in Tecumseh, Mich., Oct. 16, 1869. After his graduation from the University of Michigan in 1896 he studied for two years at the universities of Heidelberg, Leipzig, and Paris. He received the Ph.D. degree from the University of Pennsylvania in 1900, and during the next three years was senior fellow in history at that institution. In 1903 he was appointed assistant professor of American history at the University of Michigan; in 1906, professor; and in 1911, head of the department of history. During 1913-14 he was lecturer in the French provincial universities on the *Fondation Harvard pour les relations avec les Universités Françaises*, and in 1927 held the Sir George Watson chair of American history, literature, and institutions in British universities. He was an authority on American Revolutionary history and was the author of *The Loyalists in the American Revolution* (1902); *The American Revolution* (1905); *School History of the United States* (with A. C. McLaughlin, 1911); *Causes of the War of Independence* (vol. i of a projected tetralogy, History of the Founding of the American Republic, 1921); *India in Ferment* (1923); *England and America, Rivals in the American Revolution* (1927); and *The War of Independence: American Phase* (vol. ii, History of the Founding of the American Republic, 1929). The 1930 Pulitzer prize "for the best book of the year upon the history of the United States" was awarded posthumously for the latter volume.

VARDAMAN, JAMES KIMBLE. An American lawyer, journalist, and former United States Senator, died in Birmingham, Ala., June 25, 1930. Born in Jackson Co., Texas, July 26, 1861, he read law in an office in Carrollton, Miss., and was admitted to the bar in 1882, beginning his practice in Winona. He also became editor of the *Winona Advance* in 1883, of the *Greenwood Enterprise* in 1890, of the *Greenwood Commonwealth* in 1896, and of the *Jackson Issue* in 1908. During the Spanish-American War he saw service in Cuba and rose to be major in the 5th Volunteer Infantry. He began his political career in 1890 as a member

of the Mississippi House of Representatives, and serving as speaker in 1894. Defeated for Governor on the Democratic ticket in 1895 and 1899, he was elected to that office in 1903 for the term ending Jan. 1, 1908. He was twice, in 1907 and in 1910, an unsuccessful candidate for the United States Senate, but in 1911 was selected in a primary election by an overwhelming majority. He served in the Senate from 1913 to 1919.

VARGAS, GETULIO. Provisional President of Brazil. See **BRAZIL** under *History*.

VASS, MGR. JOSEPH. A Hungarian statesman, died in Budapest, Sept. 8, 1930. He was born in Sárvár, Apr. 26, 1877, and studied theology at the University of Budapest and at the Collegium Germanicum in Rome. His first charge, after taking orders in the Roman Catholic Church, was in Stuhlweissenburg. He later became rector of St. Emmerich's Student Hostel at the University of Budapest, and in 1919 was appointed professor of theology at that institution. He was one of the leaders of the Christian National party and organized the Catholic People's Association in Hungary. After the collapse of the Bolshevik régime under Bela Kun he took an active part in political reconstruction and was elected to the first National Assembly. In 1920 he became Minister for Food and later for Education and Public Worship. From 1922 until his death he was Minister for Social Welfare and Labor.

VASSAR COLLEGE. A nonsectarian institution for the higher education of women in Poughkeepsie, N. Y.; founded in 1861. The enrollment for the autumn of 1930 was 1157. The faculty in 1929-30 had 166 members, including 12 on leave of absence. The endowment, including fellowships and scholarships, amounted to \$7,300,000; the income from funds was approximately \$400,000. Gifts received during 1929-30 were in excess of \$800,000. There were 168,000 volumes in the library. President, Henry Noble MacCracken, Ph.D., LL.D., LL.D.

VATICAN. See **ROMAN CATHOLIC CHURCH**.

VATICAN CITY. A sovereign state, officially known as the State of Vatican City, established June 10, 1929, within the city of Rome as the seat of the Papacy under the terms of the political treaty signed between the Italian Government and the Vatican on Feb. 11, 1929. Ruler in 1930, Pope Pius XI (Achilles Ratti).

Vatican City has an area of 108.7 acres. It embraces St. Peter's Church and Piazza, the Vatican, with its administrative buildings, gardens, and observatory, and adjoining territory. A census taken Dec. 17, 1929, showed 528 inhabitants, including 389 Italians and 113 Swiss. Citizens include those having permanent residence there and the cardinals residing in Rome.

Duties are imposed on goods imported and exported. With the exception of St. Peter's Piazza, the territory is policed by the Pontifical Gendarmerie Corps of 120 members. In 1928 the Vatican received an income reported at \$13,500,000 from "Peter's pence," fiscal dues, private offerings, and other sources. In the settlement of its financial claims against Italy, the Holy See received 750,000,000 lire cash and 1,000,000,000 lire in Italian Government 5 per cent bonds. The average annual expenditures of the Vatican from 1917 to 1929 amounted to about 7,000,000 lire (\$1,400,000). There is no public debt. Direct telegraphic, telephonic, and wireless communication with the outside world and a railway station

linking with the Italian State Railways were placed in operation in 1930. Separate coinage and postal systems were to be maintained.

GOVERNMENT. The Pope exercises supreme legal, executive, and judicial powers, aided by a Governor and by a judicial tribunal, from which cases may be appealed to the sacred tribunal of the Rota and to the supreme tribunal of the Segnatura. The chief officials in 1930 were Commandatore Serafini, Governor, and Cardinal Eugenio Pacelli, Cardinal Secretary of State.

HISTORY. The quarrel between the Vatican and the Government of Malta, involving the relations of Church and State in Great Britain's Mediterranean naval base, assumed greater importance in 1930, resulting in strained relations between the Vatican and the British Government. (See **MALTA** under *History*.) In connection with this dispute, the Vatican on June 21, 1930, issued its first White Paper since the establishment of Vatican City as an independent state in the previous year.

It was officially announced Feb. 10, 1930, that the Pope had accepted the resignation of Cardinal Gasparri as Secretary of State and appointed Cardinal Eugenio Pacelli as his successor. As Papal Nuncio to Bavaria and later to Prussia, Cardinal Pacelli negotiated the concordats between those states and the Vatican.

The first case of a conflict of jurisdiction between the Vatican and the Italian Government arising out of the Lateran Treaties was tried by an Italian court in July. The heirs of Cardinal Vannutelli, who died earlier in the year, had received permission from the Vatican to remove a trunk containing his personal papers before his apartment was sealed. They entrusted the trunk to a Vatican employee, who lived outside of Vatican City. Later the judge of the Vatican tribunal called at the employee's home, sealed the trunk, and ordered that it be held for disposition by the Vatican. The heirs sued in the Italian courts for possession of the trunk.

A monopoly on the purchase and sale of tobacco and salt was established by the Vatican authorities in June, primarily to prevent smuggling into Italy, which had assumed considerable proportions. See **ITALY** under *History* and **ROMAN CATHOLIC CHURCH**.

VAULX, COUNT HENRI DE LA. A French aviator, was burned to death when his airship struck a high-tension electric wire in Jersey City, N. J., Apr. 18, 1930. Born in France in 1870, he first came into public notice by explorations in South America. At the Paris Exhibition of 1900, he won the grand prize in aeronautics for his flight in a balloon from Vincennes, a suburb of Paris, to Korostichef, Russia—at that time the world's record for distance traveled by a balloon. He was one of the founders of the Aero Club of France in 1896, one of the earliest pilots of dirigible airships in France, and a pioneer in flying in heavier-than-air machines. As president of the Fédération Aéronautique Internationale, Count de la Vaulx made a definite contribution to the work of that organization in promoting aviation and in controlling and preserving flight records of the world.

VEGETABLES. See **HORTICULTURE**.

VEHICLES, MOTOR. See **AUTOMOBILES**.

VENEZUELA, vén'è-zwē'là, *Sp. pron.* vā'nā-thwā'là, or *Amer. Sp. pron.* vā'nā-swā'là. A republic on the north coast of South America, bordering the Caribbean Sea and lying between Colombia

on the west, Brazil on the South, and British Guiana on the east. The capital city is Carácas.

AREA AND POPULATION. Venezuela has an area of about 352,143 square miles and a population estimated in 1928 at 3,116,000. From 1925 to 1929, births averaged 92,643 annually, deaths, 57,429; immigrants, 20,207; emigrants, 17,766. The chief cities, with their populations in 1926, were: Carácas, 135,253; Maracaibo, 74,767; Valencia, 36,804; and Barquisimeto, 23,109.

EDUCATION. Primary education is free and compulsory. In 1928, there were 111,420 primary pupils in Government, private, State, and municipal schools, 419 in secondary schools, 1415 in special schools, and 837 in institutions of higher education, the chief of which is the Central University at Carácas.

PRODUCTION. Despite its rise to second rank in petroleum production, Venezuela is primarily an agricultural and pastoral country. Coffee and cacao are the principal crops, production in 1929 totaling about 101,000,000 pounds of coffee and about 27,500,000 pounds of cacao. Sugar, tobacco, and rice are other farm products. Livestock in 1930 was estimated at 2,689,000 cattle, 512,000 swine, 113,000 sheep, 2,155,000 goats, and 168,000 horses. Forests cover approximately one-half of the total area, yielding balatá, tonka beans, divi-divi, and hardwoods. Petroleum production in 1930 totaled 136,890,784 barrels, as against 137,472,100 barrels in 1929; the amount exported in 1930 was 134,166,263 barrels. Production of gold in 1929 was 45,937 troy ounces; soft coal, 16,859 metric tons; asphalt (1928), 48,749 metric tons.

COMMERCE. Foreign trade in 1929, totaling \$237,662,531, was 20 per cent above the 1928 figure. Exports were valued at \$150,262,097, as compared with \$117,644,000 in 1928, and imports at \$87,400,434, as compared with \$80,406,000 in 1928. Exports increased 27.7 per cent and imports 8.7 per cent. The leading exports in 1929 were: Petroleum, \$111,498,000 (\$86,733,000 in 1928); coffee, \$25,822,000 (\$16,167,000); cacao, \$4,666,000; gasoline, \$1,765,000. The United States supplied 55.1 per cent of all imports and purchased directly 28.2 per cent of the exports in 1929. In the year ended June 30, 1930, imports from the United States declined 19.3 per cent from the previous year to \$38,528,698 and exports to the United States declined 13.2 per cent to \$42,038,886.

FINANCE. The budget for the fiscal year ending June 30, 1931, anticipated revenues of 202,598,500 bolívares (par value of the bolívar is \$0.193) and expenditures of 201,800,000 bolívares, as compared with revenues of 193,190,000 bolívares and expenditures of 192,450,000 bolívares budgeted for 1929-30. During the calendar year 1929 actual receipts totaled 256,440,000 bolívares and actual expenditures 209,155,000, leaving a surplus of 47,285,000 bolívares. Funds in the national treasury at the end of 1929 totaled 118,249,000 bolívares, as compared with 70,964,000 at the end of 1928. The public debt at the end of 1929 stood at 52,791,000 bolívares (about \$10,189,000), a reduction of 14,774,000 bolívares during the year. The budget for 1930-31 contained an appropriation of 19,159,687 bolívares to pay off Venezuela's remaining foreign debt.

COMMUNICATIONS. Venezuela in 1929 had 587 miles of railways, which carried 2,077,000 passengers and 457,000 tons of freight during the year. The highway system extended 2211 miles in 1930. The La Ceiba-Betijoque highway, connecting

Maracaibo with Betijoque, Trujillo, Merida, and with the Transandine Highway, was opened Dec. 19, 1929. Contracts for the establishment of air-mail lines connecting Venezuelan cities with Curaçao, Panama, and cities of Central, North, and South America were signed by the President on June 6 and 9, 1930. Two new cables connecting Maracaibo with Curaçao and with Barranquilla, Colombia, and through both these points with New York City, were laid by the International Telephone and Telegraph Corporation in 1930. Venezuela had 11,160 miles of navigable rivers and waterways. In 1928, 2003 vessels of 3,275,000 net registered tons entered and 7541 vessels of 9,718,000 tons cleared the ports, shipments of oil accounting for the preponderance of outgoing tonnage.

GOVERNMENT. Under Constitutional amendments passed by Congress in 1929, the executive power is vested in the President, elected by Congress for seven years, in conjunction with the Commander-in-Chief of the Army and the Cabinet Ministers. The actual ruler in 1930 was Gen. Juan Vicente Gómez, who established himself as dictator in 1908. General Gómez became Commander-in-Chief in 1929, following his resignation of the Presidency. There is a Congress of two Chambers. President in 1930, Dr. Juan Bautista Pérez, elected May 31, 1929.

HISTORY. A strict censorship veiled political developments in Venezuela during 1930 from the outside world. Dispatches from the nearby island of Curaçao and from Colombia indicated a continuance of the chronic state of unrest under the iron dictatorship of Gen. Juan Vicente Gómez. The 70-year-old dictator retained his firm grip on the reins of power, however, and there was an apparent subsidence of the numerous insurgent movements reported in 1929. A revolutionary outbreak, forecast for the centenary of the death of Simon Bolívar (December 17) failed to eventuate. Two days later a band of 300 revolutionaries was reported to have attacked and looted the town of Lobatera near the Colombian border. A month earlier, Gen. Vincenzo Perez Soto, President of the State of Zulia, narrowly escaped assassination. The Government displayed extreme vigilance, patrolling the Colombian border with airplanes, and reinforcing San Carlos fort, which controls the entrance to the rich Lake Maracaibo district from the sea. That the revolutionary wave which overturned five Latin-American governments during the year did not spread to Venezuela was attributed in part to that country's relatively fortunate economic condition. The activity in the petroleum industry and the government's extensive construction of public works lessened the suffering caused by the decline in the price of coffee and other agricultural products. Gen. José Vicente Gómez, eldest son of the dictator, died in March. He had lived in Switzerland since his father forced his resignation as Second Vice-President in 1928.

Dictator Gómez matched his political censorship with an equal reticence concerning the far-reaching programme of internal development through which he planned to make Venezuela the leading tourist and trade centre of the Caribbean. It was reported that \$40,000,000 had been spent during 1928-30 in the construction of a modern port at La Guaira, excellent paved highways, a large hotel at Maracay, and other improvements.

A United States commission, headed by James R. Sheffield, unveiled in Carácas on Dec. 9, 1930,

a statue of Henry Clay, the leading North American advocate of the recognition of the Latin American countries during their wars of independence against Spain. In 1921 Venezuela presented to the City of New York an equestrian statue of Bolívar. The centenary of the death of Bolívar was celebrated on a nation wide scale in Venezuela December 17. See BOLÍVAR CENTENARY and SPANISH-AMERICAN LITERATURE under *Venezuela*.

VENIZELOS, ELEUTHERIOS. See GREECE under *History*.

VERGIL BIMILLENNIUM. One of the outstanding events in the intellectual world in 1930 was the celebration of the Bimillennium Vergilianum. The Roman poet Vergil, author of the *Georgics*, the *Elogues*, and the *Aeneid*, was born on Oct. 15, 70 B.C. The Italians, who were naturally most interested in perpetuating the fame of Vergil, announced tentative plans several years in advance for the celebration in 1930 of the two thousandth anniversary of the birth of the poet. As a matter of fact the two thousandth anniversary of the birth of Vergil would not come until Oct. 15, 1931 (there was no year known as 0 B.C.). In ways too numerous to mention honor was done everywhere in 1930 to Vergil. In the United States the celebration passed largely into the hands of the American Classical League. An elaborate programme was worked out by the authorities of the League and every effort was made to call the fact of the coming celebration to the attention of the authorities of schools and colleges, and universities. In many of the high schools of the country the celebration took the form of a pageant which aimed to represent by pictures with or without accompanying words, various scenes from the poet's works, particularly from the *Aeneid*. Plays purporting to portray the life and the thoughts of the poet were written and produced. Almost without exception these plays were in English; often the writers, because they were not really scholars, or because there was really no information to be had about details of the poet's life, drew heavily on their imaginations. Now and again honor was done in a better way to the poet through the preparation and the acting of a play written in Latin. Special lectures and addresses on Vergil were delivered. Some of these, subsequently printed, constitute lasting additions to Vergilian literature. In classical periodicals in many countries solid articles dealing with various aspects of the poet's writings were produced. Some books also that dealt with Vergil were published. See PHILOLOGY, CLASSICAL, where the name Vergil occurs with pronounced frequency; also CELEBRATIONS.

VERMONT. POPULATION. According to the Fifteenth Census, the population of the State on Apr. 1, 1930, was 359,611. The population on Jan. 1, 1920, was 352,428. The capital is Montpelier.

AGRICULTURE. The following table gives the acreage, production, and value of the principal crops in 1929 and 1930:

| Crop | Year | Acreage | Prod. Bu. | Value |
|--------------|------|---------|------------|--------------|
| Hay | 1930 | 919,000 | 1,477,000* | \$16,204,000 |
| | 1929 | 927,000 | 1,542,000* | 16,919,000 |
| Potatoes ... | 1930 | 17,000 | 3,400,000 | 3,060,000 |
| | 1929 | 17,000 | 2,550,000 | 3,825,000 |
| Corn | 1930 | 64,000 | 2,752,000 | 2,752,000 |
| | 1929 | 67,000 | 2,747,000 | 2,884,000 |
| Oats | 1930 | 68,000 | 2,652,000 | 1,406,000 |
| | 1929 | 67,000 | 2,479,000 | 1,611,000 |

* Tons.

Farms in the State numbered 24,991 in 1930, as against 27,786 in 1925 and 29,075 in 1920.

MINERAL PRODUCTION. The stone quarries of the State, including both marble and granite of high grades, were normally active in 1928, producing 448,060 short tons, as against 321,970 in 1927. The value of stone produced, a truer index because less affected by the variations in the quantities produced of the lower grades of stone, was \$9,438,796 for 1928, as against \$9,216,116 for 1927. The production of slate continued large. The producers within the State sold slate to the value of \$3,704,894 in 1929 and of \$3,981,928 in 1928. The entire mineral product of the State had for 1928 the value of \$14,648,737; for 1927, of \$14,702,891.

FINANCE. State expenditures in the year ended June 30, 1929, as reported by U. S. Department of Commerce, were: for maintaining and operating governmental departments, \$9,525,611 (of which \$517,940 was for local education); for interest on debt, \$289,092; for improvements, \$6,475,294; total, \$16,289,997 (of which \$11,907,915 was for highways, \$5,550,262 being for maintenance and \$6,357,653 for construction). Revenues were \$10,506,028. Of these, property and special taxes furnished 29.9 per cent; departmental earnings and compensation to the State for officials' services, 4.7; sales of licenses, 38.4 (in which was included State revenue from the gasoline sales tax, totaling \$1,157,155). The outstanding funded debt of the State on June 30, 1929, totaled \$9,168,532; it had been sharply augmented during the year by an issue of \$2,559,000 of flood bonds. There were no sinking-fund assets as offsets to the gross debt. On taxable property assessed at \$326,437,560 were levied in the fiscal year State taxes of \$1,191,030.

TRANSPORTATION. The total number of miles of railroad line under operation on Jan. 1, 1930, was 1056.88.

EDUCATION. Standardization of public schools made marked progress; an increase of 50 per cent in two years in the number of standard or superior rural and town schools was reported at the end of 1930 in the *Journal* of the National Education Association. After July 31, 1931, the minimum requirement for the certification of new teachers was to be graduation from an accredited four-year secondary school and an accredited two-year normal school, or an equivalent acceptable to the State Board of Education.

Pupils attending the public schools in the year 1929-1930 numbered 65,727. Of these, 11,600 were in high schools. Expenditures of the year for public-school education totaled \$5,620,736. The U. S. Census of 1930 reported that the number of persons 10 years of age and over returned as unable to read and write was 6299, as compared with 8488 in 1920. The percentage of illiteracy was 2.2, compared with 3.0 10 years earlier.

POLITICAL AND OTHER EVENTS. In the Republican primary election, held on September 9, the voters chose as candidate for Governor Stanley C. Wilson, then Lieutenant Governor. Wilson had opposed the proposal to meet the cost of the projected four-year programme of highway construction by bond issue. His chief opponent, W. Arthur Simpson of Lindonville, had advocated issues of bonds at the rate of \$2,500,000 a year for the four years. At the State's eastern border, in the Connecticut River between St. Johnsbury, Vt., and Littleton, N. H., a large dam

of the New England Power Association harnessing Fifteen Mile Falls for the generation of electricity was completed with its power plant and was put in operation on September 30 by President Hoover, from the White House. The plant was designed to furnish 54,000 horse power.

The State Supreme Court held in a decision of January 7 that the State's "Disclosure Law," under which many persons had been condemned to prison for failing to tell where they had bought liquor, was unconstitutional.

United States Senator Frank L. Green died on December 17. The vacancy thus caused in the State's delegation in the Senate was filled by Frank C. Partridge, Republican, whom Governor Weeks appointed on December 23.

ELECTIONS. Lieutenant Governor Stanley C. Wilson, Republican candidate for Governor, was elected on November 4, obtaining according to unofficial report 52,647 votes to 23,360 for Park H. Pollard, Democrat. A delegation of two Republicans was elected to the Federal House of Representatives. One of these was Governor John E. Weeks. The Legislature remained under Republican control.

OFFICERS. Governor, John E. Weeks; Lieutenant Governor, Stanley C. Wilson; Secretary of State, Rawson C. Myrick; Treasurer, Thomas H. Cave; Auditor, Benjamin Gates; Attorney-General, J. Ward Carver; Commissioner of Education, C. H. Dempsey.

JUDICIARY. Supreme Court: Chief Justice, George M. Powers; Associate Justices, Leighton P. Slack, Sherman R. Moulton, Julius A. Willcox, Frank D. Thompson.

VERMONT, UNIVERSITY OF. An endowed institution of higher education in Burlington, Vt., receiving some State aid; founded by Ira Allen in 1791. The 1930 autumn enrollment was 1240. The registration for the 1930 summer session was 965. The faculty numbered 200. The endowment amounted to \$2,000,000, and the income for the year was \$650,000. The library contained over 135,000 volumes. President, Guy W. Bailey, LL.D.

VESSEL, NAVAL. See NAVAL PROGRESS.

VETERANS' BUREAU. See UNITED STATES.

VETERINARY MEDICINE. The year 1930 witnessed a notable advance in the suppression of animal diseases and parasites as a result of the application of control methods and the administration of livestock laws and regulations. There was no recurrence of the dreaded foot and mouth disease which appeared in California the previous year and the country continued to be kept free from other equally dreaded diseases of livestock against which the animal quarantine is maintained. There was a continued progress in the field of education with an increased enrollment of 13 per cent in the entering classes at the 12 accredited colleges of veterinary medicine in the United States and Canada. The eleventh International Veterinary Congress held at London in August accepted the invitation to hold its next gathering in 1934 in the United States. At the annual meeting of the American Veterinary Medical Association held at Los Angeles in August Dr. Maurice C. Hall of the District of Columbia was elected president. The United States Livestock Sanitary Association at its annual meeting held in Chicago in December elected Dr. J. W. Connaway of Missouri as its president.

LIVESTOCK TUBERCULOSIS ERADICATION. The marked progress that had been made in eradicating tuberculosis from livestock was evidenced

by the decline of the disease among cattle and swine as found in the records kept by Federal meat inspection. During the fiscal year ended June 30 there were 10,000 fewer tuberculous carcasses and 40,000 fewer parts of carcasses of cattle, sheep, and swine condemned than in the preceding year although there were a million more head inspected. At the close of the fiscal year 976 counties were recognized as modified accredited areas, signifying their practical freedom from bovine tuberculosis, representing an increase of 236 counties during the year over the preceding fiscal year. Altogether 12,845,871 cattle were tested during the fiscal year or about 1,160,000 more than in any previous year. The Federal appropriation for the work was \$6,361,000 of which \$1,190,000 was allotted for operating expenses and \$5,171,000 for paying indemnity to owners for cattle condemned as a result of the test while the combined State and county appropriations amounted to more than \$13,500,000. Up to the close of the fiscal year 1929-30, 1413 counties and the District of Columbia had engaged in the area work, an increase of 18 per cent over the number of the preceding year and there were 2,919,503 herds and 27,692,306 head of cattle under supervision. On August 1 Michigan, the first of the great dairy States, was officially designated as a modified accredited area with all its cattle practically free from the disease.

INFECTIOUS ABORTION AND UNDULANT FEVER. The first place in importance among the diseases of animals continued to be held by infectious abortion which took a heavy toll both from the cattle and the swine industry. The advance in knowledge of the direct importance of the disease to man from the sanitary health standpoint, aside from its economic importance, continued to stimulate the investigational activity. No less than 23 of the State agricultural experimental stations had some phase of the problem under investigation. In research work it was demonstrated that the eye may be a frequent channel of infection with indications that the infection may gain entry to the animal through the skin even though there be no visible abrasion. The immunizing effect of different strains of the organism received particular attention. Work in Minnesota indicated that the causative organism is associated rather closely with poll-evil and fistulous withers of the horse. It was demonstrated in Wisconsin that the udder may become infected before abortion occurs, showing that milk may be a carrier of infection even though the cow producing it has not aborted. Such cows, however, usually react to the blood test and can be removed from the herd. An outbreak of disease in a flock of hens due to this organism was reported from Michigan where it was found that though the disease is not necessarily fatal it may be of considerable importance owing to the decreased egg yield of infected birds.

In an economic study made since March, 1926, of a pure-bred dairy herd of 60 to 100 animals of breeding age it was found that positive reacting animals had $2\frac{1}{2}$ times as many abortions as negative reactors and that the sterility was four times as frequent in suspicious animals and eight times as frequent in positive reacting animals. The work of eradicating abortion from herds, which was started in an experimental way in Illinois in 1922, resulted in the presentation of the first accredited abortion-free certificate in that State

on Jan. 12, 1929, for one of the largest Holstein herds in Illinois. By 1930 there were 420 herds enrolled in the eradication project in the State in 27 counties with 27 accredited abortion free herds. For accreditation the State Department of Agriculture requires two annual negative tests on all animals over six months of age or three negative tests at intervals of six months.

TEXAS FEVER AND CATTLE TICK ERADICATION. Continued progress was made in the eradication of the cattle tick, the transmitter of Texas fever of cattle. Fifteen counties in five States, namely, one in Alabama, 4 in Florida, 6 in Mississippi, and 4 in Texas, were released during the fiscal year from the Federal quarantine. The last remaining counties in Alabama were freed of the tick and that State became the tenth of the 15 originally infested States to emerge from the quarantine. On July 1 all the territory remaining under quarantine in Mississippi was released. Owing to the failure to protect a parish in Louisiana that was released in 1917 it was re-quarantined. With these releases the year saw the area quarantined on account of Texas fever reduced to less than 20 per cent of its original size and confined to parts of four States—Texas, Louisiana, Arkansas, and Florida. On December 1, 15,210 square miles of additional territory in Arkansas, Florida, and Texas were released from the quarantine. In many localities where the tick quarantine has been lifted pure-bred animals have been rapidly introduced.

DOURINE ERADICATION. The inspection and tests made of horses in the previously infected area of Montana and on the Navajo Indian Reservation in Arizona indicated that dourine had been eradicated from those areas. During the year, however, the disease was found to exist in horses in northern Nevada, in small areas in Idaho and Oregon contiguous thereto and on the San Carlos Indian Reservation in Arizona. Eradication work was commenced in Nevada in cooperation with the livestock sanitary authorities of that State.

SCABIES ERADICATION. In the control and eradication work with scabies of sheep 22,886,382 field inspections were made and 4,450,111 dippings supervised representing a considerable increase over the preceding year. The reports indicate an increase in the number of infected sheep in Arizona, Nebraska, New Mexico, and Wyoming and a decrease in all other sheep-raising States. In similar work with cattle scabies 3,371,764 inspections were made and 446,086 dippings of cattle supervised. A total of 89,279 cattle were found to be infected or 10 per cent less than in the preceding year.

HOG CHOLERA CONTROL. The year was notable for the small extent of hog cholera in the principal areas of swine production. In all sections of the country the prevalence of the disease was comparatively low. There was a great increase in the production of clear anti-hog-cholera serum, a more refined product than that previously in general use. The principal of pasteurization in the preparation of the serum was introduced into licensed establishments, such serum safeguarding livestock from possible contamination with harmful bacteria.

ANAPLASMOSIS. There was a marked decrease in the number of cases of anaplasmosis in cattle as compared with the preceding year. The sodium-cacodylate treatment was continued, only 6 of 79 cases thus treated having died. It was found that the disease can be transmitted from an infected

to a susceptible animal by pricking the ear of the former and then the ear of the latter with the same lancet. It was shown that the brown dog tick may transmit the infection.

FOWL POX. The activity in control work with fowl pox continued. An outbreak in Michigan was controlled in four to five weeks through vaccinating the flock at the first appearance of the disease. It was shown in Massachusetts to be safe to vaccinate birds cutaneously as they are transferred from the range to laying houses even though they are in early egg production at the time. The immunity in a flock treated with the standard cutaneous vaccine in the early stages of the disease was found to last for at least 371 days. The vaccination of young fowls in Oregon with a nonattenuated virus produced an immunity in four weeks or less which lasted for at least two years in some fowls. Experiments by additional workers confirmed the finding of the preceding year that the common house mosquito may transmit the fowl pox virus and indicated that after becoming infected the mosquito may continue so during the course of its life.

PULLORUM DISEASE OF THE FOWL. It was concluded in investigations conducted in California that the agglutination test repeated at intervals of one to two months offers a reasonably certain means of eradicating pullorum disease from a flock in one season. Work in Minnesota led to the conclusion that the disease is spread, but slowly, among sexually mature fowls. In a study of the effect of pullorum disease on the first year egg production of six breeds the average for 587 reactors was 160 eggs while that for 102 non-reactors was 221 eggs.

INFECTIOUS BRONCHITIS OF THE FOWL. A subacute or chronic form of infectious bronchitis with a low mortality was described as occurring in flocks in Illinois in which other fowls had suffered 3 to 6 months previously from the acute and fatal type of the disease. The ultraviable virus which causes the disease was kept in New Jersey in dried form for 47 days. Recovered birds were found to be immune to subsequent infection.

DEATH OF DUCKS AND SHOREBIRDS. The death of large numbers of wild ducks and shorebirds that had continued to occur each year in the intermountain and northwestern States was discovered during the year to be due at least in part to botulism.

PARASITES AND PARASITICIDES. There was a notable advance made in the knowledge of intermediate hosts of helminths. A sowbug was found to serve for one and a cockroach for another of two roundworm parasites of the glandular stomach of poultry. Intermediate hosts including a dung beetle, pond snail, and grasshopper were discovered for a number of tapeworms that are pathogenic for domestic birds. Earthworms obtained from a pasture from which hogs had been absent for 4 months or longer were still infested with lungworm larvae. In addition to the snail *Galba bulimoides* a second species was found to serve as intermediate host for the common sheep liver fluke in Oregon. A variety of *Galba bulimoides* serves as its intermediate host in the South and Southwestern States, outside of Florida, and of the larger liver fluke of cattle, *Fascioloides magna*. The filarial parasite *Onchocerca cervicalis* was found in Kansas present in 10 to 12 cases of fistulous withers of the horse that were examined. Carbon tetrachloride in 1 c.c. doses was

found in Oregon to destroy mature and nearly mature flukes in the livers of sheep and goats.

LIVESTOCK POISONING. It was demonstrated that the toxic constituent of rayless goldenrod is tremetol, the same substance that causes the toxicity of snakeroot for cattle resulting in the disease known as trembles (milk sickness). It was discovered that rather large doses of sodium chlorate, which is contained in mixtures used as weed killers, are poisonous to livestock. The broad-leaved milkweed was shown in Texas to be poisonous to sheep and goats. The western bleedingheart found growing on the range in Oregon was determined to be a potential danger to livestock. It was shown that thallium sulphate, which had been used since 1920 in commercial rat poisons in the United States, when mixed with oats and used in eradicating prairie dogs caused the death of sheep grazing over the treated area.

VICTORIA. A state of the Australian Commonwealth, occupying the southeastern part of the island continent. Area, 87,884 square miles; estimated population Mar. 31, 1930, 1,783,649, as compared with 1,531,280 at the census of 1921. Melbourne, the capital and chief city, had about 1,018,200 inhabitants on Jan. 1, 1930. The population of other leading towns Jan. 1, 1929, was: Geelong, 43,150; Ballarat, 42,000; Bendigo, 33,870; and Mordialloc, 10,000. The total estimated increase of population in 1929 was 16,101. Births during the year numbered 33,604; deaths, 16,717; marriages, 12,936; and the excess of emigration over immigration was 786, compared with an immigration surplus of 2784 in the previous year.

Primary education is free, secular, and compulsory. State schools in 1927 numbered 2564, with 7166 teachers and 258,205 pupils enrolled. About 98 per cent of the population over 15 years is literate. In 1928, the State university and its branches had 612 students matriculated and 2790 attending lectures. The value of all production in 1927-28 was estimated at £96,001,644, distributed as follows: Manufacturing (value added during process) £53,798,265 (£53,025,379 in 1928-29); pastoral and dairying, £26,424,600; agriculture, £8,570,865; mining, £1,955,278 (£1,116,083, value of principal minerals in 1928-29); forestry, £1,800,400; miscellaneous, £5,685,210. Production of the principal crop, wheat, was estimated at 25,412,587 bushels from 3,566,135 acres in 1929-30, as compared with 46,818,833 bushels from 3,718,904 acres in the previous year.

The estimated value of direct overseas imports in 1929-30 was £42,309,344 and of direct overseas exports, £36,253,290; for 1928-29 comparative figures were: Imports, £46,005,660; exports, £39,437,225. Wool, wheat and flour, skins, fruits, butter, milk and cream, and meats are the leading exports. For the fiscal year 1928-29, State revenues totaled £28,156,034 (£27,357,917 in 1927-28) and expenditures, £28,104,947 (£27,521,270). The gross State debt on June 30, 1930, stood at £155,719,888, as compared with £155,989,652 on the same date in 1929. The net per capita State debt was about \$422.

Executive power is vested in a governor, acting through a responsible ministry, and legislative power in a parliament of two houses—the Legislative Council of 34 members elected for six years and subject to property qualifications, and the Legislative Assembly of 65 members, elected for three years by male and female suffrage.

Governor in 1930, Lieutenant Colonel Lord Arthur H. T. Somers; Premier, E. J. A. Hogan (Labor). A proposal to deprive hotelkeepers and others of their licenses to sell alcoholic liquor between specified hours was defeated 552,286 to 419,005 in a referendum held on Mar. 29, 1930. See AUSTRALIA.

VICTORIA SOPHIA MARIA, PRINCESS OF BADEN AND QUEEN OF SWEDEN. Consort of the Swedish sovereign, died in Rome, Apr. 4, 1930. The only daughter of Grand Duke Frederick of Baden and Princess Louise of Prussia, she was born in Karlsruhe, Germany, Aug. 7, 1862, and was educated at the Princessinschule, a school founded by her mother. In 1881 she was married to the Crown Prince Gustaf of Sweden, who succeeded to the throne in 1907. On April 12, after a funeral procession of great magnificence, she was buried in the Riddarholms Church in Stockholm, the burial place of the royal family since the time of Gustavus Adolphus.

VIEWEG COLLECTION. See ART SALES.

VILNA. See LITHUANIA under *History*.

VIOLINISTS. See MUSIC.

VIRGINIA. POPULATION. According to the Fifteenth Census, the population of the State on Apr. 1, 1930, was 2,421,851. The population on Jan. 1, 1920, was 2,309,187. The capital is Richmond.

AGRICULTURE. The following table gives the acreage, production, and value of the principal crops in 1929 and 1930:

| Crop | Year | Acreage | Prod. Bu. | Value |
|----------------|------|-----------|--------------|--------------|
| Corn | 1930 | 1,568,000 | 18,032,000 | \$18,934,000 |
| | 1929 | 1,522,000 | 44,138,000 | 44,138,000 |
| Hay | 1930 | 978,000 | 607,000* | 13,537,000 |
| | 1929 | 1,058,000 | 1,400,000* | 21,628,000 |
| Tobacco | 1930 | 174,000 | 88,200,000* | 8,996,000 |
| | 1929 | 168,500 | 109,500,000* | 19,162,000 |
| Apples | 1930 | ..... | 7,700,000 | 7,315,000 |
| | 1929 | ..... | 13,000,000 | 14,300,000 |
| Potatoes | 1930 | 143,000 | 14,583,000 | 15,312,000 |
| | 1929 | 128,000 | 17,135,000 | 21,419,000 |
| Wheat | 1930 | 644,000 | 9,982,000 | 9,683,000 |
| | 1929 | 700,000 | 8,960,000 | 11,200,000 |
| Peanuts | 1930 | 148,000 | 98,420,000* | 3,051,000 |
| | 1929 | 164,000 | 149,732,000* | 5,840,000 |
| Cotton | 1930 | 88,000 | 42,000* | ..... |
| | 1929 | 88,000 | 46,000* | 3,910,000 |
| Sweet potatoes | 1930 | 47,000 | 3,760,000 | 3,760,000 |
| | 1929 | 45,000 | 6,705,000 | 6,034,000 |
| Oats | 1930 | 200,000 | 3,800,000 | 2,280,000 |
| | 1929 | 167,000 | 3,841,000 | 2,573,000 |

* Tons. † Pounds. ° Bales.

Farms in the State numbered 171,029 in 1930, as against 193,723 in 1925 and 186,242 in 1920.

MINERAL PRODUCTION. Coal, which yearly supplies the greater part of the State's mineral yield as measured by value, was mined somewhat more actively in 1929, the production rising to 12,748,306 net tons for 1929, from 11,900,933 for 1928; in value it rose to \$20,942,000 for 1929. A considerable list of minor mineral products helped bring the total value of the yearly mineral production of the State to \$38,770,281 for 1928 and \$41,322,998 for 1927.

FINANCE. State expenditures in the year ended June 30, 1929, were: for maintenance and operation of governmental departments, \$25,120,047 (of which \$6,614,295 was for local education); for interest on debt, \$1,050,978; for permanent improvements, \$11,814,744; total, \$37,985,769 (of which \$11,843,668 was for highways, \$3,677,661 being for maintenance and \$8,166,007 for construction). Revenues were \$48,410,022. The

State's funded debt outstanding on June 30, 1929 was \$28,748,857. Net of sinking-fund assets, it was \$26,702,669. On property bearing an assessed valuation of \$761,680,445 were levied in the year State taxes of \$5,424,676.

TRANSPORTATION. The total number of miles of railroad line under operation on Jan. 1, 1930, was 4505.29. There were built, in 1930, 19.94 miles of first and 3.33 of second track.

EDUCATION. The application of the equalization fund in the State was reported to have tended to raise the level of the salaries of public-school teachers. A move to obtain a law providing for the retirement of teachers was in progress in 1930. With the aid of the equalization fund the legal yearly term of school was raised to 160 days, from 140.

There were enrolled in the public schools, in the year 1929-30, 562,956 pupils. The high-school enrollment was 79,081. Expenditures for public-school education for the year totaled \$25,313,507. The year's average of teachers' salaries was \$873.

CHARITIES AND CORRECTIONS. The central administrative powers with regard to institutions and activities for the care or custody of persons rested in 1930 in the State Department of Public Welfare. This department was created by the Reorganization of Government act in 1927. It had as its executive a commissioner (Frank Bane) appointed by the Governor and as its chief authority a Board of Charities and Corrections, whose members also were thus appointed. By the department the State institutions and agencies were coordinated and inspected; child-care activities were licensed and supervised; local welfare units were supervised; social statistics were published; applications for pardon, on submission by the Governor, were investigated; building plans for local institutions were approved. A crippled-children's bureau was established within the department in 1930. The State institutions under the department, with their populations of June 30, 1930, included: Eastern State Hospital, Williamsburg, 879; Western State Hospital, Staunton, 1755; Central State Hospital (colored), Petersburg, 2587; Southwestern State Hospital, Marion, 968; Colony for Epileptic and Feeble-minded, at Colony, Va., 900; Virginia Penitentiary, Richmond, 767; State Farm for Defective Misdemeanants, at State Farm, 205 convicts and 519 misdemeanants; Virginia Industrial School for Boys, Maidens, 253; Virginia Industrial School for Girls, Bon Air, 95; Virginia Manual Labor School for Colored Boys, Hanover, 214; Virginia Industrial School for Colored Girls, Peak's Turnout, 123; Virginia Commission for the Blind, Richmond, 128 pupils under instruction. Acts were passed in 1930 to provide an industrial farm for women prisoners and other farms, eventually for other types of criminals.

LEGISLATION. The Legislature convened in regular biennial session in January and adjourned on March 8. It enacted the chief measures sought by Governor John Garland Pollard, who took office a week after the session had convened. These were laws for the more effectual conservation of creatures furnishing sea food and for ampler schedules of indemnity under the workmen's compensation system. There was also created a commission to study the reform of the election law and report its findings to the session of 1932. The importance of the changes in the law as to sea food lay largely in the provisions made for the protection of the oyster, of which the fish-

eries afforded large aggregate revenue. Negro and Indian were legally defined by enactment. It was rendered punishable as larceny to draw checks against insufficient funds with intent to defraud.

POLITICAL AND OTHER EVENTS. An agreement was effected with Maryland to settle a boundary dispute that had subsisted since about 1661 with regard to the line along the Potomac River. Wilbur A. Nelson, head of the Department of Geology at the University of Virginia, as commissioner for his State, and Edward B. Mathews, State geologist of Maryland, appointed by the Governors of the respective States in 1928, arranged the settlement. It followed an award made in 1877, to the effect that the boundary ran between the low-water marks on certain of the Virginia headlands. Subject to ratification of the settlement by Congress, Virginia gained altogether about 8 acres of under-water area supporting oyster beds.

The Chairman of the State Conservation and Development Commission addressed the Federal Power Commission on May 29 in a complaint that the latter had withheld its approval from a project of the Appalachian Electric Power Company on the New River, thus clashing with the State's own asserted control over its water-power developments. The U. S. Attorney-General, considering this and like representations from Tennessee and West Virginia, issued an opinion to the effect that the Federal Power Commission was not bound by the terms of its creation to take account of non-navigable watercourses, even though developments on these might be asserted to affect the navigations of lower streams.

About 2500 were affected by a strike in the Riverside and Dan River cotton mills at Danville in September and October, over questions of the employers' relations with the textile union and of wages and working conditions.

ELECTIONS. Senator Carter Glass, Democrat, was reelected, only a feeble opposition vote going to J. Cloyd Byars, his Independent Democratic opponent. Byars ran as the champion of the anti-Smith Democratic faction of 1928. Nine Democrats and one Republican were elected to the House of Representatives, the Republicans losing two seats.

OFFICERS. Governor, John Garland Pollard; Lieutenant-Governor, James H. Price; Secretary of the Commonwealth, Peter Saunders; State Treasurer, John M. Purcell; Auditor of Public Accounts, C. Lee Moore; Attorney-General, John R. Saunders; Superintendent of Public Instruction, Harris Hart; Commissioner of Agriculture, George W. Koiner.

JUDICIARY. Supreme Court of Appeals: President, Robert R. Prentiss; Associate Justices, Louis E. Epes, Preston W. Campbell, H. W. Holt, E. W. Hudgins, H. B. Gregory, George W. Browning.

VIRGINIA, UNIVERSITY OF. A non-sectarian institution of higher education in Charlottesville, Va., founded in 1819. The enrollment for the autumn term of 1930 was 2556, distributed as follows: College, 1464; graduate, 269; education, 132; engineering, 169; law, 287; medicine, 235. For the 1930 summer session there was an enrollment of 2446. The faculty numbered 146. The productive endowment of the university amounted to \$10,000,000; the annual State appropriation was \$400,000; and the total annual income was \$1,741,352. There were 171,899 volumes in the library. During 1930 a stadium, with

a seating capacity of 23,000, was under construction, with a gift of \$300,000 from Frederic William Scott of Richmond, Va., rector of the university. William A. Clark, Jr., of Los Angeles, Calif., donated more than \$350,000 for the construction of a new law building. President, Edwin Anderson Alderman, D.C.L., LL.D. See PUBLIC AFFAIRS, INSTITUTE OF.

VIRGIN ISLANDS. A group of islands about 60 miles east of Porto Rico, formerly known as the Danish West Indies and purchased from Denmark by the United States Jan. 25, 1917; also a group of islands attached to the British colony of the Leeward Islands (see LEEWARD ISLANDS). The Virgin Islands of the United States consist mainly of the islands of St. Thomas, St. Croix, and St. John, and have a total area of 132 square miles. Capital, St. Thomas.

The population at the census of 1930 was 22,012, a decline of 4039 since the census of 1917. St. Thomas had 9834 inhabitants, a decrease of 357; St. Croix, 11,413, a decrease of 3488; and St. John, 765, a decrease of 194. About 80 per cent of the total population are Negroes, 13 per cent of mixed race, and 7 per cent whites. The decrease in population is due largely to emigration to the United States. St. Thomas, the chief port (population about 6300), has coaling and oil-fueling stations and is a United States naval base. Other towns are Christiansted (3390) and Frederiksted (2430) on the island of St. Croix. The chief industries are sugar production and cattle raising on the island of St. Croix and the distillation of bay oil on St. Thomas. Due to a severe drought, sugar production in 1930 was only 5750 tons; bay-rum production for the fiscal year 1929-30 was 108,182 gallons (91,116 gallons in 1928-29). The depression in the sugar industry resulted in the closing of the two sugar factories on St. Croix. About 1000 persons, thrown out of work, were fed by the American Red Cross. The economic depression was increased by the falling off in trade and the bunkering business. A total of 595 vessels of 2,403,420 tons entered St. Thomas harbor in 1929-30, or 60 vessels and 247,977 tons less than in 1928-29. Following surveys by representatives of the U. S. Department of Agriculture and Bureau of Efficiency during 1930, plans were outlined for the rehabilitation of agriculture, the improvement of livestock strains, reforestation, diversification of crops, and the improvement of methods of distilling bay oil. For the fiscal year 1930-31, Congress appropriated \$421,000 for governmental expenses in the Virgin Islands, of which \$141,000 were for projects recommended by the Bureau of Efficiency to improve economic conditions.

Imports in 1929-30 totaled \$2,298,678; exports \$794,386. Trade is mostly with the United States. The government in 1930 was administered by the Navy Department in Washington through a governor appointed by the President. For local governmental purposes, the islands are divided into the Municipality of St. Thomas and St. John and the Municipality of St. Croix, each with a Colonial Council composed of a majority of elected and a minority of appointed members. By an act of Congress of Feb. 25, 1927, the natives were granted full American citizenship. At the direction of President Hoover, studies were under way in 1930 with a view to transferring the administration of the islands from the Navy to the Interior Department. The Governor during 1930 was Captain Waldo Evans, U. S. N. (Ret.).

VITAL STATISTICS. The U. S. BUREAU of the Census announced that 1,386,363 deaths occurred in 1929 in the registration area in continental United States, corresponding to a rate of 11.9 per 1000 population as compared with 12.1 in 1928. This area in 1929 comprised 46 States, the District of Columbia, and nine cities in non-registration States, with an estimated population on July 1, 1929, of 116,275,139, or 95.7 per cent of the total population; in 1928 the registration area included 95.3 per cent of the total population. The death rate from all causes per 100,000 population decreased from 1207.1 in 1928 to 1192.3 in 1929. This net decrease was almost entirely balanced by increases in influenza (from 45.3 to 55.5), diseases of the heart (208.3 to 210.9), and meningococcus meningitis (2.6 to 4.5). Deaths from these three diseases alone caused 21.2 per cent of all deaths in 1928 and 22.7 per cent in 1929.

Among the epidemic and endemic diseases listed in this summary, seven showed lower rates in 1929 than in 1928, the outstanding one being for measles (5.4 to 2.5) which caused less than half as many deaths in 1929. Decreases were shown also for typhoid and paratyphoid fever, diphtheria, acute anterior poliomyelitis, dysentery, lethargic encephalitis, and malaria. Other epidemic and endemic diseases showed increased rates, among them whooping cough, scarlet fever, and erysipelas. Decreases among other important causes were for pneumonia, all forms (from 98.2 in 1928 to 91.7 in 1929), nephritis (95.3 to 91.2), congenital malformations and diseases of early infancy (65.8 to 62.4), tuberculosis, all forms (79.4 to 76.0), diarrhea and enteritis, under 2 years (20.7 to 17.9), diabetes mellitus (19.0 to 18.8), cancer (96.1 to 96.0), and pellagra (6.1 to 5.8). Deaths from alcoholism decreased from a rate of 4.1 in 1928 to 3.7 in 1929.

Deaths from accidental and unspecified external causes increased from 79.4 to 80.9. The types of accidents which showed the most noticeable increases were automobile accidents, excluding collisions with railroad trains and street cars (20.8 to 23.3) and accidental falls (14.1 to 14.6). A slight decrease was shown for deaths from drowning (7.1 to 6.2). Statistics of deaths and death rates in the United States in 1928 and 1929 are given in the accompanying table.

That 1930 was the best health year on record was indicated by the statistics for 1930 issued by the Metropolitan Life Insurance Co. for its industrial policy holders in the United States and Canada. The general death rate for the insured, ages 1 year and over, was only 8.3 per 1000; this was 1 per cent lower than in 1927, when the previous minimum rate was established. The outstanding health fact for 1930, the report stated, was the reduction of the tuberculosis death rate to a new minimum, more than 7 per cent lower than the previous minimum rate established in 1929 and 64 per cent lower than the rate for 1911. A new low death rate was established for each of four communicable diseases of children—measles, scarlet fever, whooping cough, and diphtheria, and the combined mortality rate from the four was 26 per cent lower than the rate for 1929. The diphtheria rate was reduced more than one-third as compared with 1929. For the third successive year a new minimum was established among women policy holders of the Metropolitan Life for deaths from puerperal diseases.

DEATHS AND DEATH RATES IN THE UNITED STATES
PRINCIPAL CAUSES OF DEATH IN THE REGISTRATION AREA, 1928 AND 1929
 [From *Provisional Summary, U. S. Bureau of the Census*]

| Cause of death | Deaths in the registration area in continental United States | | Rate per 100,000 estimated population | |
|---|---|-----------|--|---------|
| | Number | | 1929 1928 | |
| | 1929 | 1928 | 1929 | 1928 |
| All causes * | 1,386,863 | 1,378,675 | 1,192.8 | 1,207.1 |
| Typhoid and paratyphoid fever | 4,854 | 5,020 | 4.2 | 4.9 |
| Malaria | 4,084 | 4,167 | 3.5 | 3.6 |
| Smallpox | 151 | 131 | 0.1 | 0.1 |
| Measles | 2,923 | 6,146 | 2.5 | 5.4 |
| Scarlet fever | 2,468 | 2,229 | 2.1 | 2.0 |
| Whooping cough | 7,310 | 6,234 | 6.3 | 5.5 |
| Diphtheria | 7,685 | 8,263 | 6.6 | 7.2 |
| Influenza | 64,588 | 51,741 | 55.5 | 45.3 |
| Dysentery | 2,777 | 3,215 | 2.4 | 2.8 |
| Erysipelas | 2,887 | 2,724 | 2.5 | 2.4 |
| Acute anterior poliomyelitis | 812 | 1,381 | 0.7 | 1.2 |
| Lethargic encephalitis | 1,813 | 1,373 | 1.1 | 1.2 |
| Meningococcus meningitis | 5,208 | 2,923 | 4.5 | 2.6 |
| Tuberculosis (all forms) | 88,352 | 90,659 | 76.0 | 79.4 |
| Of the respiratory system | 78,624 | 80,285 | 67.6 | 70.3 |
| Of the meninges, central nervous system | 3,114 | 3,446 | 2.7 | 3.0 |
| Other forms | 6,614 | 6,928 | 5.7 | 6.1 |
| Syphilis ^b | 16,188 | 16,826 | 13.9 | 14.7 |
| Cancer and other malignant tumors | 111,569 | 109,770 | 96.0 | 96.1 |
| Of the buccal cavity | 3,588 | 3,555 | 3.0 | 3.1 |
| Of the stomach, liver | 37,915 | 38,128 | 32.6 | 33.4 |
| Of the peritoneum, intestines, rectum | 16,961 | 16,130 | 14.6 | 14.1 |
| Of the female genital organs | 15,944 | 15,839 | 13.7 | 13.9 |
| Of the breast | 10,204 | 10,056 | 8.8 | 8.8 |
| Of the skin | 2,934 | 3,020 | 2.5 | 2.6 |
| Of other or unspecified organs | 24,073 | 23,042 | 20.7 | 20.2 |
| Rheumatism | 4,401 | 4,324 | 3.8 | 3.8 |
| Pellagra | 6,793 | 6,969 | 5.8 | 6.1 |
| Diabetes mellitus | 21,829 | 21,747 | 18.8 | 19.0 |
| Pernicious anemia | 3,608 | 3,608 | 3.1 | 3.2 |
| Alcoholism (acute or chronic) | 4,339 | 4,627 | 3.7 | 4.1 |
| Meningitis (nonepidemic) | 3,594 | 3,287 | 3.1 | 2.9 |
| Cerebral hemorrhage and softening | 100,061 | 99,624 | 86.1 | 87.2 |
| Paralysis without specified cause | 5,532 | 5,827 | 4.8 | 5.1 |
| Diseases of the heart | 245,244 | 237,849 | 210.9 | 208.3 |
| Diseases of the arteries, atheroma, aneurysm, etc. | 25,506 | 25,112 | 21.9 | 22.0 |
| Bronchitis | 5,470 | 5,975 | 4.7 | 5.2 |
| Pneumonia (all forms) | 106,597 | 112,195 | 91.7 | 98.2 |
| Respiratory diseases other than bronchitis and pneumonia (all forms) | 9,635 | 9,969 | 8.3 | 8.7 |
| Ulcer of the stomach and duodenum | 7,428 | 7,329 | 6.4 | 6.4 |
| Diarrhea and enteritis | 27,357 | 30,730 | 23.5 | 26.9 |
| Diarrhea and enteritis (under 2 years) | 20,788 | 23,663 | 17.9 | 20.7 |
| Diarrhea and enteritis (2 years and over) | 6,569 | 7,067 | 5.6 | 6.2 |
| Appendicitis and typhlitis | 17,687 | 17,433 | 15.2 | 15.3 |
| Hernia, intestinal obstruction | 12,283 | 11,954 | 10.6 | 10.5 |
| Cirrhosis of the liver | 8,377 | 8,630 | 7.2 | 7.6 |
| Nephritis | 106,056 | 108,813 | 91.2 | 95.3 |
| Puerperal septicemia | 5,822 | 5,692 | 5.0 | 5.0 |
| Puerperal causes other than puerperal septicemia | 9,496 | 9,999 | 8.2 | 8.8 |
| Congenital malformations and diseases of early infancy | 72,559 | 75,159 | 62.4 | 65.8 |
| Suicide | 16,260 | 15,566 | 14.0 | 13.6 |
| Homicide | 9,909 | 10,050 | 8.5 | 8.8 |
| Accidental and unspecified external causes | 94,033 | 90,712 | 80.9 | 79.4 |
| Burns (conflagration excepted) | 6,168 | 6,323 | 5.3 | 5.5 |
| Accidental drowning | 7,252 | 8,084 | 6.2 | 7.1 |
| Accidental shooting | 3,015 | 2,839 | 2.6 | 2.5 |
| Accidental falls | 16,919 | 16,116 | 14.6 | 14.1 |
| Mine accidents | 2,661 | 2,639 | 2.3 | 2.3 |
| Machinery accidents | 2,281 | 2,180 | 2.0 | 1.9 |
| Railroad accidents | 6,769 | 6,796 | 5.8 | 6.0 |
| Collision with automobile | 1,958 | 2,041 | 1.7 | 1.8 |
| Other railroad accidents | 4,811 | 4,755 | 4.1 | 4.2 |
| Street-car accidents | 1,489 | 1,581 | 1.2 | 1.4 |
| Collision with automobile | 507 | 542 | 0.4 | 0.5 |
| Other street-car accidents | 932 | 1,039 | 0.8 | 0.9 |
| Automobile accidents (excluding collision with railroad trains and street cars) | 27,066 | 23,765 | 23.3 | 20.8 |
| Injuries by vehicles other than railroad trains, street cars, and automobiles ^c | 1,910 | 1,819 | 1.6 | 1.6 |
| Excessive heat (burns excepted) | 500 | 654 | 0.4 | 0.6 |
| Other external causes | 18,053 | 17,916 | 15.5 | 15.7 |
| All other defined causes | 109,065 | 108,533 | 93.8 | 95.0 |
| Unknown or ill-defined causes | 24,258 | 23,560 | 20.9 | 20.6 |

* Exclusive of stillbirths.

^b Includes tabes dorsalis (locomotor ataxia) and general paralysis of the insane.

^c Includes airplanes, balloon, and motor-cycle accidents

Note.—Rates in this summary are based upon revised estimates of population, derived from the 1920 and 1930 Censuses, and it will be seen that the rates shown for 1928 vary only slightly from those previously published, which were based on estimates projected from the 1910 and 1920 Censuses.

VITAMINS. How many vitamins are there is a question often asked, but one that cannot be answered definitely as yet. The alphabetical list of accepted vitamins by 1930 included vitamins A, B₁ or B, B₂ or G, C, D, and E, with B₃ suggested but still in dispute. There were few developments during the year in research on vitamins C and E; a considerable amount of research on the various B vitamins, and marked advance in knowledge concerning vitamin A.

VITAMIN A. The most important vitamin discovery of the year was the definite proof advanced by Moore (*Biochem. J.*, vol. 24, p. 692) and confirmed by others that the vitamin A of plant sources is in reality the pigment carotin which is converted *in vivo* into vitamin A. The two substances can be distinguished only by colorimetric and spectrographic tests, since in the customary animal feeding tests the carotin becomes changed into vitamin A. The details of this change and the differences in properties of carotin and vitamin A were summarized by Moore as follows:

| Carotin | Vitamin A |
|---|--|
| Synthesized in plants | Stored in animals |
| Intensely yellow | Almost colorless |
| 328 μ absorption band absent | 328 μ absorption band developed |
| Greenish blue SbCl ₃ reaction at 590 μ | Vivid blue SbCl ₃ reaction at 610-630 μ |

This cleared up satisfactorily the confusion concerning the identity of vitamin A in plant and animal sources and the well-known association of vitamin A with yellow pigmentation in plant but not necessarily in animal materials. The ultimate source of vitamin A is the synthesis of carotin in the growing plant. It is conceivable that the conversion of carotin into vitamin A in the animal body may be more or less complete. Wolff, Overhoff, and van Eckelen (*Deut. Med. Wochschr.*, vol. 56, p. 1428) reported that butter and egg yolk contain both carotin and vitamin A. Morton and Heilbron (*Biochem. J.*, vol. 24, p. 870) likewise found that samples of Danish and New Zealand butter contained both carotin and vitamin A, but that the proportions of the two differed in the two samples. The marine diatom *Nitzschia closterium* grown in pure culture in sterilized media was found by Ahmad (*Biochem. J.*, vol. 24, p. 860) to be rich in carotin. He suggested that such diatoms are the ultimate source of the vitamin A of fish-liver oils, the change from carotin to almost colorless vitamin A taking place in the bodies of the fish.

With the acceptance of carotin as responsible for the entire vitamin A effect of plant materials and in some cases for part of the similar effect of foods of animal origin, it was to be expected that satisfactory chemical tests would be forthcoming for the so-called vitamin A content of such food sources. Until recently the antimony trichloride color reaction for vitamin A had been applied chiefly to colorless liver oils on account of the interference of color pigments in plant materials. A series of papers by Norris and Church (*J. Biol. Chem.*, vol. 85, p. 477; 87, p. 139; 89, pp. 421, 580) pointed out the precautions that must be taken to obtain consistent results in such tests, important among which was the use of the non-saponifiable fraction of the substance being tested. English investigators, in using the antimony trichloride color test, rely upon the principal ab-

sorption bands of the blue solution formed with antimony trichloride which are at about 590 μ for carotin and 624 μ for liver-oil vitamin A.

Just as irradiated ergosterol is used when a concentrated source of vitamin D is desired, it is quite probable that carotin will come into use as a concentrated source of vitamin A. Green and Mellanby (*Brit. J. Expt. Path.*, vol. 11, p. 81), commenting upon the favorable results which they obtained in protecting rats against infection by daily doses of carotin, stated:

If carotin has a similar function in man to that in the rat, as seems probable, it should prove valuable both as a prophylactic and therapeutic agent. As a therapeutic agent it should be of special importance for rapid and effective action, for it can be given without the large amount of lipid material often badly tolerated, which has to be given in the massive vitamin A therapy with liver-fat preparations.

The labeling of vitamin A as the "anti-infective vitamin" received considerable criticism during the year, notably by Burton and Balmain (*Lancet*, 1930, I, p. 1063) and by Cramer (*Lancet*, 1930, II, pp. 774-777), the latter stating emphatically that there was no evidence "that vitamin A can cure infections once the barrier of the mucous membranes has been passed or that it can prevent or cure those infections which enter by the blood stream or by the subcutaneous tissues." Lassen, however (*J. Hyg.*, vol. 30, p. 300) reported that young rats depleted of vitamin A were less resistant than normal rats to paratyphoid bacilli when inoculated subcutaneously as well as when inoculated by mouth. Whether or not vitamin A acts as a general anti-infective agent, there is no doubt that degenerative processes resulting in lowered resistance to infection take place in its absence in the mucous membranes of the body. Seifreid (*J. Expt. Med.*, vol. 52, pp. 519, 533) considers the diseased condition of chickens resulting from lack of vitamin A, probably the most important of the vitamin A nutritional diseases among domestic animals. His studies showed degeneration of the mucous membrane epithelium of the entire respiratory tract with resulting secondary infections. In the upper alimentary tract the lesions were largely confined to the mucous glands and their ducts. According to Tilden and Miller (*J. Nutrition*, vol. 3, p. 121) monkeys deprived of vitamin A died of ulcerative colitis (inflammation of the mucous membranes of the colon).

THE B VITAMINS. The problem of the exact number of water-soluble B vitamins remained unsolved at the close of the year nor was the question of the function of vitamin G (B₃) as an antipellagic vitamin definitely settled. Research on vitamins B₁ and B₂ was particularly active at the Lister Institute of Preventive Medicine, London (*Brit. Med. J.*, No. 3640, p. 609). A quantitative study of the heat stability of vitamin B₂ in yeast and yeast extracts, with both growth and curative tests for experimental pellagra as criteria of activity (*Biochem. J.*, vol. 24, pp. 105, 933), showed that the vitamin is destroyed by heat in the presence of alkali. This conclusion was opposed to that of other investigators, particularly Reader (*Biochem. J.*, vol. 24, pp. 77-80), who claimed that vitamin B₂ is stable in the presence of alkalis at high temperatures, but that yeast contains another factor, B₃, which is thermo- and alkali-labile. The Lister Institute investigators believe that there is an additional factor in yeast, but that it is thermostable,

Cereals as a class are deficient in vitamin B₃ and one of the puzzling contradictions in attempts to associate human pellagra with lack of vitamin B₃ in the corn meal, which forms so large a part of the diet in sections of the country where pellagra is epidemic, is that pellagra is almost unknown among populations whose staple food is wheat, rice, or millet—presumably as deficient in vitamin B₃ as is corn. In studies at the University of Cambridge, Leader (*Biochem. J.*, vol. 24, p. 1172), attempting to produce pellagra in rats by insufficient amounts of yeast extract containing both vitamins B₁ and B₃, found that rats had a seasonal immunity against pellagra comparable to that occurring in the human disease and that in the absence of cane sugar and yeast in the diet polyneuritis, but not pellagra developed, while if sugar was added to the diet, together with a small amount of yeast, pellagra but not polyneuritis developed. In commenting upon these results, Leader called attention to the fact that when corn makes up a large part of the diet it is usually accompanied by cane sugar, sirup, or molasses—the corn bread and molasses diet of the extremely poor people in the Southern States.

With the question still unsettled as to the ultimate cause of pellagra—it seemed to be accepted generally that good sources of vitamin B₃ are of value in its prevention. Hoagland and Snider (*J. Agr. Research*, vol. 40, p. 977) found that commercial beef extract was a good source of vitamin B₃. Since 1 lb. of the extract contained approximately the same amount of vitamin B₃ as 11 lbs. of fresh lean beef, they suggested that the extract might be more effective in the treatment of human pellagra than the fresh beef so often prescribed by medical men in treating the disease.

Meantime Bliss of the School of Medicine, Tulane University (*Science*, vol. 72, p. 577) suggested that pellagra was not a vitamin-deficiency, but an iron-deficiency disease, stating in bringing forward this view that the "work of Goldberger has made less of an impression upon clinicians and laboratory workers in the South who are in actual contact with the disease than might be inferred from its ready acceptance in standard texts to-day." Whatever may be the final decision concerning the cause of pellagra, it was generally accepted, as emphasized by Sherman and Smith (*The Vitamins*, 2d ed., New York) that vitamin B₃ (G) is "a substance of coordinate importance with the longer known vitamins as an essential factor in normal nutrition and deprivation or serious shortage of this substance results in widespread injury to the body. Conversely, the liberal feeding of this substance may be expected to play a significant part in inducing a better-than-average nutritive condition."

VITAMIN C. The importance of vitamin C in preventing and curing inflammation of the oral tissues and in preventing dental caries was emphasized in a report by Hanke (*J. Am. Dental Assoc.*, vol. 17, p. 957) of continued success in the dietary treatment of such conditions by large amounts of orange and lemon juice as a source of vitamin C. The dosage which in his experience had been adequate in all cases was the juice of one-half lemon and one-half pint of orange juice twice a day. In his experience the protective quantity of vitamin C was so large that tomatoes were not as satisfactory as citrus fruits, as in the quantities required they were not as well tolerated.

The general diet recommended by Hanke includes, in addition to the citrus fruit juices, meat, fresh vegetables, any desired amount of fresh fruit and from 1 to 2 pints of milk, 1 or 2 eggs, and from $\frac{1}{4}$ to $\frac{1}{2}$ head of lettuce a day. The diet is recommended not only as a curative but as a preventive measure.

Dietary management should most certainly begin with the pregnant woman, not only because of the most immediate effect on herself, but also because of the action on the fetus. Subsequent proper systematic nourishment of the child may lead to a decreased incidence of oral inflammation and possibly of dental caries.

VITAMIN D. From the standpoint of nutrition perhaps the most significant outcome of vitamin D research reported during the year was the convincing evidence along several different lines of the mutual interdependence of vitamin D and calcium. Harris (*Lancet*, 1930, I, p. 236), Bills and Wirick (*J. Biol. Chem.*, vol. 86, p. 117), and Duguid, Duggan, and Gough (*J. Path. Bact.*, vol. 33, p. 353) showed that the toxicity of laboratory rats to large doses of irradiated ergosterol varies with the calcium content of the diet, the higher the calcium the greater the toxicity. The toxicity manifests itself by hypercalcemia of the blood and deposits of calcium in various organs and tissues. Brown and Shohl (*J. Biol. Chem.*, vol. 86, p. 245) and Watchorn (*Biochem. J.*, vol. 24, p. 631) found that large doses of irradiated ergosterol led to decreased retention of calcium in spite of the calcification of certain tissues taking place at the same time. Watchorn (*Biochem. J.*, vol. 24, p. 1560) reported, however, that absence of calcium in the diet did not check the increased excretion of calcium following massive doses of irradiated ergosterol and concluded that for calcification in the body a high intake of vitamin D must be continued, with a fairly high intake of calcium, but that regardless of the calcium intake increased elimination of calcium from the bones or tissues follows excessive intake of vitamin D. "Such a loss of calcium in the absence of calcium from the diet can only mean that it is being lost from the bones or tissues."

This view was likewise held by Hess, Weinstock, and Rivkin (*Proc. Soc. Expt. Biol.*, vol. 27, p. 298) and others. Ashford (*Biochem. J.*, vol. 24, p. 661) found, however, that the bones of rabbits receiving excessive doses of irradiated ergosterol were hard and well calcified, which would hardly suggest that the calcium came from the bones. Jones, Rapoport, and Hodes (*J. Biol. Chem.*, vol. 89, p. 647) pointed out that many experimental diets considered to be calcium-free contain sufficient calcium to produce marked hypercalcemia in the presence of excessive vitamin D and demonstrated with dogs that in a diet absolutely free from calcium, it was impossible to produce pronounced hypercalcemia even with excessive doses of vitamin D. They concluded that the source of the excess of calcium in irradiated ergosterol hypercalcemia is the food and not the body tissue. Harris (*Lancet*, 1930, I, p. 236) expressed the opinion that the extent of hypercalcemia produced by excessive dosage of vitamin D depended upon the ratio of calcium to phosphorus in the diet.

The evidence just reviewed of the relation of calcium to vitamin D is based upon the abnormal condition of excessive intake. Sherman and Stiebeling (*Proc. Soc. Expt. Biol. Med.*, vol. 27, p. 663) showed in experiments upon growing rats under more normal conditions that any one

of the three factors phosphorus, calcium, or vitamin D may be the limiting factor in bone development, emphasizing that "vitamin D appears to have influence upon the rate of normal calcification even at levels well above those associated with rickets, but the supplying of vitamin D in abundance does not justify any lack of care in providing the growing organism with the liberal calcium intake which has also been shown to be essential to the optimal development of bone." See also CHEMISTRY; DAIBYING; FOOD AND NUTRITION.

VOCALISTS. See MUSIC.

VOLKELT, fôl'kêlt, JOHANNES IMMANUEL. A German philosopher, died in Leipzig May 8, 1930. He was born in Lipnik, Galicia, July 21, 1848, and was educated at the Universities of Vienna, Jena, and Leipzig. He became professor of philosophy at Jena in 1879, at Basel in 1883, and at Würzburg in 1889. In 1894 he was made professor of philosophy and pedagogy at Leipzig, which chair he held until 1921. His more important works are: *Kants Erkenntnis-theorie* (1879); *System der Aesthetik* (3 vols., 1905-14); *Zwischen Dichtung und Philosophie* (1908); *Was ist Religion?* (1913); *Gewissheit und Wahrheit* (1918); *Die Gefühlsgewissheit* (1922); *Phänomenologie und Metaphysik der Zeit* (1925); and *Das Problem der Individualität* (1928).

VOLLBEHR COLLECTION. See LIBRARY PROGRESS.

VOUGHT, CHANCE MILTON. An American aeronautical engineer, died in Southampton, N. Y., July 25, 1930. Born in New York City, Feb. 26, 1888, he attended Pratt Institute in Brooklyn, New York University, and the University of Pennsylvania. He designed and constructed such planes as the PLV biplane, Mayo biplane, Simplex 3-place flying boat, Wright model-V military biplane, and the Wright-Hispano flying boat. He was consulting engineer with the U. S. Bureau of Aircraft Production during the World War, and designed the Vought VE-7 standardized military training biplane, VE-8 single-seater pursuit plane, VE-9 advanced training airplane, VE-10 flying boat, and VE-11 special pursuit single-seater. For the U. S. Navy he designed the V-ocatapult-observation convertible airplane for scout-cruisers and battleships and the famous Corsair or OU, a convertible land and seaplane for observation and fighting. At the time of his death he was president of the Chance Vought Corporation, manufacturers of military and naval airplanes.

WAFD. EGYPTIAN NATIONALIST PARTY. See EGYPT under *Government and History*.

WAGES. See STATISTICS.

WAGNER, COSIMA. Widow of Richard Wagner, the German composer, died in Bayreuth, Germany, Apr. 1, 1930. She was born in Bellagio on Lake Como, Italy, Dec. 25, 1837, daughter of Franz Liszt, the Hungarian pianist, and the Comtesse Marie d'Agoult. In 1857 she was married to her father's pupil, Hans von Bülow, the orchestra conductor, from whom she was divorced in 1869. A year later she was married to Wagner, by whom she had already borne three children, Isolde, Eva, and Siegfried (q.v.). In 1872 she and her husband moved to Bayreuth where, through the patronage of Ludwig II of Bavaria, an opera house was erected for the production of the composer's operas. So profoundly had she penetrated into and assimilated Wagner's ideals that after his death in 1883 she

became the leading spirit of Bayreuth, developing the annual festival into a world-famous institution. See MUSIC.

WAGNER, SIEGFRIED. A German composer and orchestra conductor, son of Richard and Cosima Wagner (q.v.), died in Bayreuth, Aug. 4, 1930. He was born in Triebtschen, near Lucerne, Switzerland, June 6, 1869, and although destined by his father for an architect's career early determined to become a musician, studying under Kniese and Humperdinck. In 1893 he entered upon his career as an orchestra conductor, touring through Germany, Austria, Italy, and England, where he met with marked success as an interpreter of the works of his father. In 1896 he became co-director, with his mother, of the Wagnerian Festival Playhouse in Bayreuth, and in that year won general favor by his work as conductor of *Der Ring des Nibelungen*. The festival was discontinued on the outbreak of the World War but was resumed ten years later, following a successful tour of Europe and the United States by Herr Wagner to raise money for this purpose. In 1924 he also assumed general direction of the playhouse on account of the advanced age and precarious health of his mother. His principal works are the operas *Der Barenhäuter* (1899); *Herzog Wildfang* (1901); *Der Kobold* (1904); *Bruder Lustig* (1905); *Das Sternengeböt* (1908); *Banadietrich* (1910); *An allem ist Hütchen schuld* (1917); *Schwarzschwänenreich* (1918); *Sonnenflammen* (1918); *Der Schmied von Marienburg* (1920); and *Der Friedensengel* (1926). In 1922 he published his memoirs under the title *Erinnerungen*. See MUSIC.

WAGNER BILLS. See UNITED STATES under *Congress*.

WAGNER MUSICAL FESTIVAL. See MUSIC.

WAILING WALL. See PALESTINE under *History*.

WALES. A historical division of the United Kingdom, consisting of 12 counties, on the west coast of Great Britain, between the Irish Sea on the north and the Bristol Channel on the south. Area, 7466 square miles; population, according to the census of 1921, 2,205,680. See GREAT BRITAIN.

WAR, OUTLAWRY OF, ETC. See ARBITRATION, INTERNATIONAL; PEACE and PEACE MOVEMENTS.

WAR CLAIMS COMMISSION. See GERMANY under *History*; ARBITRATION, INTERNATIONAL.

WARD, SIR JOSEPH (GEORGE), FIRST BARONET. A New Zealand statesman and former premier, died in Wellington July 7, 1930. He was born in Melbourne, Australia, Apr. 26, 1856, and was educated privately. In 1887 he was elected to Parliament as member for Awarua in the Liberal party, and in 1891 became Postmaster General, an office which he held continuously until 1912. He served his first premiership during 1906-12. As leader of the Liberal party, he sponsored much of New Zealand's progressive legislation.

In 1915 Sir Joseph entered the National Ministry, a coalition of the Liberal and Reform parties brought about by the War, as Finance Minister and Postmaster General; and during 1917-18 represented New Zealand in the Imperial War Cabinet in London, and in 1919 at the Paris Peace Conference. On his return from Paris he resigned from the coalition cabinet and was defeated in the election which followed, the Reform party remaining in power. He was reelected to Parlia-

ment in 1925, however, as a member for Invercargill. In 1928, as leader of the United party, he again became Premier, but resigned this office in May, 1930, on account of ill health. He was created a knight commander of St. Michael and St. George in 1901 and a Baronet in 1911.

WARDITE. See MINERALOGY.

WARSHIPS. See NAVAL PROGRESS.

WASHBURN, ALBERT HENRY. An American diplomat and lawyer, died in Vienna, Austria, Apr. 2, 1930. He was born in Middleborough, Mass., in 1866 and was graduated from Cornell University in 1889. He entered the diplomatic service immediately upon graduation, acting as United States consul at Magdeburg, Germany, for three years. On his return to the United States in 1893 he became private secretary to Senator Henry Cabot Lodge and also studied law at the University of Virginia and Georgetown University, receiving the degree of LL.B. from the latter institution in 1895. He then practiced law in Middleborough. In 1919 he became professor of political science and international law at Dartmouth College, and three years later was appointed Minister to Austria. He represented the United States on the commission of jurists sitting at The Hague from December, 1922, to March, 1923, to consider amendment of the laws of war in accordance with a resolution of the Washington Disarmament Conference. The following year he was named president of the mixed commission appointed to adjust differences between Austria and Yugoslavia arising out of provisional trade agreements. Dartmouth conferred the LL.D. degree on him in 1924. He resigned as Minister to Austria early in 1930 so as to accept the post of Ambassador to Japan.

WASHBURN COLLEGE. A coeducational institution in Topeka, Kan., founded in 1865. The enrollment for the summer session of 1930 was 204 and for the autumn term, 763. There were 72 faculty members. The endowment amounted to \$1,334,603, and the income for the year was \$230,480. The library contained 37,051 volumes. President, Parley P. Womer, Sc.D.

WASHINGTON. POPULATION. According to the Fifteenth Census, the population of the State on Apr. 1, 1930, was 1,563,396. The population on Jan. 1, 1920, was 1,356,621. The capital is Olympia.

AGRICULTURE. The following table gives the acreage, production, and value of the principal crops in 1929 and 1930: •

| Crop | Year | Acreage | Prod. Bu. | Value |
|--------------|------|-----------|------------|--------------|
| Wheat | 1930 | 2,445,000 | 40,065,000 | \$22,627,000 |
| | 1929 | 2,430,000 | 44,910,000 | 47,902,000 |
| Apples | 1930 | ..... | 37,850,000 | 35,958,000 |
| | 1929 | ..... | 29,500,000 | 38,350,000 |
| Hay | 1930 | 961,000 | 1,968,000* | 26,097,000 |
| | 1929 | 973,000 | 1,914,000* | 32,030,000 |
| Potatoes ... | 1930 | 64,000 | 9,984,000 | 7,488,000 |
| | 1929 | 56,000 | 8,680,000 | 12,586,000 |
| Oats | 1930 | 210,000 | 10,080,000 | 8,629,000 |
| | 1929 | 191,000 | 8,977,000 | 5,296,000 |
| Corn | 1930 | 50,000 | 1,900,000 | 1,672,000 |
| | 1929 | 48,000 | 1,824,000 | 1,879,000 |
| Barley | 1930 | 63,000 | 2,142,000 | 1,007,000 |
| | 1929 | 63,000 | 2,142,000 | 1,671,000 |

* Tons.

Farms in the State numbered 71,335 in 1930, as against 73,267 in 1925 and 66,288 in 1920. The area of irrigated lands totaled 503,458 acres in 1929, as against 529,899 in 1919.

MINERAL PRODUCTION. Coal, which normally has contributed somewhat less than one-half of

the yearly total of the State's mineral product as measured by value, was mined at about the same rate in 1929 as in 1928, the quantity produced being 2,521,327 net tons for 1929 and 2,519,901 for 1928, and the value of coal mined being \$8,647,000 for 1929 and \$8,720,000 for 1928. The entire mineral production of the State attained the value of \$22,119,541 for 1928; for 1927, of \$21,965,917.

The value of the gold, silver, copper, lead, and zinc produced from ore mined in the State of Washington in 1930 was about \$349,200 as compared with \$552,233 in 1929, according to estimates of the U. S. Bureau of Mines. There were increases in the quantities of recovered gold and lead, but decreases were reported in the output of silver, copper, and zinc.

FINANCE. State expenditures in the year ended Mar. 31, 1929, as reported by the U. S. Department of Commerce, were: for maintenance and operation of governmental departments, \$23,130,089 (of which \$8,164,293 was for local education); for interest on debt, \$757,024; for permanent improvements, \$12,901,842; total, \$36,788,955 (of which \$14,062,820 was for highways, \$3,638,005 being for maintenance and \$11,324,815 for construction). Revenues were \$35,310,791. Of these, property and special taxes formed 40.2 per cent; departmental earnings and remuneration to the State for officers' services, 6.0; sales of licenses, 37.9 (including taxes of \$4,245,237 on sales of gasoline). The State's funded debt outstanding on Mar. 31, 1929, was \$13,800,289. Net of sinking-fund assets, it was \$12,194,031. On property bearing an assessed valuation of \$1,246,168,552 were levied in the year State taxes of \$13,835,832.

TRANSPORTATION. The mileage of railroad line under operation on Jan. 1, 1930, was 5538.95.

EDUCATION. A constitutional amendment for classifying taxable property, regarded as helpful to the finances for public education, received the organized support of the teachers, and was adopted at the polls. The effort was made to modernize more thoroughly the courses of study in the public schools, and new courses were introduced in elementary, high, and junior high schools. For the year ending June 30, 1930, the school population of the State was estimated at 432,377 individuals between the ages of 4 (or 5) and 21 years. There were enrolled in the public day schools 344,731 pupils; there was also an evening-school enrollment of 13,721. Of the day-school pupils, 3420 were in kindergartens, 255,883 in elementary, and 85,428 in high-school grades. The year's expenditures for public-school education were: Current, \$27,694,802; total, \$33,245,780. Salaries of teachers averaged, for the year, \$1525.

CHARITIES AND CORRECTIONS. Control of State institutions for the care or custody of persons, under the system in operation in 1930, was based on the State's Civil Administrative act of 1921. The Department of Business Control, having as its executive head an appointive director (Olaf L. Olson), exercised a closely centralized regulation of the institutions. The director appointed the superintendents of the several institutions, to serve during his pleasure. The department fixed the salaries of superintendents' subordinates, whom the superintendents appointed. Institutional purchasing was regulated through the department's Supervisor of Purchasing. The State institutions, with populations of October, 1930, included: Western State Hospital, Fort Steilacoom, 1670; Eastern State Hospital, Medical Lake, 1393; Northern State Hospital, Sedro-

Woolley, 1413; State Custodial School, Medical Lake, 1199; State Soldiers' Home, Orting, 158.

POLITICAL AND OTHER EVENTS. Efforts to reform the State's system of taxation were checked by decisions of the State Supreme Court. The five per cent tax on financial corporations was held unconstitutional. Governor Hartley's advisory tax commission then petitioned the Court for a reconsideration of the case. The Court dismissed the petition on August 7, delivering an opinion to the effect that the State constitution did not admit of the proposed methods of relief from *ad valorem* taxation on property. The so-called statutory excise tax on the profits of certain corporations was declared to be in reality a property tax and therefore not constitutionally assessable against some corporations if not against others.

ELECTIONS. The Republican vote on November 4 elected majorities in both branches of the Legislature. Four Republicans and one Democrat were elected to the House of Representatives. A proposed State constitutional amendment for reapportionment of representation in the Legislature was adopted by popular vote.

OFFICERS. Governor, Roland H. Hartley; Lieutenant-Governor, John A. Gellatly; Secretary of State, J. Grant Hinkle; State Auditor, C. W. Clausen; State Treasurer, Charles W. Hinton; Attorney-General, John H. Dunbar; Superintendent of Public Instruction, N. D. Showalter.

JUDICIARY. Supreme Court: Chief Justice, John R. Mitchell; Associate Justices, Warren W. Tolman, John F. Main, Emmett N. Parker, Mark A. Fullerton, O. R. Holcomb, Walter B. Beals, W. J. Millard, Adam Beeler.

WASHINGTON, D.C., IMPROVEMENT. See CITY AND REGIONAL PLANNING, under *City Planning*.

WASHINGTON, STATE COLLEGE OF. A co-educational institution for higher learning in Pullman, Wash.; founded in 1890 by an act of the State Legislature. It consists of the following colleges and schools: Colleges of agriculture, home economics, mechanic arts and engineering, sciences and arts, veterinary medicine; and schools of education, mines and geology, music and fine arts, pharmacy, and graduate. The enrollment for the autumn of 1930 was 3207; 585 students attended the summer session. There were 330 faculty members. The amount of income for the year, including appropriations made by the State Legislature (millage tax) and income from land grant and Federal funds, student fees, etc., was \$1,836,675. The library consisted of 200,000 volumes. President, Ernest O. Holland, Ph.D.

WASHINGTON, UNIVERSITY OF. A State institution of higher education in Seattle, Wash.; founded in 1861. The enrollment for the autumn term of 1930 was 7368 classified as follows: Business administration, 1193; education, 240; engineering, 917; fine arts, 759; forestry, 128; journalism, 67; law, 301; liberal arts, 2302; library science, 46; mines, 55; pharmacy, 137; science, 1223. The summer-school enrollment totaled 3272 in the two terms, including 1135 men and 2137 women. The faculty numbered 466 members. The income from all sources for the scholastic year 1929-30 was \$2,915,064.57. The library contained 255,398 volumes. President, M. Lyle Spencer, Ph.D.

WASHINGTON AND JEFFERSON COLLEGE. A nonsectarian institution for the higher education of men in Washington, Pa., which had its origin in the Washington Academy, founded in

1787 and chartered at Washington College in 1802. Jefferson College at Canonsburg, Pa., was chartered in 1806, and in 1865 the two colleges were united to form Washington and Jefferson College. The enrollment for 1930-31 totaled 434 undergraduates and 9 graduate students. The 1930 summer session enrollment was 150. The faculty enrollment 36. The productive funds of the college amounted to \$1,137,813, and the income from all sources was approximately \$200,000. The library contained 42,561 volumes. President, S. S. Baker, M.S., LL.D.

WASHINGTON AND LEE UNIVERSITY.

A nonsectarian institution for the higher education of men in Lexington, La., founded in 1749. The enrollment for the autumn of 1930 was 915. There were 58 members on the faculty. The productive funds of the university amounted to \$1,459,155, and the income for the year was \$335,780. The library contained 65,000 volumes. President, Francis Pendleton Gaines, Ph.D., Litt.D., LL.D.

WASHINGTON BICENTENNIAL. See CELEBRATIONS.

WASHINGTON UNIVERSITY. A nonsectarian institution of higher learning for men and women in St. Louis, Mo.; founded in 1853. The enrollment on Nov. 1, 1930, was 7444, distributed as follows: Graduate students, 321; college of liberal arts, 1416; engineering, 386; architecture, 123; business and public administration, 221; law, 131; medicine, 321; dentistry, 199; fine arts, 364; extension division, 2770; nursing, 254. The enrollment in the summer session of 1930 was 938. The faculty for 1930-31 numbered 580, including 94 professors, 59 associate professors, and 97 assistant professors. The value of buildings, grounds, and equipment of the institution was estimated at \$13,531,061. The endowment amounted to \$17,903,718, while the income for the year was \$2,670,052. Gifts received in 1929-30 amounted to \$1,373,830. The library contained 305,446 volumes and 86,546 pamphlets. Chancellor, George R. Troop, Ph.D., LL.D.

WATER POWER. During 1930 a total of 1,076,889 horse power (about 750,000 kilowatts) capacity in water power was added to power plants in the United States, bringing the total hydro capacity at the end of the year up to 14,884,667 horse power. The greatest increase in hydro-electric production capacity occurred in the East South Central States, where the horsepower capacity of water wheels rose 17 per cent to 1,363,653 on Dec. 31, 1930, from 1,168,992 on Dec. 31, 1929. The production capacity of water wheels in the New England States increased 16 per cent during the year to a total of 1,897,591 horse power. The South Atlantic States, with a 10 per cent increase; the Mountain States, with 8 per cent; and the Pacific States, with 6 per cent, followed in order. The increase in power-production capacity for the entire country was 7 per cent. New Hampshire, New York, South Carolina, Tennessee, Alabama, and Washington each showed a gain of about 100,000 horse power for the year. New construction undertaken, or announced, would add more than 1,000,000 horse power to that of the utility plants. This does not take into account proposed developments on the St. Lawrence River nor the Boulder Canyon (Hoover Dam) project on the Colorado River.

In Canada new installations, totaling 400,000 horse power, were completed during 1930 bringing the total for the Dominion up to 8,112,000 horse

power. New construction which was active would add 1,500,000 horse power during the succeeding two or three years. These projects would entail an expenditure of \$300,000,000. Approximately 98 per cent of the power there produced is hydro.

In addition to this there were under construction in the United States nine units, each of 84,000 horse power, for the Dneiper River Project in Russia. Some of the more important developments included in the foregoing figures are as follows:

IMPORTANT HYDRO-ELECTRIC PROJECTS PUT INTO OPERATION OR UNDER CONSTRUCTION IN 1930

| UNITED STATES PUT IN SERVICE | | | | |
|---------------------------------------|---------------------------|-------|-----------------------|-----------|
| Company | Project | Units | Size each unit (h.p.) | Head, ft. |
| New Eng. Pr. Assoc. | 15 Mi. Falls | 4 | 53,100 | 175 |
| Lexington Water Pr. Co. | Saluda | 4 | 55,650 | 180 |
| Arkansas Pr. & Lt. Co. | Carpenter | 2 | 39,500 | 89 |
| Pac. N. W. Pub. Ser. Co. | Oak Grove | 1 | 40,000 | 860 |
| City of Tacoma | Cushman No. 2 | 2 | 37,500 | 440 |
| Mont. Pr. Co. | Morony | 2 | 31,000 | 82½ |
| N. Y. Pr. & Lt. Corp. | Spier Falls | 1 | 57,000 | 81 |
| N. Y. Pr. & Lt. Corp. | Cocklingville | 2 | 17,150 | 71 |
| Conn. River Dev. Co. | McIndoes Falls | 2 | 5,120 | 29 |
| San Joaquin Lt. & Pr. Co. | Merced Falls | 1 | 4,750 | 26 |
| Knoxville Pr. Co. | Caldewood | 2 | 56,000 | 213 |
| Turners Falls Pr. Co. | Cobble Mt. | { | 2 19,200 | 420 |
| | | { | 1 8,550 | 420 |
| Alabama Pr. Co. | Lower Tallassee | 2 | 36,000 | 88 |
| Carolina Pr. & Lt. Co. | Waterville | 1 | 49,000 | 850 |
| UNDER CONSTRUCTION [Dec. 31, 1930] | | | | |
| Company | Project | Units | Size each unit (h.p.) | Head, ft. |
| Safe Harbor W. P. Co. | Safe Harbor | 6 | 42,500 | 55 |
| New Kanawha Pr. Co. | Hawk's Next | 4 | 35,000 | 158 |
| Consumers' Pr. Co. | Hardy Dam | 3 | 14,900 | 99 |
| Union El. Lt. & Pr. Co. | Osage | { | 6 33,500 | 90 |
| | | { | 2 3,025 | 90 |
| Washington El. Co. | Rock Island | { | 4 21,000 | 32 |
| | | { | 1 2,100 | 32 |
| Cent. Maine Pr. Co. | Wyman | 2 | 34,000 | 135 |
| Pac. Gas & El. Co. | Tiger Creek | 2 | 36,000 | 1,190 |
| Pac. Gas & El. Co. | Sale Springs | 1 | 13,500 | 244 |
| City of Seattle | Diablo | 2 | 90,700 | 327 |
| Inland Pr. & Lt. Co. | Ariel | 1 | 50,000 | 170 |
| CANADA | | | | |
| Beauharnois Pr. & Lt. Co. | Beauharnois | { | 10 53,000 | 83 |
| | | { | 2 8,000 | 83 |
| Ontario Pr. & Ser. Co. | Abitibi | 5 | 60,000 | ... |
| Ollawa Valley Pr. Co. | Chata Falls | 8 | 28,000 | ... |
| Alcoa Pr. Co. | | 4 | 65,000 | ... |
| Northwestern Pr. Co. | Seven Sisters | 3 | 37,500 | 66 |
| RUSSIA | | | | |
| | Dneiper River Development | 9 | 84,000 | 116½ |

The two 90,700 horse-power units being constructed for the Diablo plant of the City of Seattle are the largest in capacity thus far to be installed in the United States. These exceed the rated capacity of the Dneiper River units being built for Russia which were designed to develop 84,000 horse power at their maximum efficiency when operating under the normal head of 116.5 feet, although it was expected that each unit would develop over 100,000 horse power at full gate opening when operating under a head of 123

feet. The 40,000 horse-power Francis type turbine, installed as the second such unit at the Oak Grove plant in Oregon, represented the highest head unit of this type in this country although this had been exceeded by two installations in Europe. For higher heads the Pelton type of wheel was used.

The largest projects in the United States to use propeller type wheels were the Safe Harbor Development on the Susquehanna River in Pennsylvania, which was to have initially six 42,500 horse-power units operating under a 55-foot head and the Rock Island Development in the State of Washington, which was to install four 21,000 horse-power units to operate under a 32-foot head.

The Colorado River Project (Boulder Canyon) upon which preliminary work was started by the U. S. Government during 1930 involved a 727-foot dam (the Hoover Dam) and a power installation of 1,000,000 horse power. See DAMS.

The State of Arizona was endeavoring to prevent construction of this project under the five-State agreement and sought permission to bring suit in the U. S. Supreme Court. Under the terms of this agreement 36 per cent of the power would be allocated to the Metropolitan Water District, comprising 11 municipalities in California, 18 per cent to Nevada, 18 per cent to Arizona, 13 per cent to the city of Los Angeles, 9 per cent to the Southern California Edison Company, and the remaining 6 per cent would be distributed among various municipalities.

The much discussed development of International Section of the St. Lawrence River advanced a step nearer actuality with the report of Governor Roosevelt's Commission at the end of the year. This board recommended a single-dam two-step development at Massena Point, N. Y., the first step utilizing 50-foot head, to develop 600,000 horse power at a cost of \$79,935,000 or \$133 per horse power, and the second development, which would involve raising the dam 35 feet, would add 1,600,000 horse power at a cost of \$91,612,000. This would bring the average construction cost down to \$77.97 per horse power. From five to six years was estimated as the time required for this construction. The majority of the commission recommended development by the State of New York and the Dominion of Canada with disposal of the power to existing utilities.

Among utility plants in the United States water power accounted for slightly over one-quarter of the total capacity and accounted for 34.3 per cent of the total output in kilowatt hours. See POWER PLANTS.

WATER SUPPLY. See AQUEDUCTS; WATERWORKS AND PURIFICATION.

WATERWAYS. See CANALS.

WATERWORKS AND WATER PURIFICATION. California was the greatest centre of activity in waterworks construction. The water-supply system of the East Bay Municipal Utilities District, comprising Oakland and eight other cities on the east side of San Francisco Bay, was completed early in the year. The district was formed in 1923 and construction was begun two years later. Water of the Mokelumne River is impounded by the Pardee dam, a structure 357 feet high above the foundation, and is conveyed to the district by gravity through a 95-mile aqueduct. The district has bought the distribution system of the company formerly supplying the East Bay cities. San Francisco is continuing the construction of the Hetch Hetchy aqueduct, to bring water

by gravity from the Tuolumne River from the Hetch Hetchy dam and reservoir—renamed O'Shaughnessy dam after the chief engineer of the project. The dam has been completed for several years, as also the development of a large amount of hydro-electric power. On March 3, San Francisco took over the waterworks system of the Spring Valley Water Company, which had supplied the city with water for about 70 years (see MUNICIPAL OWNERSHIP).

To supplement the sources of supply acquired from the company San Francisco contracted with the East Bay Cities Utilities district for a temporary emergency supply pending the completion of the Hetch Hetchy aqueduct. The largest waterworks project in the world was the Colorado River aqueduct and associated works for the Metropolitan Water District of Southern California, comprising Los Angeles, Pasadena, San Bernardino and eight other cities. Studies were begun by Los Angeles alone, in 1925, but were taken over by a district organized later. After fifty different routes had been explored, all were submitted to a board of engineering review in November, 1929. The board chose four routes for further study by the district engineers.

On Nov. 10, 1930, the chief engineer of the district recommended the Parker route, which was referred back to the three consulting engineers, who approved it late in December. The aqueduct line chosen will be 265.5 miles long from the Colorado River to a terminal reservoir and requires a pumping lift of 1563 feet. The carrying capacity of the aqueduct will be 1500 cubic feet per second or about one billion gallons per 24 hours but the first installation of pumping equipment would lift only 800 feet per second. Construction cost, including interest charges, is estimated at \$200,000,000.

At an election on May 20, Los Angeles voters approved a \$38,800,000 water bond issue, the vote being 8 to 1 in favor of the loan. The money was to be divided about equally between increasing the Owens Valley supply and acquiring land and water rights. Included in the latter will be the purchase of the sites of five towns—Laws, Bishop, Big Pine, Independence and Long Pine—at a cost of nearly \$6,000,000, to end a long and bitter controversy over alleged damages to these towns caused by taking water for the Los Angeles aqueduct. For accounts of the Colorado River aqueduct project see *Engineering News-Record*, April 2, 1925, p. 560; May 31, 1928, p. 850; Nov. 27 and Dec. 25, 1930, pp. 854 and 1024.

Elsewhere in the United States the Wanaque aqueduct for the North Jersey Water Supply District, including Newark, Paterson and other cities, was completed and put in use; work was in progress on the second deep-pressure tunnel to convey the Catskill water supply beneath New York City; the 14-mile Coldbrook-Wachusett aqueduct of the Boston Metropolitan Water District was holed through and the placing of the concrete lining was nearly completed; the new gravity water supply system for Albany, N. Y., was carried well on towards completion; large additions to the supply of Detroit were under way, including a new lake intake, tunnels, pumping stations and additional filters; and large-scale experiments on the treatment of the water supply of Chicago were continued.

A tentative plan for four immense plants to treat the entire water supply of Chicago and a number of dependent adjacent towns was made

public early in the year. The estimated cost of purification works to serve the present population of the Chicago district is \$60,000,000. The capacities of the four plants was not stated. Each would be built in units consisting of chemical mixing basins to hold the water 55 minutes and settling basins to give four hours detention; filters of sand and activated carbon operating at a rate of 155,000,000 gallons an acre per day and clear-water reservoirs. The four plants would serve as many districts, the water being delivered by a dozen pumping stations. The treatment would remove turbidity and microorganisms and partly soften the water. The water would be chlorinated to complete the bacterial removal. At the November election the voters of Chicago endorsed the policy of filtration.

INTERSTATE WATER RIGHTS. Progress was made in two lawsuits before the U. S. Supreme Court seeking to prevent the diversion of the waters of interstate streams for the supply of a municipality in another State. In the suit brought by Connecticut to prevent the diversion of tributaries of the Connecticut River eastward to supplement the present supply of Boston and other places in the Metropolitan Water District, the court referee reported adversely to Connecticut on all the points raised by that State except for a conditional recommendation that slight damages be awarded to a private power company. The court had not acted on the report at the end of the year.

In a second case, by which New Jersey sought to prevent New York City from going to tributaries of the Delaware River for an additional water supply, a vast mass of testimony was taken during the year—with Pennsylvania guarding its own interests, which might be affected whichever way the decision went. The outcome of the Connecticut-Massachusetts suit would not affect the portion of the additional supply for Boston and vicinity to be carried through the Coldbrook-Wachusett tunnel, already mentioned, but New York City was postponing construction of its Delaware River project until the U. S. Supreme Court rendered its decision on the constitutionality of the diversion.

DROUGHT. Abnormally low rainfall in some of the New England, Middle Atlantic, Southern and North Central States called sharp attention to the need of increased capacities of sources of water supply for many cities but except for relatively small towns here and there water famines did not occur. Large rural areas were seriously affected. See METEOROLOGY.

LONDON. The largest waterworks system in the world, measured by population supplied, is that operated by the Metropolitan Water Board of London, England, which furnished water directly to an estimated population of 7,500,000 during the year ending Mar. 31, 1930, besides delivering water in bulk, outside its own district, to 50,000 more persons. From the time the board took over the works from the eight water companies, in June, 1904, to Mar. 31, 1930, the length of pipe in the system increased from 5759 to 7202 miles. The average daily per capita water consumption for the fiscal year 1929-30 was nearly 44 United States gallons or less than half of what would be considered a low figure for an American city.

WEATHER. See METEOROLOGY.

WEBB, SIR ASTON. A British architect, died Aug. 21, 1930, in London where he was born May 22, 1849. Educated privately, he gained renown as the most prominent British architect of his

time. He designed the Admiralty Arch at the east end of the Mall, London; the Birmingham Assize Courts; the Britannia Royal Naval College and Sick Quarters in Dartmouth; the French Protestant Church in Soho; and the London offices of the Grand Trunk Railway of Canada and of the Metropolitan Life Assurance Company. He also restored churches in different parts of England, including the beautiful St. Bartholomew's the Great in Smithfield, London. The most famous examples of his work, however, are the new façade of Buckingham Palace, together with the architectural setting of Brock's Victoria Memorial and the layout of the Mall as a processional road, and the buildings of the Victoria and Albert Museum, the Royal College of Science, and the Imperial College of Science and Technology, all in South Kensington.

WEEVIL. See ENTOMOLOGY, ECONOMIC.

WEIHAIWEI. For transfer of sovereignty from Great Britain to China see CHINA under History.

WEIMAR CONSTITUTION, ANNIVERSARY OF. See CELEBRATIONS.

WELDING. See BRIDGES.

WELFARE WORK. THE COST OF PHILANTHROPY. According to the John Price Jones Corporation, gifts to philanthropy in the United States in 1929 reached the total of \$2,450,720,000, which was an increase of \$120,120,000 over 1928. The following was the distribution of these gifts according to the purposes for which they were granted: Religion, \$996,300,000; education, \$467,500,000; gifts for personal charity, \$279,760,000; organized charitable relief, \$278,710,000; health, \$221,510,000; foreign relief, \$132,000,000; the fine arts, \$40,000,000; play and recreation, \$20,900,000; miscellaneous reform organizations, \$14,040,000.

SOCIAL STATISTICS. The registration of social statistics, beginning with July 1, 1930, became one of the concerns of the Federal Children's Bureau. Heretofore such data had been collected by the National Association of Community Chests and Councils and the local community research committee of the University of Chicago. For the time being the Children's Bureau was compiling figures in the fields of dependency, delinquency and health. The cities participating in the registration for 1930 were Akron, Berkeley, Bridgeport, Buffalo, Canton, Chicago, Cincinnati, Cleveland, Columbus, Dayton, Denver, Des Moines, Detroit, Duluth, Grand Rapids, Harrisburg, Hartford, Indianapolis, Kansas City, Lancaster, Louisville, Minneapolis, Newark, New Haven, New

Orleans, Norfolk, Omaha, Orange, Richmond, Sharon, Sioux City, Springfield (Ill.), Springfield (Mass.), Springfield (Ohio), St. Louis, St. Paul, Washington (D. C.), Wichita, and Wilkes-Barre.

The accompanying table indicates the relief expenditures for 15 cities for 1928 and 1929 in the family welfare field.

Relief was being given in these cities by both private and public agencies and, in most instances, the major portion was coming from the public treasury. Of the \$6,418,659 disbursed for relief in 1929 by the 15 cities, \$2,937,525, or 46 per cent of the total, was expended in Detroit. The following table indicates that the relief expenditures in 1930 for 19 cities was considerably greater than for the similar months in 1929.

AMOUNT OF RELIEF GIVEN MONTHLY FROM JANUARY, 1929 TO JUNE, 1930, IN 19 CITIES^a BY THE PRINCIPAL AGENCY PROVIDING FAMILY RELIEF IN EACH

| Month | Amount of relief given 1929 | 1930 |
|-----------|--------------------------------|-----------|
| January | \$173,239 | \$257,350 |
| February | 171,867 | 239,113 |
| March | 152,243 | 232,035 |
| April | 117,484 | 204,387 |
| May | 115,449 | 186,353 |
| June | 95,799 | 169,644 |
| July | 95,816 | |
| August | 96,589 | |
| September | 90,932 | |
| October | 106,873 | |
| November | 130,885 | |
| December | 189,888 | |

^a Excluding mothers' aid and veterans' relief.

^b Akron, Canton, Chicago, Cincinnati, Cleveland, Columbus, Dayton, Des Moines, Grand Rapids, Kansas City, Lancaster, Louisville, Minneapolis, Omaha, Richmond, Sharon, Sioux City, St. Louis, Wichita.

COMMUNITY CHESTS. According to the Association of Community Chests and Councils there were community chests in 360 cities in the country and these succeeded in raising \$80,000,000 during the year. Fall campaigns for the raising of the annual budgets were held in 220 cities and, among these, 64 cities exceeded the sums that had been raised in the year 1929. According to the Association, the unemployment situation created a greater interest among the giving public with the result that large subscriptions, coming from the wealthy, were increased rather than otherwise. In New York City, for the first time, the important family welfare societies were uniting in a common appeal because of the heavy drains made on their resources by unemployment. The goal of this drive was \$6,000,000 and it was proposed to employ the sum raised to obtain jobs in non-profit making activities for 10,000 heads of families, throughout the winter at least.

WELLAND CANAL. See CANALS.

WELLESLEY COLLEGE. A nonsectarian institution for the higher education of women in Wellesley, Mass.; chartered in 1870 and opened in 1875. The enrollment for the academic year 1930-31 was 1550, which included 52 candidates for the Master's degree. The teaching staff numbered 158. The trust funds as of June 30, 1930, amounted to \$9,732,245, and the income for the year 1929-30 was \$1,125,074 (exclusive of gifts). A new faculty apartment house was completed in September, 1930. An administration building and a zoological laboratory were under construction. The library contained about 135,000 volumes. President, Ellen Fitz Pendleton, Litt.D., LL.D.

WELLS COLLEGE. An institution of higher learning for women in Aurora, N. Y., founded in

RELIEF GIVEN BY ALL AGENCIES FOR FAMILY WELFARE AND RELIEF IN 15 CITIES^b DURING EACH MONTH OF 1928 AND 1929

| Month | Amount of relief given 1928 | 1929 |
|-----------|--------------------------------|-----------|
| January | \$600,279 | \$570,373 |
| February | 577,265 | 548,693 |
| March | 564,084 | 535,991 |
| April | 457,812 | 484,070 |
| May | 426,482 | 456,328 |
| June | 383,491 | 430,097 |
| July | 367,861 | 445,339 |
| August | 370,292 | 444,301 |
| September | 355,401 | 444,142 |
| October | 391,016 | 516,555 |
| November | 421,389 | 631,589 |
| December | 496,512 | 911,181 |

^a Including mothers' aid but excluding veterans' relief.

^b Akron, Cincinnati, Cleveland, Dayton, Des Moines, Detroit, Grand Rapids, Lancaster, Minneapolis, New Orleans, Omaha, Sioux City, Springfield, Ill., St. Paul, and Wichita.

1868. The enrollment for the autumn of 1930 was 269. The faculty numbered 44 members. The endowment amounted to \$1,500,000, and the income for the year from invested funds, tuition, etc., was \$367,182. There were approximately 65,000 volumes in the library. President, Kerr Duncan Macmillan, S.T.D.

WESLEYAN METHODIST CHURCH. See METHODISTS.

WESLEYAN UNIVERSITY. An institution for the higher education of men in Middletown, Conn.; founded in 1831. The 1930 autumn enrollment was 608, distributed as follows: Seniors, 126; juniors, 118; sophomores, 141; freshmen, 198; graduate students, 24; specials, 1. The faculty for 1930-31 numbered 75. The productive funds of the university amounted to \$5,134,424, and the income for the year was \$569,672. The library contained more than 170,000 volumes. President, James Lukens McConaughy, Ph.D.

WESTERN AUSTRALIA. A state of the Australian Commonwealth, occupying the western third of the continent. Area, 975,920 square miles; population, estimated at 417,423 on Mar. 31, 1930, as compared with 332,732 at the census of 1921. Full-blooded aborigines were estimated at 22,898 in 1929. The capital, Perth, had 202,888 inhabitants on Jan. 1, 1930, or nearly half of the total population. The population increase in 1929 was 10,890. Births numbered 9051; deaths, 3930; marriages, 3367; and the excess of immigration over emigration was 5769. Primary education is compulsory. In 1929, there were 836 State schools, with an average attendance of 46,947.

Agriculture, stock raising, manufacturing, mining, lumbering, and fishing are the leading industries. The area under wheat in 1929-30 was estimated at 3,568,225 acres and the production at 39,081,183 bushels, as compared with 33,790,040 bushels from 3,343,530 acres in 1928-29. Oats, barley, hay, potatoes, fruits, and grapes are other products. In 1929-30, the value of direct overseas imports was estimated at £8,901,799 and that of overseas exports at £15,996,964. There were 4111 miles of State railways and 450 miles of Federal lines in 1930, the deficit of the former in 1929-30 totaling \$1,965,817. For the fiscal year 1928-29, State revenues amounted to £9,947,951 and expenditures to £10,223,919. The gross State debt on June 30, 1930, was £71,990,141, or over £171 per capita.

Executive power is vested in a governor, acting through a responsible ministry, and legislative power in a parliament of two houses, the Legislative Council of 30 members elected for six years on a property qualification basis, and the Legislative Assembly of 50 members elected for three years by universal suffrage. Governor in 1930, Col. Sir William Robert Campion; Premier and Treasurer, Philip Collier (Labor).

In the State election of April, 1930, the Labor Government was defeated and supplanted by a Nationalist-Country party coalition government. A movement for secession from the Australian Commonwealth gained considerable strength during 1930. See AUSTRALIA.

WESTERN RESERVE UNIVERSITY. A nonsectarian institution for the higher education of men and women in Cleveland, Ohio; chartered in 1826. The enrollment for the autumn of 1930 in the regular day curricula was 4311. The faculty numbered 475 professors and other members. The endowment of the university amounted to \$10,579,620; and the income for the year was \$2,075,-

282. The library contained about 350,000 volumes. President, Robert E. Vinson, D.D., LL.D., L.H.D.

WESTERN SAMOA. See SAMOA.

WEST POINT. See UNITED STATES MILITARY ACADEMY.

WEST SPITZBERGEN. See SVALBARD.

WEST VIRGINIA. POPULATION. According to the Fifteenth Census, the population of the State on Apr. 1, 1930, was 1,729,205. The population on Jan. 1, 1920, was 1,463,701. The capital is Charleston.

AGRICULTURE. The following table presents the acreage, production, and value of the principal crops in 1929 and 1930:

| Crop | Year | Acreage | Prod. Bu. | Value |
|----------|------|---------|------------|--------------|
| Hay | 1930 | 751,000 | 508,000* | \$11,613,000 |
| | 1929 | 817,000 | 1,163,000* | 17,529,000 |
| Corn | 1930 | 441,000 | 5,865,000 | 6,393,000 |
| | 1929 | 441,000 | 15,876,000 | 18,828,000 |
| Potatoes | 1930 | 60,000 | 4,200,000 | 5,670,000 |
| | 1929 | 57,000 | 6,555,000 | 9,177,000 |
| Apples | 1930 | ..... | 3,944,000 | 4,338,000 |
| | 1929 | ..... | 5,600,000 | 7,280,000 |
| Oats | 1930 | 216,000 | 4,428,000 | 2,613,000 |
| | 1929 | 216,000 | 5,616,000 | 3,594,000 |
| Wheat | 1930 | 134,000 | 2,345,000 | 2,392,000 |
| | 1929 | 134,000 | 1,782,000 | 2,370,000 |

* Tons.

Farms in the State numbered 82,641 in 1930, as against 90,380 in 1925 and 87,289 in 1920.

MINERAL PRODUCTION. The production of coal, which was somewhat curtailed in 1928, made some improvement in 1929. It rose to the total quantity of 138,518,855 net tons for 1929, from 132,952,159 for 1928; in value it rose less notably, to \$215,110,000 for 1929 from \$211,480,000 for 1928. The natural gas industry was on the increase in 1928, its total production for that year, 163,018,000 M cubic feet, being slightly above the 162,375,000 M of 1927, while the total value of the yearly product, \$72,265,000 for 1928, was conspicuously above the \$67,994,000 of 1927. Natural gas gasoline, of which the yield was 69,729,000 gallons for 1928, was increasingly produced, the quantity for 1929 being 70,700,000 gallons; the corresponding values were \$6,220,000 for 1928 and \$5,970,000 for 1929. Clay products totaled \$19,027,545 for 1928; for 1927, \$16,320,373. Though much of the coal produced left the State, there was a substantial production of coke. The quantities of coke produced in 1928 were 431,419 short tons from beehive ovens and 1,367,481 from by-product ovens; the respective totals by value, \$1,543,933 and \$3,761,460. Blast furnaces shipped, in 1929, 653,048 long tons of pig iron; in 1928, 645,038; the total value of the output, for either year, was about \$11,000,000. There were produced 312,000 short tons (estimated) of lime in 1929 and 279,947 in 1928; in value, \$1,860,000 (estimated) for 1929 and \$1,788,989 for 1928. The entire native mineral product of the State, after allowance for duplications, attained \$336,636,948 for 1928; for 1927, \$366,043,205.

FINANCE. State expenditures in the year ended June 30, 1929, as reported by the U. S. Department of Commerce, were: for maintaining and operating governmental departments, \$15,000,612 (of which \$1,902,290 was for local education); for interest on debt, \$2,627,927; for improvements, \$6,106,180; total, \$23,734,719 (of which \$8,561,704 was for highways, \$3,272,532 being for maintenance and \$5,289,172 for construction). Revenues were \$23,631,783. Of these, property and special taxes supplied 22.4 per cent; departmental

earnings and compensation to the State for officers' services, 8.1; sales of licenses, 59.7 (in which was included the gasoline sales tax, totaling \$4,463,860). The funded debt of the State outstanding on June 30, 1929, was \$65,194,300, of which \$59,210,000 was for highways. Net of sinking fund assets, the debt was \$63,828,400. On taxable property assessed at \$2,075,746,270 were levied in the year State taxes of \$2,698,469.

TRANSPORTATION. The total number of miles of railroad line under operation on Jan. 1, 1930, was 4005.77. There were built, in 1930, 19.94 miles of first and 3.33 of second track.

EDUCATION. For the promotion of the interests of public education a council of education was organized, charged with urging legislation whereby the State would assume one-third or more of the expenditures of the local schools. The school population of the State as estimated for 1930 was 527,613. There were enrolled in the public schools 395,505 pupils. Of these, 328,839 were in common schools or elementary grades and 66,666 in high or junior high schools. The year's expenditures for public-school education totaled \$27,104,798. The salaries of teachers averaged, for the year, \$958 for elementary and \$1730 for high-school teachers.

CHARITIES AND CORRECTIONS. The State Board of Control, as operating in 1930, exercised a central authority both over numerous State educational institutions, ranging from the West Virginia University to the schools for defectives, and also over the institutions having care or custody of individuals. The latter, with the numbers of their inmates on Nov. 30, 1930, included: Weston State Hospital (insane), Weston, 1453; Spencer State Hospital (insane), Spencer, 807; Huntington State Hospital (mental), Huntington, 971; State Hospital for the Colored Insane, Lakin, 346; State Tuberculosis Sanitarium, Lakin, 407; State Colored Tuberculosis Sanitarium, Denmark, 69; surgical hospitals at Welch, McKendree and Fairmont, 105; West Virginia Industrial School for Boys, Grafton, 424; State Industrial School for Colored Boys, Lakin, 98; West Virginia Industrial Home for Girls, Industrial, 167; State Industrial Home for Colored Girls, Huntington, 31; West Virginia Children's Home, Elkins, 83; West Virginia Colored Orphans' Home, Huntington, 38; Home for Aged and Infirm Colored Men and Women, Huntington, 52; West Virginia Penitentiary, 2344. The total of the populations of all these institutions was 7518.

LEGISLATION. A special session of the State Legislature called by Governor Conley met in March. It enacted the State's first official code of laws, for which agitation had been in progress for nine years. The code was adopted very nearly in the form drawn up by the code committee which had prepared it. It was to go into effect on Jan. 1, 1931. At a second special session called immediately after the close of the first the Legislature authorized the sale, to defray the cost of highway construction, of road bonds to the total of \$15,000,000, the remainder of an issue of 1928.

POLITICAL AND OTHER EVENTS. Senator Goff announced on April 22 that owing to ill health he would not become a candidate for reelection. Growing difficulty with the operation of the system of taxation was reported in March by State Tax Commissioner T. C. Townsend. It was asserted that the rates, ostensibly based on equal taxation of all property at full assessment, had risen above \$4 to the hundred in many localities

and that extensive evasion, whether by the removal of property from the State or otherwise, was suspected.

West Virginia, through Governor Conley, lodged with the Federal Power Commission a protest against that body's assumption of jurisdiction over the assignment of rights to develop hydroelectric power projects on streams not classed as navigable. Governor Conley's protest asserted that his State had legislation appropriate to the need of regulating power development within its borders, and that the policy of the Commission had been held a cause of delay in the proper development of the State's resources. An opinion of the Federal Attorney-General, relative to the State's complaints, held that the Commission was not bound by the terms of its creation to take account of the projects to derive power from non-navigable waters, even though the interruption of the flow of such waters might conceivably affect navigation at a distance down the same river systems.

ELECTIONS. The vote of November 4 as compared with those of recent preceding years was marked by a distinct swing to the Democratic party. Former Senator Mansfield S. Neely, Democrat, was elected Senator, defeating James Elwood Jones, Republican, by a vote of 342,839 to 210,480, as unofficially reported. Neely's plurality was higher than Hoover's of 1928. The control of the lower Legislative house but not of the upper passed to the Democrats. Four Republican and two Democratic Representatives were elected. The popular vote rejected four proposed amendments to the State constitution. These would have altered the authority for budget-making; transferred the probate power to circuit clerks; created the office of Lieutenant-Governor; and authorized new circuit judges.

OFFICERS. Governor, William G. Conley; Secretary of State, George W. Sharp; Treasurer, W. S. Johnson; Auditor, Edgar C. Lawson; Attorney-General, Howard B. Lee; State Superintendent of Free Schools, W. C. Cook; Commissioner of Agriculture, John W. Smith.

JUDICIARY. Supreme Court: President, John H. Hatcher; Associate Judges, Frank Lively, Homer B. Woods, Raymond Maxwell.

WEST VIRGINIA UNIVERSITY. An institution for the higher education of men and women in Morgantown, W. Va., founded in 1867. In the autumn of 1930 the enrollment was 2600. There were 1700 registered in the summer school of the same year. The faculty numbered more than 300. The libraries contained 92,000 volumes. The first unit of the new library building, costing \$300,000, was completed in 1930. Divisions of industrial science, biological science, social science, and education were also established as the nucleus of a graduate school. President, John Roscoe Turner, Ph.D.

WEYLER Y NICOLAU, wé-lér or wä-lér, VALERIANO, MARQUIS OF TENERIFFE. A Spanish general of German descent, died in Madrid, Oct. 20, 1930. He was born in Palma, Mallorca, Sept. 17, 1839, and on entering the army served in the Santo Domingo expedition of 1863. In 1873 he returned to Spain to serve against the Carlists. He was Governor-General of the Canaries (1878-83), of the Balearics (1883-86), and in 1889 became Captain General of the Philippines. After serving as Provincial Governor of Catalonia, in 1886 he was sent to Cuba, to suppress the revolution, succeeding Martínez Campos. His ruthless

policy in insurgent areas, combined with the concentration of noncombatants in camps where hundreds died of starvation and disease, aroused strong protests in the United States, and he was recalled in 1897. In 1900 he was made Captain General of Madrid. He was Minister of War in the Sagasta cabinet, which held office from March, 1901, to December, 1902, and in the cabinet of Montero Rios during 1905-06. As Captain General of Catalonia in 1909, he handled with skill the situation developing after the Ferrer riots.

WHALING. See POLAR RESEARCH.

WHEAT. The world's wheat situation in 1930 was characterized by surplus supplies and generally low price levels. During the commercial season ended July 1, 1930, as pointed out by the U. S. Department of Agriculture, consumption had exceeded production so that the stocks of wheat on hand at that date were about 100,000,000 bushels less than the stocks on hand July 1, 1929. In view of a reduced carryover, very low prices and a prospective greater use of wheat for feeding purposes as a result of a shortage in feed grain crops in many countries, a large consumption of wheat from the 1930 crop was predicted. The consumption of wheat in the United States and Europe together during the commercial year 1930-31 was forecast as probably greater by 250,000,000 bushels than the consumption of the past season. A survey by the Department of Agriculture indicated the use of 236,000,000 bushels for feeding livestock as compared with 90,000,000 bushels used for live-stock food from the crop of 1929.

The total production of 43 countries reporting to the International Institute of Agriculture, Rome, was estimated at 3,422,360,000 bushels, or 6 per cent above the yield of 1929 and 6.3 per cent above the annual average for the five years 1924-28. The figures included estimates for the crop year 1930-31 for Australia. The yields for the leading countries outside of the United States were given as follows: India, 386,512,000 bushels; Canada, 395,854,000 bushels; Hungary, 210,815,000 bushels; Australia, 214,780,000 bushels; Spain, 145,991,000 bushels; and Germany, 131,379,000 bushels. The acreage in European countries was increased in general but the total area for the 43 countries reporting was only 1.3 per cent above the area of 221,839,000 acres in 1929. The production of Argentina for the crop year 1929-30 was reported as 137,434,000 bushels and that of Chile as 37,052,000 bushels. While no yields for the Soviet Republics either in Europe or Asia were recorded, the area in 1930 was given as 58,891,000 acres, an increase of 0.7 per cent over the area in 1929.

The production of wheat, including winter and spring wheat, in the United States in 1930 as estimated by the Department of Agriculture was 850,965,000 bushels compared with 809,176,000 bushels the preceding year. With the stocks of wheat on hand from the previous year the total supply for the commercial year 1930-31 was placed at about 1,126,000,000 bushels, or 70,000,000 bushels more than the total supply of the preceding season. The area harvested in 1930 was 59,153,000 acres, and the year before 61,464,000 acres, the respective average yields per acre being 14.4 bushels and 13.2 bushels. On the basis of the December 1 farm price of 60.8 cents per bushel the total value of the 1930 crop was \$517,407,000. The corresponding value of the 1929 crop at \$1.042 per bushel was \$843,030,000.

The harvested area of winter wheat, 38,608,000 acres, mainly owing to a greater abandonment was about 4 per cent below that of the previous year but the average yield per acre, 15.7 bushels, was 1.3 bushels above the acre yield of 1929. The total winter wheat production, 604,337,000 bushels, was about 5 per cent above the 1929 production of 576,213,000 bushels. The average farm price on December 1, 1930, was 64.3 cents per bushel as compared with \$1.065 per bushel the year before. Of the 39 States reporting winter wheat production, the leading ones and their yields were as follows: Kansas, 158,422,000 bushels; Nebraska, 70,267,000 bushels; Illinois, 37,584,000 bushels; Oklahoma, 33,696,000 bushels; Indiana, 28,998,000 bushels; and Ohio, 28,640,000 bushels.

The production of spring wheat other than durum wheat in 1930 was estimated at 100,963,000 bushels compared with 178,773,000 bushels in 1929. After allowing for abandoned acreage the area harvested was placed at 15,902,000 acres, about the same as the year before. The average yield per acre was 12 bushels in 1930 and 11.3 bushels in 1929 and the December 1 farm price 54.3 cents and \$1.016 per bushel for the two years respectively. In both years the crop suffered from drought. The yields in the leading States of 25 reporting spring wheat production were as follows: North Dakota, 64,087,000 bushels; Montana, 28,033,000 bushels; South Dakota, 22,504,000 bushels; Washington, 19,825,000 bushels; Minnesota, 15,105,000 bushels; and Idaho, 14,703,000 bushels.

The durum wheat production in 1930 as estimated was 55,665,000 bushels compared with 54,190,000 bushels in 1929. The area harvested, 4,643,000 acres, was about 16 per cent smaller than the area of the year before but the average yield per acre, 12 bushels, was about 22 per cent above the relatively low yield of 9.8 bushels of the preceding year. The average farm price on Dec. 1, 1930, was only 45.1 cents per bushel, or 43 cents below the corresponding price in 1929. On this basis the total value of the crop declined from \$47,762,000 in 1929 to \$25,113,000 in 1930.

The leading States, and their yields, of 42 reporting wheat production were as follows: Kansas, 158,862,000 bushels; North Dakota, 99,807,000 bushels; Nebraska, 73,275,000 bushels; Illinois, 41,952,000 bushels; South Dakota, 40,840,000 bushels; and Washington, 40,065,000 bushels.

During the fiscal year ended June 30, 1930, the United States exported 92,175,000 bushels of wheat and 13,009,000 barrels of flour. The imports for the year were 12,948,000 bushels of wheat and 334,000 pounds of flour. A survey made by the Department of Agriculture indicated an area of 42,042,000 acres of winter wheat sown for the 1931 crop, a reduction of 1.1 per cent from the area sown in the fall of 1930. In another study the Department determined that the cost of producing a bushel of wheat in 1929 was \$1.24 and of an acre \$21.07. It was also pointed out by the same authority that in the period 1920-1928 more than 48,000 harvester-threshers or combines were sold in the United States.

For Australian wheat pool bill, see AUSTRALIA, under *History*.

WHITE HOUSE CONFERENCE ON CHILD HEALTH AND PROTECTION. See CHILD WELFARE; EDUCATION IN THE UNITED STATES.

WHITE PINE BLISTER RUST. See FORESTRY.

WILEY, HARVEY WASHINGTON. An American chemist, died in Washington, D. C., June 30, 1930. He was born in Kent, Ind., Oct. 18, 1844, and was graduated from Hanover (Ind.) College in 1867, from the Indiana Medical College in 1871, and from Harvard University in 1873. He was professor of Latin and Greek at Butler College, Indianapolis, from 1868 to 1870, and professor of chemistry at Purdue University and State chemist of Indiana from 1874 to 1883. In 1883 he became chief of the division of chemistry in the U. S. Department of Agriculture, where by his energetic enforcement of the Pure Food and Drugs Act of 1906 he at times aroused much antagonism among manufacturers. Fully exonerated after Congressional investigation, Dr. Wiley resigned in 1912 and thereafter continued advancing the cause of pure food by frequent lecturing and writing, conducting the department of foods, sanitation, and health in *Good Housekeeping* from 1912 until 1930. He was professor of agricultural chemistry at George Washington University, with which he had been associated since 1899. His works include: *Songs of Agricultural Chemists* (1892); *Principles and Practice of Agricultural* (3 vols., 1894-97; 2d ed., 1909-11); *Foods and Their Adulterations* (1907-11); *1001 Tests* (1914); *The Lure of the Land* (1915); *Not by Bread Alone* (1915); *Beverages and Their Adulterations* (1919); *Health Readers for Schools* (1919); and *Harvey W. Wiley, An Autobiography* (1930).

WILHELMINA, QUEEN OF THE NETHERLANDS. See NETHERLANDS, THE, and CELEBRATIONS.

WILKINS, MARY E. See FREEMAN, MRS. MARY ELEANOR WILKINS.

WILKIN'S POLAR EXPEDITION. See POLAR RESEARCH.

WILLIAM AND MARY, COLLEGE OF. An institution for the higher education of men and women in Williamsburg, Va.; founded in 1693. The enrollment for the autumn of 1930 was 1431, of whom 757 were men and 675 women; there was also an enrollment of 1649 students in extension classes in Norfolk, Richmond, and Newport News. The registration for the 1930 summer session was 729. There were 72 members on the faculty. The productive funds amounted to \$332,557, and the income for the year was \$1,317,000. The library contained 70,000 volumes. During 1929-30, in connection with the Williamsburg restoration financed by John D. Rockefeller, Jr., and others, the main building of seventeenth-century architecture, after the style of Sir Christopher Wren, was restored at a cost of \$400,000. President, Julian A. C. Chandler. Ph.D.

WILLIAMS, FRANK MARTIN. An American engineer, died in Albany, N. Y., Feb. 20, 1930. He was born in Durhamville, N. Y., Apr. 11, 1873, and was graduated from Colgate University in 1895 and from the law department of Syracuse University two years later. Admitted to the New York bar in 1897, he practiced law in Oneida, N. Y., until 1900, engaging at the same time in engineering and contracting. In 1900 he entered the engineering department of New York State, becoming in 1909-10 state engineer and surveyor. He was appointed in 1923 consulting engineer to the New York and New Jersey State Bridge and Tunnel Commissions on the construction of a vehicular tunnel under the Hudson River from New York to Jersey City. He was also consulting engi-

neer for a number of utility companies in New York State. In 1929 he was appointed by President Hoover to the Inter-oceanic Canal Commission which undertook an investigation of the Nicaraguan Canal project.

WILLIAMS, FRITZ. An American actor, died in New York City, Apr. 1, 1930. He was born in Boston, Mass., Aug. 23, 1865, and was educated at St. John's College, Fordham, N. Y. He first appeared on the stage in Boston in 1879, when he played the part of Sir Joseph Porter in a juvenile production of *H.M.S. Pinafore*. In 1884 he appeared on the New York stage as Anatole in a *Scrap of Paper*. He was a member of the Lyceum Company of New York City from 1889 to 1896. His later plays include *Hoity-Toity*, with Weber and Fields (1901); *A Japanese Nightingale* (1903); *Come to Bohemia* (1916); *Rain* (part of Dr. McPhail, 1922-24); and *Spread Eagle* (first London appearance, 1928). At the time of his death, he was playing the rôle of the American ambassador in *Berkeley Square*, which was produced in New York.

WILLIAMS COLLEGE. A nonsectarian college for men in Williamstown, Mass., founded in 1793. The enrollment for the autumn of 1930 totaled 809, including 7 graduate students, 183 seniors, 189 juniors, 200 sophomores, and 230 freshmen. There were 81 members on the faculty, of whom 13 were new appointees. The productive funds of the college amounted to \$7,188,215, and the income for the year ending June 30, 1930, was \$808,659. The library contained approximately 133,000 volumes. President, Harry Augustus Garfield, LL.D. See POLITICS, INSTITUTE OF.

WILLINGDON, VISCOUNT. For his appointment as Viceroy of India, see INDIA under *History*.

WINDWARD ISLANDS. The name applied to a group of British-owned islands in the West Indies, comprising Grenada, St. Vincent, and St. Lucia, together with the Grenadines (which are one-half under Grenada and one-half under St. Vincent); forming the eastern limit of the Caribbean Sea between Martinique and Trinidad. (See articles on the islands mentioned above.) Each of the islands is under its own government, but they are united for certain common purposes and have a court of appeals. Governor and commander-in-chief in 1930, Sir Frederick Seton James. For effects of sugar depression, see GREAT BRITAIN under *History*.

WINKLER, MAX. An American philologist and educator, died in Ann Arbor, Mich., Mar. 14, 1930. He was born in Austria Sept. 4, 1866, and was brought to the United States in childhood, his parents settling in Cincinnati, Ohio. After his graduation from Harvard in 1889 he was assistant professor of modern languages for a year at the University of Kansas. He then became instructor in German at the University of Michigan, where two years later he received the Ph.D. degree. In 1895 he became assistant professor; in 1900, acting professor; and in 1902, professor of German language and literature. He edited Lessing's *Emilia Galotti* (1895); Goethe's *Egmont* (1898); Schiller's *Wallenstein* (1901); and Goethe's *Iphigenie*.

WIRELESS TELEGRAPHY AND TELEPHONY. See RADIO COMMUNICATION.

WISCONSIN. POPULATION. According to the Fifteenth Census, the population of the State on Apr. 1, 1930, was 2,939,006. The population on Jan. 1, 1920, was 2,632,067. The capital, Madison.

AGRICULTURE. The following table presents the acreage, production, and value of the principal crops in 1929 and 1930:

| Crop | Year | Acreage | Prod. Bu. | Value |
|-------------|------|-----------|-------------------------|--------------|
| Hay | 1930 | 3,627,000 | 6,001,000 ^a | \$74,534,000 |
| | 1929 | 3,653,000 | 7,685,000 ^a | 79,631,000 |
| | 1930 | 2,035,000 | 79,365,000 | 57,148,000 |
| Corn | 1929 | 1,995,000 | 79,800,000 | 66,234,000 |
| | 1930 | 2,470,000 | 108,680,000 | 35,864,000 |
| | 1929 | 2,470,000 | 85,215,000 | 37,495,000 |
| Potatoes .. | 1930 | 244,000 | 18,056,000 | 14,445,000 |
| | 1929 | 220,000 | 20,240,000 | 24,288,000 |
| | 1930 | 703,000 | 26,011,000 | 13,266,000 |
| Barley ... | 1929 | 703,000 | 22,848,000 | 14,851,000 |
| | 1930 | 43,000 | 52,900,000 ^b | 7,935,000 |
| | 1929 | 38,500 | 48,125,000 ^b | 7,219,000 |
| Rye | 1930 | 191,000 | 2,960,000 | 1,332,000 |
| | 1929 | 185,000 | 2,960,000 | 2,634,000 |
| | 1930 | 109,000 | 2,331,000 | 1,692,000 |
| Wheat | 1929 | 105,000 | 2,190,000 | 2,409,000 |

^a Tons. ^b Pounds.

Farms in the State numbered 182,028 in 1930, having declined from 193,155 in 1925 and 189,295 in 1920.

MINERAL PRODUCTION. Although no one branch of the mineral industry of the State predominated, the highest yield was that of stone, of which the quantity produced was 3,313,740 short tons in 1928 and 3,104,240 in 1927; the value of the product was \$5,516,067 for 1928 and \$5,181,631 for 1927. The iron mines of the State sold to furnaces 1,394,371 long tons of iron ore in 1928 and 937,935 in 1927; by value, \$3,700,797 for 1928 and \$2,567,078 for 1927. The sand and gravel industry was important in point of value, the production of 1928 being valued at \$3,680,420. There were mined in 1929, 16,986 short tons of zinc, as against 18,417 in 1928; by value, \$2,242,152 for 1929 and \$2,246,874 for 1928. The clay products of the State totaled \$1,007,826 for 1928; for 1927, \$1,228,338. The entire mineral product of the State totaled \$20,889,395 for 1928; for 1927, \$21,776,847.

FINANCE. State expenditures in the year ended June 30, 1929, as reported by the U. S. Department of Commerce, were: for maintenance and operation of governmental departments, \$35,201,753 (of which \$9,098,567 was for local education); for interest on debt, \$109,459; for permanent improvements, \$16,099,895; total, \$52,011,107 (of which \$18,371,686 was for highways, \$4,091,840 being for maintenance and \$14,279,846 for construction). Revenues were \$54,100,856. Of these, property and special taxes formed 38.9 per cent; departmental earnings and remuneration to the State for officers' services, 9.2; sales of licenses, 41.0 (including taxes of \$6,896,080 on sales of gasoline). The State's funded debt outstanding, gross and net alike, on June 30, 1929, was \$1,463,700. On property bearing an assessed valuation of \$6,559,298,898 were levied in the year State taxes of \$10,788,008.

TRANSPORTATION. The total number of miles of railroad line under operation on Jan. 1, 1930, was 7333.15. No additional construction of line or trackage in 1930 was reported.

EDUCATION. The work of surveying the whole situation of public education in the State was carried on throughout the year by an interim committee of the Legislature. The number of persons of school age in Wisconsin in the year 1929-30 was reported as 880,661. There were enrolled in the public schools 528,130 pupils. Of these, 417,622 were in common schools or elementary grades, and 110,508 were in high schools. Expenditures

for public-school education in 1929 totaled \$55,525,318. The yearly salaries of teachers averaged \$1500.

CHARITIES AND CORRECTIONS. Under the State laws applying in 1930 control over State institutions and other activities for the dependent and delinquent was highly centralized. The central organization, the State Board of Control, was a corporate body of three members, one necessarily a woman. Members served six years and were appointed one every two years. The entire number of the State's institutional inmates was 8039. It considerably exceeded the institutions' collective rated capacity of 6606, the State Prison being particularly overcrowded. The county asylums for the chronic insane held an aggregate of 7622 other inmates; the county sanatoria for the tubercular, another 1420.

POLITICAL AND OTHER EVENTS. Governor Kohler, accused by some of his political opponents of having exceeded the lawful limit of \$4000 in his expenditures during his campaign for the governorship, was indicted and placed on trial in Sheboygan County on a charge of corruption. It was submitted in his defense that certain of the campaign expenditures charged to have been made by him had actually been made in good faith by persons among his relatives and close associates. He was acquitted by jury verdict on May 15. Kohler sought a renomination from the Republican party. At the State Republican primary election on September 16 he was defeated for the candidacy for governor by Philip F. LaFollette, son of the late Senator LaFollette.

The Wisconsin board of real-estate brokers, having power to issue licenses to sell real estate, refused a license in January to the Progreso Development Company, a concern to sell land in Texas. This refusal was sustained by a court in Dane County. The Texas authorities took the matter up and the Legislature of Texas passed a boycott resolution directed against the products of Wisconsin. The State Supreme Court reversed on June 23 the anti-license decision and held it obligatory for the Wisconsin board to issue the desired license.

The State statute against the use of daylight-saving time was invoked in the spring to prevent numerous business houses' and factories at Milwaukee from adopting the summer time schedule. A number of labor organizations joined the opposition. A temporary injunction against the practice was secured, but was vacated on June 28 by a Circuit Court decision holding that the statute applied only to the agencies of the State and its subdivisions. See CHILD LABOR.

ELECTIONS. Philip LaFollette, running on the Republican ticket, was elected Governor, receiving 369,756 votes to 164,897, as unofficially reported, for Charles Hamersley, Democrat. Ten Republicans and one Democrat were elected to the House of Representatives, the Republicans losing one seat in the existing solid delegation. Republican control of both branches of the State Legislature was preserved. A proposed amendment of the State constitution to give the Governor the power to veto individual items in appropriation bills while approving the remainder of such bills was ratified by popular vote.

OFFICERS. Governor, Walter J. Kohler; Lieutenant-Governor, Henry A. Huber; Secretary of State, Theodore Dammann; State Treasurer, Scott Levitan; Attorney-General, John W. Reynolds; Superintendent of Schools, John Callahan.

JUDICIARY. Supreme Court: Justices, Marvin B. Rosenberry, Walter C. Owen, Chester A. Fowler, Oscar M. Fritz, John D. Wickhem, George B. Nelson, Edward T. Fairchild.

WISCONSIN, UNIVERSITY OF. A State institution of higher education in Madison, Wis.; founded in 1848. The enrollment for the autumn of 1930 was 9401, distributed as follows: Letters and science (including the experimental college and music), 5998; engineering, 1143; agriculture (including home economics), 781; law, 309; medicine, 309; nursing, 119; library, 38; school of education (previously included in letters and science), 704. For the 1930 summer session the enrollment totaled 5171, distributed as follows: Letters and science (including music and nursing), 4423; engineering, 230; agriculture (including home economics), 274; law, 117; medicine, 76. The faculty numbered 1339, including 317 new members. The endowment as of June 30, 1930, was \$1,054,669, while the income for 1929-30, exclusive of gifts, amounted to \$8,501,824. The library contained 846,500 volumes and 457,000 pamphlets. A school of education of coordinate college rank was organized to give a B.S. degree in education. Curricular changes in the college of letters and science provide for the giving of a certificate of junior graduate in liberal studies on the satisfactory completion of the first two years, and for the exclusion of unqualified students from the last two years of the course. An athletic field house and a children's orthopedic hospital were built during the year. President, Glenn Frank, Litt.D., L.H.D., LL.D.

WOLF, LUCIEN. An Anglo-Jewish leader, died Aug. 23, 1930, in London where he was born Jan. 20, 1857. Educated at the Athenée Royale in Brussels and in Paris, he achieved distinction as a journalist, acting as sub-editor and editorial writer for the *Jewish World* from 1874 to 1893 and as editor from 1906 to 1908. He was also assistant editor of the *Public Leader* during 1877-78, foreign editor of the *Daily Graphic* during 1890-1909, and London correspondent of *Le Journal*, Paris, during 1894-98. In addition to serving eight times as president of the Jewish Historical Society of England, he represented the Anglo-Jews at the Paris Peace Conference in 1919, where he obtained the Minorities Treaties with Poland, Rumania, Czechoslovakia, Jugoslavia, and Greece, protecting the rights of Jews and other nationals in those countries. He was also founder of and delegate to the advisory committee of the High Commissioner for Refugees of the League of Nations. At the time of his death he was secretary of the Jewish Joint Foreign Committee of the Anglo-Foreign Association. His publications include: *Diplomatic History of the Jewish Question* (1919); and *The Myth of the Jewish Menace in World Affairs* (1921).

WOMAN'S CHRISTIAN TEMPERANCE UNION, NATIONAL. An all-partisan and all-sectarian movement which has as its purpose the protection of the home through the abolition of the liquor traffic. It is comprised of 10,000 local unions with an approximate membership of 600,000, and is organized in every State, territory, and dependency of the United States, including the District of Columbia, Alaska, Hawaii, Porto Rico, the Philippines, and the Virgin Islands. The Young People's Branch for both young men and women who are united for total abstinence and law observance, and the Loyal Temperance Legion are under its supervision.

The national W. C. T. U. maintains a publishing house from which in the year 1930, 20,000,000 pages of literature were sent out. The official organ is *The Union Signal*; *The Young Crusader* is published for boys and girls. The 1930 national convention was held in Houston, Texas, November 14-19. The officers for 1930-31 were: President, Mrs. Ella A. Boole; vice-president-at-large, Mrs. Ida B. Wise Smith; corresponding secretary, Mrs. Anna Marden DeYo; treasurer, Mrs. Margaret C. Munns; recording secretary, Mrs. Sara H. Hoge; assistant recording secretary, Mrs. Nelle G. Burger. A legislative headquarters is maintained at the Hotel Driscoll, Washington, D. C., but the national headquarters and administrative offices are in Evanston, Ill.

WOMAN SUFFRAGE. See JAPAN, TURKEY, and SOUTH AFRICA under *History*.

WOMEN, NATIONALITY OF. See INTERNATIONAL LAW.

WOMEN IN INDUSTRY. MARRIED WOMEN. A report issued by the U. S. Women's Bureau in 1930 contained the results of a study made of married women seeking employment. The study was confined to an inquiry made among 448 women seeking work in Denver in the summer of 1928. A total of 311 women gave reasons why they were seeking employment. Of these, 281, or 90 per cent, said that economic necessity prompted them to obtain jobs; 10 per cent said they worked as a matter of preference. Of those who worked from necessity, 109, or 42 per cent, were living with their husbands; 149 were widowed, divorced, separated, or deserted; and 23 did not report. Of those women who said they were working as a matter of choice, 22 were living with their husbands, seven were widows, and one did not report marital status. The report found that of the women who worked of necessity a great number were without their husbands' support. Only 78 of the women had some support from their husbands and of these, 12 declared that the husband's earnings were inadequate, and 17 that his work was irregular. Nine reported a desire to help the husband because of some financial emergency.

WOMEN'S BUREAU. The fiscal year ending June 30, 1930, marked the end of the first decade of the work of the Federal Women's Bureau. The annual report of the director of the Women's Bureau indicated that these ten years had seen a considerable expansion in the volume and variety of the Bureau's work as a result of the increased demands made upon it by the public. Miss Mary Anderson stated:

With the number of women workers constantly growing; with striking increase in married women wage earners; with the share of women in family support and economic responsibility assuming greater proportions; with acute problems of employment and unemployment piling up as a result of our machine age; and with the development of more industries and new processes giving rise to new hazards and additional strain to women workers—the task of the Women's Bureau each year becomes more extensive and complicated.

The Bureau has been giving considerable attention to the important question of hours and wages of employed women. There was in process of publication, summarizing the research activities of a number of years, a report furnishing wage data on 100,000 white women and 6000 Negro women employed in 1472 factories, stores, and laundries in 13 States.

LABOR LEGISLATION. The Women's Bureau reported that the regular legislative sessions of the year yielded little in the way of legislation affect-

ing women in industry. The outstanding piece of legislation was the enactment in New York of amendments to the labor law which required in factories and mercantile establishments a weekly half-holiday, if more than eight hours were being worked on any day of the week. Another amendment also forbade overtime in connection with the 48-hour and 6-day week.

NEW YORK STATE. A study made in New York State by the local industrial commissioner's office attempted to ascertain to what extent hours of women in industry were being affected by the prevailing statutes. The law fixes a 48-hour week and a 9-hour day for women employed in factories and in mercantile establishments, and a 9-hour day and a 54-hour week for women employed in restaurants. In addition, women employed as elevator operators and on street railroads are limited to a 9-hour day and a 54-hour week. In view of the fact that these restrictive measures apply only to enumerated groups in the working population, a large number of women in industry are not affected by the statutes. Thus, a tabulation made by the industrial commissioner's office indicated that out of the 1,135,295 women at work in the State, the hours of labor of 771,330 were not affected by law.

The report points out that in the nine main occupational groups into which the census divides all the employed women of the State, there is only one in which a large proportion of the women have their working hours regulated by law. However, 82 per cent of the women in manufacturing industries come under the provisions of the restricted-hour law; 50 per cent of the women in trade are thus affected; only 10 per cent of the women in domestic service are affected; and only one-half of 1 per cent of the women in clerical occupations.

ENGLAND. Previous YEAR BOOKS have pointed out that studies made in the United States indicate that legislative restrictions on the employment of women do not seriously stand in their way of ability to obtain and hold jobs. Studies made by the Federal Women's Bureau of States where statutory restrictions on women in industry are explicit, have amply demonstrated the general character of this conclusion. The British Home Office, in a report issued in 1930, comes to substantially the same conclusion. The report sums up the situation in these words:

Except in a few isolated cases, there is little evidence that they have handicapped women in the past or are handicapping them in the present. On the contrary, the employment of women during the period under review has been steadily progressing. Cases where men are sometimes employed at night at work that is done by women during the day, or in which women have been displaced by men because they cannot be employed in the night shift, are rare; and in view of the strong influences that exist generally against the employment of women at night, it is doubtful whether women would be employed even if the prohibition were removed.

NIGHT WORK IN AMERICAN COTTON MILLS. The Cotton Textile Institute on October 16, in its annual convention, unanimously agreed to the abolition of night work for women and minors under 18 years of age in all the cotton mills of the United States. The beginnings of the programme were to go into effect Mar. 1, 1931, and the entire programme was to be fully carried out within three years. It was apparent from the sentiment of the convention that the programme had the wholehearted support of a large number of cotton mill owners, and the speeches of approval made

indicated a belief that the day capacity of the mills was sufficient to meet the entire demands made on the industry.

WOMEN'S CLUBS, GENERAL FEDERATION OF. An organization founded in 1889 and chartered by act of Congress in 1901 for "the promotion of movements looking toward the betterment of life." In 1930 the general federation was composed of approximately 14,500 clubs in the United States and 70 clubs outside the United States; affiliated with it were 15 national and international organizations. The work, as outlined by the general federation, is conducted through State federations which, in turn, are composed of district and county federations made up of individual clubs. The official publication is *The Clubwoman*. A convention was held in Denver, Colo., June, 1930, at which Mrs. John F. Sippel was reelected president for the ensuing biennial period. At this convention the federation reaffirmed, through resolution, its stand for prohibition, and definitely showed that foremost among its objectives were the promotion of peace and extension of coöperation between rural and urban groups. Headquarters are at 1734 N Street, N. W., Washington, D. C.

WOOD, WOOD PULP. See FORESTRY.

WOODBERRY, GEORGE EDWARD. An American author and educator, died Jan. 2, 1930, in Beverly, Mass., where he was born May 12, 1855. He was graduated from Harvard in 1877 and taught English for a year after graduation at the University of Nebraska. He then joined the staff of *The Nation*, but during 1880-82 was again at the University of Nebraska. From 1882 to 1891, he lived in Beverly, engaged in literary criticism and contributing to the *Atlantic Monthly* and other magazines. He was also for a time literary editor of the *Boston Post*. In 1891, on James Russell Lowell's recommendation, he became professor of comparative literature at Columbia University, and his appointment was a particularly happy one, as he was able to inspire his students by his ideal of beauty and sense of the spiritual value of literature. He resigned this chair in 1904, devoting his time thereafter to lecturing and writing. His popularity as a teacher was attested to by the Woodberry Society, composed of students who had studied under him and organized in his honor in 1905. Amherst and Harvard bestowed on him the Litt.D. degree in 1905 and 1911 respectively, and Western Reserve the LL.D. degree in 1907. He was one of the founders, and a fellow, of the American Academy of Arts and Sciences, a member of the American Academy of Arts and Letters, and an honorary fellow of the Royal Society of Literature, a distinction rarely tendered an American. Among his critical works are: *Edgar Allan Poe* (1885); *Studies in Letters and Life* (1890); *Makers of Literature* (1900); *Nathaniel Hawthorne* (1902); *America in Literature* (1903); *Algernon Charles Swinburne* (1905); *Ralph Waldo Emerson* (1907); *The Appreciation of Literature* (1907); *Great Writers* (1907); *The Life of Edgar Allan Poe* (2 vols., 1909); *Two Phases of Criticism* (1914); *Shakespeare* (1916); and *Nathaniel Hawthorne* (1918). His other books include: *History of Wood Engraving* (1883); *The North Shore Watch and Other Poems* (1890); *Heart of Man* (1899); *Wild Eden* (1900); *The Torch* (1905); *The Inspiration of Poetry* (1910); *Wendell Phillips* (1912); *The Kingdom of All-Souls* (1912); *A Day at Castrogiovanni* (1912); *North Africa and*

the Desert (1914); *The Flight* (1914); *Ideal Passion* (1917); *The Roamer* (1919); and *Collected Essays* (6 vols., 1920-21).

WOODROW WILSON AWARD. See LEAGUE OF NATIONS.

WOOL. The world's wool production in 1930 did not differ greatly from that in 1929, estimates being about 1 per cent greater in the former than in the latter year. The production for the five principal producing countries of the Southern Hemisphere, Australia, New Zealand, Argentina, Uruguay, and the Union of South Africa, was estimated at 1,936,000,000 pounds in 1930 as compared with 1,933,000,000 pounds in 1929. The estimated production in Canada and the United Kingdom was practically the same as in 1929, while in Germany there was a small reduction. The estimated wool shorn in the United States in 1930 was 323,000,000 pounds which was about 6 per cent greater than in the previous year. There was also an increase of about 19 per cent in the sheep slaughter which no doubt increased the production of pulled wool. These states with six other European countries produce about four-fifths of the world's clip, exclusive of Russia and China. No estimates were available for China, but in Russia the number of sheep was estimated at only 89,860,000 compared with 132,759,000 head in 1929, owing to the wholesale destruction large flocks by rich peasants. This may be expected to materially reduce wool production.

Wool production was relatively heavy during 1930 and the previous two years and consequently considerable supplies were available. In 1930 the wool exported from the five principal exporting countries of the Southern Hemisphere increased nearly 30 per cent. This resulted in heavy stocks of foreign and colonial wool in the United Kingdom which at the close of the year were estimated to be 18 per cent above those held in 1929 and 16 per cent above the last four-year average. The large supply naturally reacted unfavorably on the world price level, so that in 1930 wool prices in the United States were from 6 to 12 cents per pound lower than at similar periods in 1929. The price was particularly low toward the close of 1930 when near pre-war levels were reached. In fact there had been an almost steady drop in wool prices since 1928.

Notwithstanding the low price, wool consumption was low in the United States. Consumption of combing and clothing wools was about 20 per cent lower than in 1929 and only 55 per cent of the amount of carpet wool consumed in 1929 was consumed in 1930. Several of the continental European countries took advantage of the prices and imported considerable quantities of wool toward the close of the year. This applied particularly to Germany, France, and the United Kingdom.

In the United States on the other hand wool imports were greatly reduced. During 1929, 175,106,973 pounds of carpet wool were imported but in 1930 this was reduced 93,203,141 pounds. Clothing wool importations did not show as great a decrease, the amount in the respective years being 18,497,782 and 14,698,450 pounds, but the amounts of combing wool decreased from 83,709,708 pounds in 1929 to 54,363,170 pounds in 1930. China, Argentina, Australia, Uruguay, and the United Kingdom continued to send the largest amounts of wool to the United States. The new tariff of 34 cents per pound on clean wool also had its effect on imports. See also AUSTRALIA.

A continued interest was shown by sheep breeders during the year in the fleece production of individual sheep, not only in total production but in the quality of the fleeces. Consequently wool-scouring plants were established at a number of research institutions so that data might be obtained for individual fleeces. Such equipment may also be used in estimating the influence of environmental factors on fleece characteristics.

WORCESTER POLYTECHNIC INSTITUTE. A nonsectarian institution for the technical education of men in Worcester, Mass.; founded in 1865. The enrollment for the autumn of 1930 totaled 663, distributed as follows: Mechanical engineering, 176; civil engineering, 92; electrical engineering, 130; chemistry, 73; general science, 6; and freshmen, 186, all of whom took the same course of study. The faculty numbered 70. The productive funds of the institute amounted to \$3,060,781, and the income for the year was \$325,826. There were 23,500 volumes in the library. President, Ralph Earle, D.Sc., D.Eng., LL.D., Rear Admiral, U. S. N., ret.

WORKMEN'S COMPENSATION. OCCUPATIONAL DISEASES. The continued extension of occupational disease lists in existing workmen's compensation laws has been referred to in earlier YEAR BOOKS. The process has been going on for ten years and in that time seventeen States and territories have come to include occupational diseases as causes for compensation. These are the following: California, Connecticut, District of Columbia, Hawaii, Illinois, Kentucky, Massachusetts (by court decision), Minnesota, New Jersey, New York, North Dakota, Ohio, Porto Rico, Philippines, Wisconsin, and the United States under the Federal Employees' Compensation Act and the Longshoremen's Act. The devices employed are: (1) To list a specific number of diseases; (2) to include all occupational diseases under a blanket provision; and (3) to substitute the word "injuries" for the word "accidents" in the compensation codes. In the first group are to be found the following States: Minnesota, listing 23 diseases; New Jersey, 10; New York, 23; Ohio, 18; Porto Rico, 15. The following States have a blanket provision: California, Connecticut, North Dakota, and Wisconsin. The following have substituted the word "injury" for "accident": District of Columbia, Hawaii, Massachusetts, Philippine Islands, and the United States, in the Federal Civil Employees' and Longshoremen's Laws.

It is interesting to note to what extent workmen's compensation was being employed to cover occupational diseases. Thus, in Wisconsin, whose law has a blanket provision, over a period of eight years there were 2569 cases or an average of 321 cases per year. This was less than 1 per cent of the physical industrial accident cases. The total compensation awarded to all these cases for eight years was \$473,921, and the medical care cost was \$105,104, making an average indemnity cost of \$185 per case and an average medical cost of \$41 per case. The experiences of New York State, whose law covers 23 listed diseases, for the year ending Jan. 30, 1929, were as follows: 345 awards were made for occupational diseases which represented one-third of 1 per cent of the total number of compensated cases for that year. The compensation was \$112,000 for these 345 cases, making an average of \$325 per case. There were included five deaths from lead poisoning and one permanent total disability due to the same cause.

NEW YORK STATE. The accompanying table indicates the number and cost of compensated accidents in New York State, by causes for the fiscal year 1928-29. The number of compensable cases in New York State had been on the increase over three years. Thus, it will be noted that in 1928-29 there was a total of 100,462 cases as compared with 93,565 in 1927-28 and 98,984 in 1926-27. In the same way the average amount of compensation granted per case increased, too. Thus in 1928-29 the average amount of compensation was \$320 as compared with \$299 in 1927-28 and \$285 in 1926-27. This was largely due to the fact that the compensation cost in 1928-29 was increased because of the raising of the maximum weekly compensation rate from \$20 to \$25 during the period of total disability.

the United States, there was a total of 18,517 injuries. The total number of claims filed was 6542, of which 198 were death claims. The Post Office Department reported the largest number of injuries, the War Department came next, and the Navy Department third. The Longshoremen's Act in the fiscal year ending June 30, 1929, was in the second year of its operation. The number of injuries reported during this period was 38,052, of which 183 resulted in fatalities. Of the total number of cases 18,765 were temporary total disabilities, and 619 were permanent partial disabilities. The third act, that is to say, the Workmen's Compensation Act for the District of Columbia, for the first year of its operation (year ending June 30, 1929), resulted in the reporting of 14,295 injuries, of which 59 were fatal.

COMPENSATED ACCIDENTS IN NEW YORK STATE, YEAR ENDING JUNE 30, 1929

| CAUSES | Number of cases | Time lost (weeks) | Compensa- tion paid | Average amount paid per case |
|--|--------------------|-------------------------|---------------------------|---------------------------------------|
| Handling objects and tools | 36,101 | 445,822 | \$6,865,248 | \$190 |
| Falls of workers | 19,197 | 621,346 | 7,894,178 | 411 |
| Mechanical apparatus (machinery, conveyors, etc.) | 15,402 | 510,461 | 6,754,845 | 439 |
| Vehicles | 8,908 | 481,776 | 4,537,585 | 509 |
| Falling objects | 6,258 | 188,781 | 2,113,989 | 338 |
| Dangerous and harmful substances | 5,442 | 222,948 | 2,066,070 | 380 |
| Stepping on and striking objects | 4,718 | 47,397 | 809,955 | 129 |
| Other or indefinite | 4,436 | 104,401 | 1,280,945 | 289 |
| Total, all causes | 100,462 | 2,622,932 | \$32,122,815 | \$320 |

QUARRY ACCIDENTS. A report issued by the Federal Bureau of Mines for the calendar year 1928 showed that 119 quarry workers were killed and 10,568 were injured. This compares with 182 killed for 1911-1915 (annual average) and 7437 injured. It is interesting to compare these injuries and deaths on the basis of index figures. The death rate per 1000 for 300 day workers was 1.46 as compared with 1.63 in 1927 and 2.19 as the average for 1911-1915. Similarly the injury rate was 129.95 in 1928 as compared with 162.92 in 1927 and 89.39 in 1911-1915 (annual average). The principal causes of fatal accidents inside the quarries were falls or slides of rock, falls of persons, machinery, explosives, and haulage. One may compare the fatality rates of quarries with metal mines and coal mines on the basis of rates per 1000 for 300 day workers. In 1928 in quarries the rate was 1.46; in the metal mines it was 2.50; and in the coal mines it was 4.64. In the first two groups safety campaigns that had been waged in these industries had apparently met with some success in view of the fact that fatality rates show sizable declines since 1911. In the case of the coal miners, however, the rate had not seriously decreased over the seventeen years. Thus, in 1911, the fatality rate was 4.97.

ENGLAND. In 1928 there was a total of 464,220 compensation cases in this country, of which 2735 were cases of fatality. The following seven major industries, viz., shipping, factories, railways, docks, mines, quarries and construction work, were covered. A total of \$31,427,548 was paid out as compensation. Of this amount \$3,345,951 was paid out in fatal cases.

FEDERAL EXPERIENCES. A report was issued in 1930 by the U. S. Employees Compensation Commission covering the operations of the three Federal workmen's compensation acts whose administration was under the supervision of this body. The report showed that during the first nine months of 1929, as regards civil employees of

WORLD AGRICULTURAL CENSUS, WORLD CROPS, ETC. See AGRICULTURE.

WORLD ALLIANCE FOR INTERNATIONAL FRIENDSHIP THROUGH THE CHURCHES. See INTERNATIONALISM.

WORLD CONFERENCE ON FAITH AND ORDER. See INTERNATIONALISM.

WORLD COURT. On Jan. 16, 1930, the Council of the League of Nations asked the Court for an advisory opinion as regards the interpretation of certain provisions in the Convention concluded at Neuilly on Nov. 27, 1919, between Bulgaria and Greece, and relating to reciprocal emigration. The purpose of this application, submitted at the request of the Mixed Commission set up under the terms of the Neuilly Treaty, was to obtain an interpretation of the provisions relating to "communities."

The Court delivered an unanimous opinion on the question of "communities" on July 31. As regards the principles governing the interpretation of the Convention, the Court observed that the Convention was closely related to the general body of measures designed to secure peace by the protection of minorities, the particular aim of the Convention being to eliminate or reduce the centres of irredentist agitation by the reciprocal and voluntary emigration of the minorities in the two countries. To facilitate and stabilize emigration, the Convention was designed to spare the persons concerning the material losses normally involved by their emigration, whether in the future or the past. Without this, the general purpose of the Convention would have been compromised. The benefit of the clauses designed to protect private property was, however, only extended to individuals and not to associations of persons. But bearing in mind the benefits derived in the East by individuals from uniting into "communities" the Convention allows them, when emigrating, to take away the movable property and the value of the immovable property of com-

munities dissolved as a result of their emigration.

The Secretary-General of the League notified the Registrar of the definitive acceptance by Lithuania, for five years as from Jan. 14, 1930, of the Optional Clause of the Court Statute. Lithuania was previously bound by this clause for a period which expired on May 16, 1927. The acceptance of this obligation by Lithuania brought to 20 the number of states between whom the Optional Clause of the Court's Statute was in force; it had been signed by 42 states. The Protocol concerning the revision of the Court Statute and the Protocol concerning the accession of the United States to the Statute was signed by the Albanian government on January 21. The first of these instruments had now been signed by all the states entitled to do so except Abyssinia and Cuba. The second had been signed by all except Abyssinia. A special agreement entered into on Apr. 19, 1928, in regard to the case of the Serbian loans issued in France, provided that, after the Court's decision, the Yugoslav government and the bondholders' representatives were to enter into negotiations for the conclusion of an arrangement.

Under the terms of the instruments signed at The Hague on January 12, at the conclusion of the second Reparations Conference, the Court was asked to appoint two new members to each of the Hungaro-Rumanian, Hungaro-Czechoslovak and Hungaro-Yugoslav Mixed Arbitral Tribunals. Provision was made in January for a right of appeal to the Court in respect of certain categories of decisions to be given by the Mixed Arbitral Tribunals set up between Hungary, on the one hand, and Rumania, Czechoslovakia and Yugoslavia on the other.

At the beginning of February, the President of the United States appointed Judge Charles Evans Hughes as Chief Justice of the Supreme Court of the United States. After his confirmation by the Senate, Mr. Hughes, on February 14, sent his resignation as a Member of the Permanent Court to the President of the Court and to the Secretary-General of the League. In the same month, the Union of South Africa, Austria, Belgium, Great Britain, and India deposited with the League Secretariat their instruments of ratification of the Protocol of Sept. 14, 1929, concerning the revision of the Statute, and the Union of South Africa, Austria, Great Britain, and India deposited their instruments of ratification of the Protocol concerning the accession of the United States to the Protocol of Signature of the Court Statute. Great Britain, India, and Latvia deposited the instruments ratifying their acceptance of the Optional Clause establishing the so-called compulsory jurisdiction of the Court. The number of members or states between which the Clause was now in force was 24. The number of declarations of acceptance was 41.

At its tenth session, the Assembly considered a proposal of the Finnish delegation that means should be studied for giving the Court jurisdiction over disputes as to whether an arbitral tribunal in pronouncing an award had acted without jurisdiction or exceeded its jurisdiction. A committee met at Geneva from May 19 to 22, to study the question. Its report stated that any general proposals put forward should be limited to awards in disputes with regard to which the parties were in conflict as to their respective rights, although particular agreements might of course be made to give the Court jurisdiction in regard to awards not falling under this definition. The

committee proposed a third ground for recourse to the Court, namely, a fundamental fault in the procedure of the arbitral tribunal.

The committee suggested three methods by which the Assembly could act for the purpose of bringing within the jurisdiction of the Court the question whether an arbitral award need not be executed. Under the first method, the Assembly would recommend the insertion in arbitration treaties, arbitration clauses and, where appropriate, agreements for submitting particular questions to arbitration, of draft provisions to be annexed to the Assembly's recommendation. Under the second, the Assembly would open to accession by all states a protocol of which a draft was submitted by the Committee. The third method would consist in the Assembly adopting a resolution recognizing that a member of the League which asserted the nullity of an arbitral award on one of the grounds in question must propose to the other party the conclusion of a special agreement submitting the question to decision by the Permanent Court.

By an Order made on Aug. 19, 1929, in the case of the Free Zones of Upper Savoy and the District of Gex, the Court granted to the French and Swiss governments a time-limit, expiring on May 1, 1930, to settle between themselves, under such conditions as they might consider expedient, the "new régime" for the territories contemplated in the Treaty of Versailles. On March 28 the Swiss Federal Council informed the Registry of the Court that it was impossible to arrive at a settlement before May 1 and on April 29, the French government reported to the same effect. Failure to reach an agreement within the time fixed threw the case again before the Court, and on September 20 the Court convoked an extraordinary session, opening October 22, to dispose of the question. The Court gave its second decision in the case December 6. In effect, the decision reiterated the Court's first ruling in urging the two countries to settle the matter between themselves. Notice was given that the Court would make a final ruling on July 31, 1931, which would either include a settlement agreed to by the two governments or a decision upon the legal points involved.

On May 15, the Council decided to seek the advisory opinion of the Court on the question: "Is the special legal status of the Free City of Danzig such as to enable the Free City to become a member of the International Labor Organization?" The Court replied in the negative on August 26.

As concerns the protection of the Free City and the guarantee of its constitution, the Court held that they would not prevent it from becoming a member of the Labor Organization. With regard to the right of Poland to conduct the foreign relations of Danzig, the Court held that a proportion of the activities of the Labor Organization fell within the category of foreign relations, e.g., the ratification of draft conventions or the filing of a complaint against a member for failure to comply with the provisions of a convention; in all such cases, therefore, Poland's consent to any action by the Free City would be necessary and could be withheld. The Court considered that the Free City of Danzig could not participate in the work of the Labor Organization until some arrangement had been concluded between it and Poland insuring that no objection would be made by this state to any action of the Free City as a member of the Organization. The

Court further held that if the arrangement involved a modification of the special legal status of the Free City, it might be subject to a veto by the authorities of the League. The immediate ground for the negative reply given by the Court to the question is the absence of such agreement.

The opinion was adopted by six votes to four. Three of the members of the minority, namely, M. Anzilotti (President), M. Huber (Vice-President), and M. Loder (former President) stated their dissent, M. Anzilotti and M. Huber filing separate opinions, which were attached to the Court's opinion.

On Sept. 25, 1930, the Assembly and the Council of the League of Nations, voting concurrently, elected as members of the Permanent Court of International Justice, for the period from Jan. 1, 1931, to Dec. 31, 1939, the 15 following candidates: Mine-ichiro Adachi (Japan); Dionisio Anzilotti (Italy); Henri Fromageot (France); Sir Cecil Hurst (Great Britain); Rafael Altamira y Crevea (Spain); Willem Van Eysinga (Netherlands); J. Gustavo Guerrero (Salvador); Baron Rolin-Jaequemyns (Belgium); Frank B. Kellogg (United States); Count Michael Rostworowski (Poland); Antonio S. de Bustamante (Cuba); Wang Chung-hui (China); Demetro Negulesco (Rumania); Walther Schücking (Germany); and Francisco José Urrutia (Colombia). The deputy judges elected were M. Erich, M. Da Matta, M. Novakavotch, and M. Redlich.

On Sept. 15, 1930, the President of the Government of the Grand Duchy of Luxemburg signed a declaration on behalf of the Grand Duchy accepting the Court's compulsory jurisdiction. This declaration, which is not subject to ratification, became effective as from the date of signature. It replaces that made in 1920 on behalf of the same state. The Albanian government, on Sept. 17, 1930, signed at Geneva a declaration of acceptance of the Court's compulsory jurisdiction. On the same day it deposited the instrument of ratification in respect of this declaration. The Salvadorean government which in 1920 signed the Optional Clause, but whose signature, failing subsequent ratification, never became effective, deposited, on Aug. 29, 1930, the instrument of ratification in respect of the Protocol of Dec. 16, 1920, relating to the Court's Statute, and announced in its *Official Gazette* the reservations placed by it upon its ratification of the Optional Clause.

On October 2, Hussein Khan Ala, Persian delegate to the League, signed the Optional Clause with a qualifying declaration and on October 8, M. Constantin Antoiniade, the Rumanian delegate, signed the Clause with qualifications. Up to Dec. 1, 1930, a total of 46 states had accepted the Optional Clause, with or without reservations, and 34 states had ratified it.

During the Eleventh Assembly of the League of Nations, Cuba refused unanimous consent to the ratification of the revised reservation to the Protocol. This prevented action at that time. On November 26, the Cuban government ratified the Protocol for the Adherence of the United States to the World Court, bringing the total number of ratifications to 32 nations. No country made any objection to this protocol, and ratification by the United States would undoubtedly hasten action on the part of the other governments which had signed but not yet ratified. The Cuban Senate approved the Protocol for the Revision

of the World Court Statute with two reservations. These reservations had to do with two points in the revised statute to which Cuba objected during the Eleventh Assembly in September: the required residence of judges near the World Court, and the method of putting the revised Court Statute into effect. Neither of these reservations, however, affected in any way the entrance of the United States into the Court.

In his message to Congress of Dec. 3, 1930, President Hoover announced that he favored the adherence of the United States to the revised World Court Statute. He submitted the protocols of adherence to the Senate on December 10 but the Foreign Affairs Committee of that body took no action up to the end of the year. See UNITED STATES under *Seventy-first Congress, Second Regular Session*.

WORLD FAIRS. See EXPOSITIONS.

WORLD LEAGUE AGAINST ALCOHOLISM. An organization originated in a conference of the Anti-Saloon League of America in Columbus, Ohio, in 1916 and formally launched in a joint conference of the Canadian Temperance Alliance and the Anti-Saloon League in Washington in 1919. The object of the league, as formulated, was "to attain by the means of education and legislation the total suppression throughout the world of alcoholism, which is the poisoning of body, germ-plasm, mind, conduct, society, produced by the consumption of alcoholic beverages."

The official league membership in 1930 comprised 61 national temperance organizations in 34 of the leading countries of the world. The work is carried on by executive, legal, publicity, and service departments, with offices in Westerville, Ohio; the research department in New York City; the Scientific Temperance Federation in Boston; and the Intercollegiate Prohibition Association in Washington. Branch offices are maintained in London, England; Lausanne, Switzerland; Oslo, Norway; and Tartu, Estonia. In 1930 the presidents of the league were: Miss Anna A. Gordon, Evanston, Ill.; Dr. Robert Hercod, Lausanne, Switzerland; the Rt. Hon. Lief Jones, London, England; and Dr. Howard H. Russell, Westerville, Ohio. The general secretary was Dr. Ernest H. Cherrington.

WORLD RECORDS. See articles on ATHLETICS, etc.

WORLD SERIES. See BASEBALL.

WORMAN, JAMES HENRY. An American educator, editor, and consul, died in Plattsburg, N. Y., Jan. 24, 1930. He was born in Berlin, Germany, Feb. 28, 1845, and was educated at the University of Berlin and at the Sorbonne in Paris. He came to the United States in 1864 and filled an assistant professorship at Knox College until 1867, when he became librarian at Drew Theological Seminary. He was editor of the *Okenango Telegraph*, 1875-76, and associate editor of the *National Repository*, 1876-80. In 1877, soon after the opening of Chautauqua Institution, he became senior professor, founding in 1878 its correspondence system of study. While connected with Chautauqua, he also held professorships at Adelphi College, 1877-82, and Vanderbilt University, 1882-85. DePauw University granted him the degree of Ph.D. in 1882. In 1885 he became editor of the magazine *Saratogian* and two years later, editor-in-chief of *Outing*. He was made American consul at Munich, Germany, in 1899, and in 1902 was consul-general. Two years later he was trans-

ferred to Three Rivers, Canada, serving until 1908.

In 1916 Dr. Worman was appointed acting professor of Spanish at the University of Vermont and in 1917, head of the department, retiring as professor emeritus in 1925.

WORMS. See ENTOMOLOGY, ECONOMIC; ZOLOGY.

WRECKS. See SAFETY AT SEA.

WRESTLING. Of the two rival claimants to the world's professional heavyweight wrestling crown at the end of 1929, Gus Sonnenberg and Richard Shikat, the latter was eliminated in June, 1930, by Jim Londos, of Greece. Londos, whose title was recognized by the New York State Athletic Commission, threw the Hungarian challenger, Ferenc Holuban, at Madison Square Garden, New York, on December 29, after having previously disposed of Gino Garibaldi, of Italy, and others. Oklahoma A. and M. College won the national intercollegiate team title and three of the eight final-round bouts in the National A. A. U. tournament, the other five being taken by the New York Athletic Club. Earl McCready, of Oklahoma A. and M. College, won both the intercollegiate and the national amateur heavyweight titles. Cornell was the Eastern intercollegiate team champion.

WRIGHT, JOSEPH. A British philologist and educator, died in Oxford, Feb. 27, 1930. He was born in Thackley, Yorkshire, Oct. 31, 1855. He entered the University of London, and on graduation in 1878 taught first at Margate, then at Wareham. In 1882 he was appointed assistant instructor at Neuenheim College, Heidelberg; while at Heidelberg he also studied for his Ph.D. degree. In 1891 he became deputy professor, and in 1901 professor, of comparative philology at Oxford, holding this chair until his resignation in 1925. His great work is the *English Dialect Dictionary* (6 vols., 1896-1905), in which there are recorded provincial words and expressions, many of which were passing into disuse.

WÜRTEMBERG, würt'tém-bêrk. A constituent state of the German Republic since November, 1918; formerly a kingdom of the German Empire. Area, 7530 square miles; population, according to the census of 1925, 2,580,235. Chief city, Stuttgart, population 343,048 in 1925.

WYOMING. POPULATION. According to the Fifteenth Census, the population of the State on Apr. 1, 1930, was 225,565. On Jan. 1, 1920, it was 194,402. The largest city is Casper. The capital is Cheyenne.

AGRICULTURE. The following table presents the acreage, production, and value of the principal crops in 1929 and 1930:

| Crop | Year | Acreage | Prod. Bu. | Value |
|-------------|------|-----------|------------|--------------|
| Hay | 1930 | 1,117,000 | 1,465,000* | \$12,943,000 |
| | 1929 | 1,094,000 | 1,577,000* | 19,125,000 |
| Wheat | 1930 | 247,000 | 3,565,000 | 1,762,000 |
| | 1929 | 256,000 | 3,409,000 | 8,034,000 |
| Corn | 1930 | 170,000 | 3,570,000 | 2,392,000 |
| | 1929 | 157,000 | 2,198,000 | 1,868,000 |
| Oats | 1930 | 126,000 | 3,402,000 | 1,225,000 |
| | 1929 | 139,000 | 3,614,000 | 1,843,000 |
| Potatoes | 1930 | 17,000 | 2,550,000 | 1,912,000 |
| | 1929 | 17,000 | 1,784,000 | 2,234,000 |
| Barley | 1930 | 136,000 | 8,382,000 | 1,466,000 |
| | 1929 | 124,000 | 2,976,000 | 1,905,000 |
| Sugar beets | 1930 | 46,000 | 621,000* | ..... |
| | 1929 | 47,000 | 487,000* | 8,495,000 |

* Tons.

Farms in the State numbered 16,066 in 1930 as against 15,512 in 1925 and 15,748 in 1920. The area of irrigated lands totaled 1,233,604 acres in 1929, as against 1,207,982 in 1919.

MINERAL PRODUCTION. Some 95 per cent of the mineral product of the State for 1928, according to value, consisted of fuels, of which the sorts, in their order of importance, were petroleum, coal, natural gas, and gasoline derived from natural gas. The development of these mineral industries was peculiar in that, while the State's natural gas commanded for 1929 the lowest average price, 7½ cents a thousand cubic feet, reported for any State, and while the petroleum output of 1929 averaged about \$1.33 a barrel or but slightly above the average price for the petroleum product of the entire country, nevertheless the production of coal tended to maintain its importance, though the coal product of 1929 commanded an average price of \$2.54 or 76 cents a ton above the national average. Petroleum production in the State fell to 19,190,000 barrels for 1929, from 21,461,000 for 1928; in value, to \$25,700,000 for 1929 (estimated), from \$27,400,000 for 1928. The quantity of coal mined rose to 6,704,790 net tons for 1929, from 6,571,683 for 1928; the value on the contrary fell to \$17,052,000 for 1929, from \$17,363,000 for 1928. The yield of natural gas (figures for 1929 not available) rose to 47,490,000 M cubic feet for 1928, from 43,581,000 M for 1927; in value, to \$3,527,000 for 1928, from \$3,268,800 for 1927. Gasoline was extracted from natural gas to the quantity of 42,861,000 gallons in 1928 and of 44,700,000 in 1929; by value, \$2,775,000 in 1928 and \$3,250,000 in 1929. The entire mineral product of the State was valued at \$52,950,875 for 1928 and of \$56,166,600 for 1927.

The estimated output of gold, silver, and copper from Wyoming mines in 1930 in terms of recovered and recoverable metal was 465 ounces of gold, 125 ounces of silver, and 11,000 pounds of copper, according to the U. S. Bureau of Mines.

FINANCE. State expenditures in the year ended Sept. 30, 1928, as reported by the United States Department of Commerce, were: for maintenance and operation of governmental departments, \$5,297,622 (of which \$2,063,427 was for local education); for interest on debt, \$144,333; for permanent improvements, \$3,198,293; total, \$8,640,248 (of which \$3,781,815 was for highways, \$920,852 being for maintenance and \$2,860,963 for construction). Revenues were \$9,693,985. Of these, property and special taxes formed 14.9 per cent; departmental earnings and compensation to the State for officers' services, 6.8; sales of licenses, 17.9 (including taxes of \$920,839 on sales of gasoline). The funded debt outstanding on Sept. 30, 1928, was \$1,901,000. Net of sinking-fund assets, it was \$1,599,498. On property bearing an assessed valuation of \$441,833,874 were levied in the year State taxes of \$1,728,586.

TRANSPORTATION. The total number of miles of railroad line under operation on Jan. 1, 1930, was 2043.49.

EDUCATION. A formula for the determination of efficiency in the teaching of all public schools and likewise of the part-time classes in agriculture was put into use.

There were enrolled in the public schools, in 1929-30, 54,505 pupils. Of these, 43,341 were in kindergartens or elementary grades; in secondary grades or courses, 11,164. The year's expenditures for public-school education in the State, outlay included, totaled \$7,715,445.

CHARITIES AND CORRECTIONS. The central authority of the State in the care and custody of individuals, the State Board of Charities and Reform, as operating in 1930, was composed of the

Governor, Secretary of State, State Treasurer, State Auditor, and State Superintendent of Public Instruction. It exercised supervision over the State institutions. Under an act of 1929 the Board was charged with the work of home placement and like duties with regard to dependent and neglected children. The Board's members also served as a pardon board and as a prison-labor commission.

POLITICAL AND OTHER EVENTS. The Federal executive order halting the further development of petroleum fields on Federal lands in the West was taken by some interests in Wyoming, as elsewhere, as likely to delay the advance of the region. The subject of withholding the benefits of the Federal public lands in the State was agitated in July at the annual convention of the Wyoming Wool Growers' Association. In Wyoming, as in South Dakota, the authorities noted the upgrowth of a novel method of "rustling" cattle, that of abstracting the animals in motor trucks.

ELECTIONS. Frank C. Emerson, Republican, was reelected Governor on November 4. He was unofficially reported to have received 37,040 votes; Leslie A. Miller, Democratic candidate, 35,909. Former Governor Robert D. Carey, on the Republican ticket, was elected United States Senator, defeating Harry Schwartz, Democrat; the vote was, respectively, 42,873 and 29,928, as unofficially totaled. Vincent Carter was reelected Representative. Republican control of the Legislature in both branches was maintained. Popular vote approved a proposed issue of \$2,800,000 of State bonds for expenditure on highway work, the sum being chiefly requisite to match Federal aid to be rendered the State as authorized by Congress in the three-year programme of contribution to State road building enacted in the spring.

OFFICERS. Governor, Frank C. Emerson; Secretary of State, A. M. Clark; Treasurer, W. H. Edelman; Auditor, Roscoe Alcorn; Attorney-General, W. O. Wilson; Superintendent of Public Instruction, Katharine A. Morton.

JUDICIARY. Supreme Court: Chief Justice, Fred H. Blume; Associate Justices, Ralph Kimball and W. A. Riner.

WYOMING, UNIVERSITY OF. A State institution of higher education in Laramie; founded in 1886. It consists of colleges of liberal arts, agriculture, engineering, education, and a law school. The enrollment for the summer session and for the autumn term of 1930 was 1194. The faculty numbered 150. The income for the year from State and local funds was \$977,761, and from Federal grants for agricultural extension, \$113,541. The library contained 75,351 volumes. President, Arthur Griswold Crane, Ph.D.

X-RAYS. See CHEMISTRY; PHYSICS.

XYLOSE. See CHEMISTRY, INDUSTRIAL.

YACHTING. The defeat of Sir Thomas Lip-ton's *Shamrock V* by the American defender *Enterprise* in the America's Cup races off Newport, R. I., in September was the outstanding event of a year in which American yachting regained much of the prestige lost in 1929. In the first race of the series on September 13, *Enterprise* finished the 30-mile course 2 minutes and 52 seconds ahead of *Shamrock V*. With a ton of ballast removed for the second race on September 15, the *Shamrock* proved somewhat unseaworthy, and Capt. Harold Vanderbilt brought the *Enterprise* over the finish line 9 minutes and 34 seconds ahead of the challenger. In the third race, September 17, the *Shamrock* was disabled when

her main halyard tore out. In the final, on September 18, *Enterprise* broke the record for the course by 3 minutes and 5 seconds, finishing 5 minutes and 44 seconds ahead of *Shamrock V*. The *Enterprise's* time was 3 hours, 10 minutes, and 13 seconds. Although the American yacht was much better sailed, mechanical winches and other contrivances, though quite legitimate, installed in *Enterprise* evoked criticism in both Great Britain and America. Regulations subsequently adopted by the British Yacht Racing Association and the New York Yacht Club, effective Jan. 1, 1931, barred the future use of metal masts and of winches below deck for the trimming of sails and rigging.

The Canada's Cup, premier yachting trophy of the Great Lakes, was retained by the *Thisbe*, sailed by W. P. Barrows of the Rochester Yacht Club, in an exciting series with *Quest*, of Toronto, sailed by Norman Gooderham. The Star class international championship was captured by *Peggy-wee*, sailed by Arthur Knapp Jr., and Newell P. Weed, of the Long Island Sound fleet. Four foreign fleets participated in the races, which were held off Gibson Island in Chesapeake Bay. America secured a leg on the British-American Cup when four American six-meter sloops defeated a similar British fleet off Oyster Bay. The British won the first leg on the cup in Scottish waters two years earlier. The American entrants were *Mars*, sailed by Van S. Merle-Smith; *Cherokee*, Cornelius Shields; *Aphrodite*, Sherman Hoyt; and *Lucie*, Briggs Cunningham. The *Lucie* won the Riviera championship early in the year, while J. B. Shethar's *Ripples* was runnerup for the Scandinavian Gold Cup, retained in Sweden.

The New London-Bermuda trophy and Class B prize was won by the American schooner, *Malay*, sailed by Raymond W. Ferris. The Class A prize went to *Malabar X*, sailed by John G. Alden. Ralph W. Manny, sailing *Blue Streak*, won the Royal Bermuda Yacht Club Trophy. The Gloucester (Mass.) fishing schooner *Gertrude L. Thebaud*, sailed by Capt. Ben Pine and Charley Johnson, defeated the *Bluenose*, captained by Angus Walters, off Gloucester in October, taking the championship of the fishing fleet from Canadian waters for the first time in nine years. American and Bermuda one-design and six-meter sloops raced off Bermuda and in Long Island Sound, dividing the honors. On the N. Y. Yacht Club Cruise the King's Cup race was won by *Andiamo*, W. K. Shaw; the Astor Cup for schooners, by *Pleione*, Joseph V. Santry; Astor Cup for sloops, *Avatar*, Floyd L. Carlisle. In the chief British events, the King's Cup at Cowes was won by *Caread*, Col. J. Gretton; the Fastnet Cup from Cowes, by *Jolie Brise*, R. Somerset; and the Ocean Channel race, by *Spica*.

YAKUTSK REPUBLIC. See SIBERIA.

YALE UNIVERSITY. A nonsectarian institution of higher education in New Haven, Conn.; founded in 1701. The enrollment for the autumn of 1930 was 5914, including 624 who were not candidates for degrees or certificates. Of those working for degrees or certificates, 812 were in the graduate school, 1680 in Yale College, 645 in the Sheffield Scientific School, 849 in the freshman year, 199 in the school of medicine, 258 in the divinity school, 325 in the school of law, 367 in the school of fine arts, 120 in the school of music, 40 in the school of forestry, and 102 in the school of nursing. There were 73 research fellows working on the various foundations. The registration for

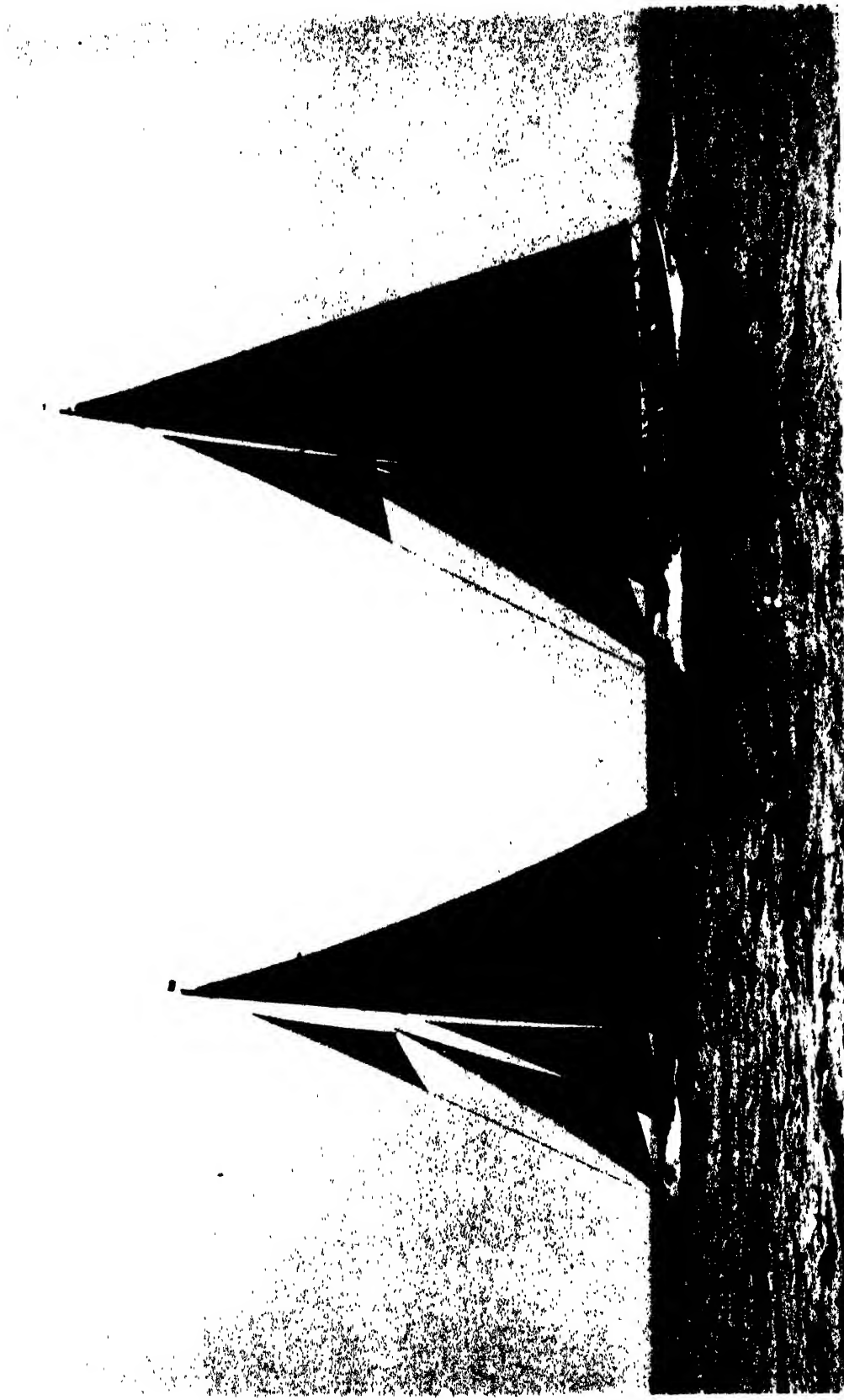


Photo by Edwin Lerick, N. Y.

INTERNATIONAL YACHT RACES OF 1930
"Shamrock" and "Enterprise" After Start of Third Race, "Shamrock" Leading

the summer session of the school of law was 60. The faculty of the university numbered 1351 and included 243 of professorial rank, 74 associate professors, 170 assistant professors, 267 instructors, and 595 assistants. Appointments to the faculty included: Joannes Gregorius Dussier de Barenne, of Utrecht, Holland, Sterling professor of physiology, Eugen Kahn, of Munich, Germany, Sterling professor of psychiatry and mental hygiene; James Harvey Rogers, of the University of Missouri, professor of political economy. Edgar Stevenson Furniss, professor of political economy, was appointed dean of the graduate school to fill the vacancy caused by the retirement of Wilbur Lucius Cross.

The total endowment amounted to \$82,856,840.91, and the income for the year was \$7,878,742.63. The permanent endowment funds were increased by \$12,599,671 during the year, and \$12,610,239 was received for buildings and income for special purposes. Gifts received during the year included: Edward S. Harkness Fund, to enable the university to inaugurate its residential quadrangle plan, \$5,000,000; Sterling Memorial Professorship Funds, establishing five additional professorships and increasing the endowment of the 25 formerly provided, \$2,500,000; Bingham Oceanographic Foundation, the gift of Harry Payne Bingham, \$67,500; Chester D. Pugsley Trust for Conference on International Relations, \$50,000; Henry L. Johnson Memorial Publication Fund, \$45,000; Carnegie Corporation Professorship Fund for a chair in art history \$150,000.

The transfer of the major part of 1,540,000 books to the new Sterling Memorial Library was accomplished between July and October, 1930. Other new buildings which were occupied during the year were the Raleigh Fitkin Memorial (medical and pediatric wards), the Sterling Quadrangle (dormitory), Sterling Law Buildings (dormitory section), Medical and Pediatric Laboratory, Department of University Health, and Institute of Human Relations. Buildings which were under construction at the close of 1930 included residential quadrangles, Clinic, Payne Whitney Gynasium, Graduate School Sterling Quadrangle, and Sterling Hall of Medicine addition.

Some of the projects undertaken by the Institute of Human Relations in its first year of activity included a special study of cases of bankruptcy in New Jersey, New York, and Massachusetts; a comparative study of cases of juvenile delinquency in New Haven, Boston, and Detroit; a preliminary study of human relations in industry; photographic records of young children; and researches in psychology, which embraced studies on the power of suggestion, eye movements, reflexes, etc., and anthropoid research. The library, including departmental libraries, contained 1,983,341 volumes and pamphlets. President, James Rowland Angell, Ph.D., Litt.D., LL.D.

YANAON. See FRENCH INDIA.

YAP. See CAROLINE ISLANDS.

YEMEN. See ARABIA.

YESHIVA COLLEGE. The first college of liberal arts and science in the United States under Jewish auspices, for men only; founded in New York City in 1896 as the Rabbi Isaac Elchanan Theological Seminary and by amendment to the charter known since 1928 as the Rabbi Isaac Elchanan Theological Seminary and Yeshiva College. The enrollment in 1930 was as follows: Senior seminary, 117; junior seminary, 206; teachers' institute, 136; preparatory department,

236; college, 81. The faculty numbered 43. The income for the year was \$143,460. Additions of about \$51,500 were made to the endowment fund. The library contained 22,000 volumes and a collection of manuscripts. President of the faculty, Bernard Revel.

YORKTOWN, VIRGINIA, ANNIVERSARY CELEBRATION. See CELEBRATIONS.

YOUNG MEN'S CHRISTIAN ASSOCIATION. An educational, social, physical, and spiritual movement for men and boys, found in every civilized nation of the world. It originated in London in 1844, then spread to the United States in 1851. In 1930 there were throughout the world 10,397 associations, with 1,680,841 members, of whom 557,127 were boys under 18; 6955 employed officers; and net property and funds amounting to \$275,833,301. The local associations in the United States numbered 1442, with 1,034,019 members, of whom 231,234 were boys 12 to 17 years of age; 72,402 directors and committee men; 4861 employed officers; and total net property and funds paid in amounting to \$230,063,700. During the year 998,361 men and boys participated in physical training activities; 74,432 were enrolled in educational courses, including lectures, discussions, and regular day and evening classes; 98,149 attended summer camps; 90,895 were assisted in securing employment; and 209,084 were enrolled in Bible classes, while a total of 4,511,000 attended religious meetings.

Headquarters of the National Council of the Young Men's Christian Associations of the United States of America are at 347 Madison Avenue, New York City. The officers in 1930 were: President, Francis S. Harmon; chairman of the general board, Adrian Lyon; treasurer, Walter W. Head; and general secretary, Fred W. Ramsey. The World's Alliance of Young Men's Christian Associations has its headquarters at the office of its president, John R. Mott, 230 Park Avenue, New York City, and also at the office of its general secretary, W. W. Gethman, 3 Rue General Dufour, Geneva, Switzerland.

YOUNG PLAN. See GERMANY under *History*; REPARATIONS.

YOUNG WOMEN'S CHRISTIAN ASSOCIATION. An organization and movement of which the purpose is to advance the physical, social, intellectual, and spiritual interests of young women; to promote growth in Christian character and service; and to be a social force for the extension of the Kingdom of God. Its national organization holds a biennial convention to which all affiliated associations send delegates. The 1930 convention was held April 25 to May 1 in Detroit, Mich. The national executive organization is known as the National Board of the Young Women's Christian Associations. To it is entrusted the work of the national body during the interim of conventions. The officers of the National Board in 1930 were: Mrs. Robert E. Speer, New York City, president; Mrs. John French, Greenwich, Conn., chairman executive committee; Mrs. John Huston Finley, New York City, first vice-president; Mrs. Howard Gillespie Myers, New York City, second vice-president; Mrs. George B. Ford, New York City, third vice-president; Miss Katharine Lambert, New York City, secretary; Mrs. Samuel Murtland, New York City, treasurer; Mrs. George W. Davison, Greenwich, Conn., assistant treasurer.

In 1929 there were 1145 associations in the United States, of which 965 were affiliated with

the national board and 180 were as yet unaffiliated. Of these associations, 265 were in cities, 142 in towns, 47 in rural communities (with 10 more in process of organization), and 691 were student associations on college and university campuses. There were also 65 branches for colored girls and women, and 56 International Institutes, centres for foreign-born girls and women. The total Y. W. C. A. membership in the United States was 603,876.

The value of real estate owned by the Y. W. C. A. in the United States was \$71,749,902, while 175 associations reported a total endowment of \$12,559,328. There were 3755 professional workers employed in the movement, of which 3473 were in local work, 189 were on the national staff, and 93 were serving in foreign countries. Working as volunteers, as board and committee members, in 1929 were 55,000 women.

The National Board received in 1929, from contribution sources and quota payments, \$1,108,603; from income on endowment, \$237,233; and from income-producing sources, \$1,007,422. Gross-expenditures were \$2,337,236. The endowment fund as of Dec. 31, 1929, amounted to \$4,376,218; the approximate value of the National Board's property was given as \$4,450,290. Headquarters are at 600 Lexington Avenue, New York City, with Miss Anna V. Rice as general secretary and Miss Emma P. Hirth, associate secretary.

YUGOSLAVIA. See **JUGOSLAVIA**.

YUKON, yŏŏ'kŏn. A territory of the Dominion of Canada; bounded on the west by Alaska and stretching from British Columbia to the Arctic Ocean; constituted a separate political unit in 1898. Area, 207,076 square miles; population, 4157, according to the census of 1921; estimated June 1, 1930, at 3700. Dawson, the capital and largest town, had 975 inhabitants in 1921. Mining is the principal occupation, and the chief minerals are gold, copper, silver, lead, and coal. The output of gold in the year ending Mar. 31, 1929, was \$654,672. Silver production for the calendar year 1928 totaled \$2,000,000. Revenues for 1929 were \$220,268 and expenditures, \$211,232. At the head of the government is a gold commissioner and a territorial council of three elected members. Gold Commissioner in 1930, G. I. MacLean.

ZAMBONINITE. See **MINERALOGY**.

ZANZIBAR PROTECTORATE. A British protectorate off the coast of Tanganyika in East Africa, comprising the islands of Zanzibar, Pemba, and adjacent small islands. The area of the island of Zanzibar is 640 square miles and of Pemba, 380 square miles; their respective populations, at the census of 1924, were 128,099 and 88,691. In 1921 the protectorate contained 270 Europeans, mostly English, and 12,000 British Indian subjects, who controlled most of the trade of East Africa. Zanzibar, the capital, had 38,700 inhabitants. The protectorate is the world's chief source of cloves, the annual production approximating 19,343,000 pounds.

ZAUDITU (JUDITH). Empress of Ethiopia, died in Addis Ababa, Apr. 2, 1930. She was born in 1876, daughter of Menelek II, and was married at the age of six to Ras Sahla Selasse, aged 12 years and son of John IV. In the marriage contract it was stipulated that Zauditu's father, Menelek, then Ras of Shoa, should succeed John on the throne and that his son-in-law, Sahla Selasse, should succeed him. Zauditu's dowry was the kingdom of Wollo, and she and her husband

were known as "queen" and "king." Upon Sahla Selasse's death in 1901 Zauditu was married to Dadjasmatch Ube who divorced her soon after. Her third husband was Ras Gugsa who also divorced her in 1909. Zauditu succeeded to the throne in 1916 on the deposition of her nephew, Lij Yasu, who during his three-year reign had openly acknowledged the overlordship of the Turkish Sultan as Caliph and had attempted to overthrow the National Church of Ethiopia. She was crowned empress Feb. 11, 1917, and Ras Taffari Makonnen, a distant cousin, was proclaimed Regent and her heir and successor. After Taffari's coronation as King in 1928, her rule was only a nominal one. See **ETHIOPIA**.

ZINC. Low industrial demand throughout the world in 1930 was reflected in the zinc industry in the United States, according to the U. S. Bureau of Mines. Production of primary zinc from domestic and foreign sources and apparent deliveries for domestic consumption were lower than in any year since 1922. Stocks of metallic zinc at smelters and at electrolytic refineries were nearly doubled during 1930 and at the end of the year they were the highest on record. In 1930 the exports of slab zinc, which have declined sharply and, with only one exception, steadily since 1925, were less than one-half of exports in 1929 and were only slightly more than 10 per cent of exports in 1925.

The output of primary metallic zinc from domestic ores in 1930, was about 491,100 tons and that from foreign ores was about 8200 tons, a total of 499,300 tons. In comparison with 612,136 tons from domestic ores and 13,311 tons from foreign ores, a total of 625,447 tons in 1929, the decrease in total primary production for 1930 amounted to 20 per cent. In addition to the output of primary zinc, about 34,800 tons of redistilled secondary zinc was produced, as compared with 47,348 tons in 1929. Thus the total supply of distilled and electrolytic zinc in 1930 was about 534,100 tons, composed of 161,500 tons of high grade, 21,600 tons of intermediate, 94,600 tons of select and brass special, and 250,400 tons of prime western zinc. Of the total output of primary zinc in 1930, 132,000 tons was electrolytic zinc. Of the primary retort output, 102,000 tons was produced in Pennsylvania, 94,000 tons in Illinois, 80,700 tons in Oklahoma, and the remainder in Arkansas, Indiana, Kansas, Texas, and West Virginia.

A total number of about 107,100 retorts was reported at the 21 zinc smelters that operated during all or a part of the year. Of that number, about 38,000 were reported in operation at the end of November. Only a little more than one-third of retort capacity at the 21 smelters, or about 37,700 retorts, was estimated to be in operation at the end of the year. The average monthly price of prime western zinc at St. Louis was 5.24 cents a pound in January. From this figure it declined steadily to 4.33 cents a pound in July, rose to 4.36 cents in August and dropped again to a low for the year of 4.06 cents in October. The average for December was about 4.09 cents and on December 29 the price was 4.12½ cents. The average quoted price for 1929 was 6.49 cents a pound. The average selling price of all grades of zinc in 1929, was 6.6 cents a pound.

ZIONISM. See **JEWS**; **PALESTINE**.

ZONING. See **CITY** and **REGIONAL PLANNING**.

ZOOLOGY. The American Society of Zoologists and the American Society of Naturalists met at

Cleveland, Ohio, in affiliation with the American Association for the Advancement of Science, in the week of Dec. 29 to Jan. 3, 1931. H. V. Neal was president of the Zoölogists and A. F. Blakeslee of the Naturalists. The eleventh International Zoölogical Congress met at Padua, Italy, from September 3 to 11, under the presidency of Paolo Enriques.

OCEANOGRAPHIC INSTITUTE. After exhaustive investigation and in a voluminous report, a committee of the National Academy of Sciences recommended the establishment of an Oceanographic Institute to be located at Woods Hole, Mass., and financed by the Rockefeller Foundation. Enough funds were available to supply all of the necessary equipment, including residence and laboratory buildings, and a sea-going vessel, fitted to carry on investigations in any sea and at any depth. The Institute is an independent organization, but proposed to cooperate with universities and other research institutions in all phases of oceanographic work. Woods Hole was chosen as the location partly because of the proximity of the Marine Biological Laboratory and the laboratory of the U. S. Bureau of Fisheries, and partly because from it there is easy access to an unusually wide variety of oceanic conditions. It was expected that work in the Institute would begin in the summer of 1931. Dr. H. B. Bigelow was Director.

William Beebe, who had done under-water investigations with the aid of a diving helmet, had more recently (*Nature*, 126, p. 220) developed an apparatus in which he was able to descend to 1426 feet. The machine is a steel sphere 57.3 inches in diameter and $1\frac{1}{2}$ inches thick, with a 6-inch window of quartz glass. Decayed meat hanging in a bag outside the window served as bait and the whole was illuminated by a searchlight.

While no biologist doubts that life on the earth has reached its present status through an evolutionary process, there was still much difference of opinion as to the mode of origin of new species. Some consider it most probable that they have arisen through mutations, i.e. the sudden appearance of changes of specific value which are heritable and give rise in one generation to individuals differing specifically from their immediate ancestors. Work in genetics has shown that such mutations are constantly appearing under laboratory conditions and that they are heritable and constant. Fruit flies, under treatment with X-rays and with radium emanations (see YEAR BOOKS for 1927 and 1928) show mutations, in some cases exactly like those appearing spontaneously in laboratory cultures, though in considerably greater proportionate numbers than in the untreated animals.

The question then arises whether, if under laboratory conditions radiations produce mutations, naturally appearing mutations may not be the result of the action of normal earth radiations. If so, may not the answer to the problem of the origin of species be that mutations, arising as the result of the action of radioactive earth agencies, are the materials from which species are built. Babcock and Collins (*Proc. Acad. Nat. Sci.*, 15, p. 623) tested this question by exposing fruit flies in an earth tunnel where radioactive materials were present in considerable abundance and found that proportionately more mutations appeared here than

in the control cultures kept in the laboratory, indicating that the expected changes actually had taken place.

Muller (*Am. Nat.*, 64, p. 220) stated that, while it is absolutely certain that the mutations artificially produced are exactly the same as those appearing naturally, a comparison of the strength of natural radioactive emanations with those he used in producing artificial mutations showed that the former, in order to produce the observed amount of mutations, would have to have been 1000 times their present ascertained strength. It may be that some substance in the protoplasm itself may have radioactivity, but so far as can be seen, the radioactivity of the earth can be responsible for only a part of natural mutations.

That the effect on the chromosome is to produce a "point mutation," and not a general "wrecking" of the chromosome is shown by the fact that it is possible to reverse the action so as to recover the original character, which would not be the case if the chromosome were injured. Hersh, Karrer, and Loomis (*Am. Nat.*, 64, p. 552) experimented on fruit flies with sound waves of high frequency to determine if they would have any effect comparable to radioactive substances. While the results were inconclusive, it seemed certain they would not.

Dobrovolskaia-Zavadskaja (*Biol. Reviews*, 4, p. 327) achieved through nice results quite different from most workers in this field. After a critical examination of the literature and a description of her own experiments, she concluded that X-rays cannot produce mutations. Where mutations follow after X-ray treatment, it is because there are in any animal species, a very few individuals who have a definite predisposition to change and the treatment encourages these but is not in itself the cause of the change. The hypothesis that species are stable but have a few potentially changeable individuals, she considered the nearest approach to an explanation for the origin of species that can be made with our present information.

It has repeatedly been stated in earlier YEAR BOOKS, that present day zoölogy is undergoing its greatest development along experimental lines, and morphology, or study of structure, has suffered a corresponding decline. This supplanting of morphology by experiment repeats in large measure an earlier supplanting of taxonomy by morphology. Some zoölogists believe that the reaction against taxonomy (the classification of animals) went too far and that there is a need for a return to it. The presidential address before the Section of Zoölogy at the British Association for the Advancement of Science at Bristol had the title "The Taxonomic Outlook" (*Nature*, 126, p. 440), President Calman asserting that "if there is any truth in the theory of evolution it is obvious that function and habits have an evolutionary history behind them, but it is no less obvious that this history has not been independent of the organisms that display them."

EUGENICS. The English Eugenics Society received during the year a bequest from the estate of Henry Twitchin, of between £70,000 and £80,000, the income to be used to further the work of the Society. The Galton lecture for 1930 was given in England by Professor S. J. Holmes, of the University of California. He thought (*Eugenics Review*, 22, p. 7) that, ow-

ing to advances in medical science and social assistance for defectives, natural selection on physical grounds plays little part in human societies, but that the intelligence quotient has great importance. A factor operating against racial improvement is the differential birth rate which tends to increase the numbers of the less desirable elements of the population.

Pearl (*Scientia*, 47, p. 175) held that in experiments designed to show the action of natural selection as a race-modifying agency the following proofs are essential. 1. Proof of somatic differences between survivors and eliminated. 2. Proof of genetic differences between them. 3. Proof of age of survivors, since if past the reproductive age their survival cannot affect the race. 4. Proof that the race has altered genetically. 5. Proof that the race has altered somatically. Up to now, only the first of these proofs has been taken into consideration.

The reputed effect of alcohol on the heredity of animals is a question of sufficient importance to attract a good deal of attention, and the balance of evidence to date has indicated that, whatever may be said about the effects of alcohol on the individual, there is no reason to think that its effects are transmitted to descendants. Hanson and Cooper made a final report (*Jour. Exp. Zool.*, 56, p. 369) on learning ability in white rats after prolonged alcoholic treatment. Their results, carefully treated by statistical methods, showed that an acquired tolerance for alcohol repeated for ten generations, does not impress itself on the germ cell. In each generation the treatment causes a falling off in the growth curve, but this is not inherited.

PROTOZOA. Ludwig (*Zool. Anzeiger*, 92, p. 33) showed that in accordance with rules of zoological nomenclature the spelling of the common protozoön should be *Paramecium*, and gave diagnoses of the different species. Bullington (*Jour. Exp. Zool.*, 56, p. 423) reported that in the characteristic spiral mode of swimming of ciliates there is in each species a constant tendency to turn either to the right or to the left. In each case, the contrary direction may be taken, but this requires more attention to maintain and the animal behaves as if it were a learning process. In backward swimming, all of the species he studied spiralled to the left. This direction of spiraling is a characteristic of taxonomic importance.

Pascher (*Biol. Zent.*, 50, p. 1) described an amoeba which he named *A. stigmatica*, which has zoöchlorellæ in its protoplasm and a red stigma. He was unable to study any division stages, but did get encystment and in all cases the stigma and zoöchlorellæ were carried through the encystment. The animal is phototropic (it is not stated whether positive or negative), this probably being due to the contained zoöchlorellæ and the stigma. Beers (*Jour. Exp. Zool.*, 56, p. 193) discussed the significance of encystment in *Didinium*. If the animal is fed an inadequate diet encystment follows, but when revived from this encystment by transfer to a fresh hay infusion and again subjected to inadequate food, it showed an increase in vitality. From this it was concluded that encystment may act to increase vitality after a previous period of depression due to insufficient food. Encystment is not a rejuvenation process since an intrinsic life cycle terminating in senescence is absent in this ciliate.

Hopkins (*Jour. Morph.*, 48, p. 371) found that the rate of locomotion of amoeba is dependent on the nature of the substratum, and on the relation of the Na., K., Li., and Rb. cations to the Ca. and Sr. present. If either series is present in high concentration without adequate antagonistic action of the other, movement ceases. Darby (*Jour. Exp. Biol.*, 7, p. 132) found that the division rate in protozoa can be varied by varying the pH concentration of the medium, and when cultures are maintained under optimum conditions encystment and conjugation can take place at any age. Under these conditions neither endomixis nor conjugation has any effect on the division rate.

Raffel (*Biol. Bull.*, 58, p. 293) found that conjugation affected the division rate in *Paramecium*, the ex-conjugants in his experiments having a lowered rate, which character was transmitted to their descendants. Faure-Fremiet (*Biol. Bull.*, 58, p. 28) considers that the development of the colonial protozoön *Zoothamnium alternans* in giving rise to the colonial adult condition is intermediate between the formation of a group of free cells and that of a multicellular animal.

PORIFERA. Wilson earlier showed that sponges would regenerate from fragments even if these were small enough to pass through the meshes of fine wire netting. Further study by Wilson and Penney (*Jour. Exp. Zool.*, 56, p. 73) stated that in general this is a case of regeneration from comparatively unspecialized cells and that no dedifferentiation occurs. Collar cells, however, are not a product of regeneration and are carried over from the old tissues. This regeneration process then (in *Microciona*) is essentially the same as gemmule development, complicated by the carrying over of the parental collar cells.

PLATYHELMINTHES. Sonneborn (*Jour. Exp. Zool.*, 57, p. 57) studied asexual reproduction in *Stenostomum*, a turbellarian which reproduces by transverse division. It has been assumed that the two products of division are anatomically and physiologically equivalent to one another, but Sonneborn found that the line of the successive anterior products of division show a gradual senescence and final death while the successive posterior products have the characteristics of newly produced young. The anterior products of division, therefore, may properly be regarded as an individual giving off young from the posterior end. Shearer (*Jour. Exp. Biol.*, 7, p. 260) disagreed with Child's conclusions concerning metabolic gradients in *Planaria* (see earlier YEAR BOOKS), and also with reference to their application to other animals. Respiration, for example, is not stronger in the anterior than in the posterior end of insects, and in vertebrates the liver respiration is much greater than that of the brain.

INSECTS. Shull (*Zeit. f. induktive Abstamm. u. Vererbungs.*, 55, p. 108) reported on results of experiments on the effect of light and temperature in determining the production of parthenogenetic and gametic females in aphids. High temperatures (24° C. and above) applied to wingless aphids tend to make the offspring parthenogenetic females, low temperatures (16° C. or below) tend to make them gametic females. Continuous light applied to winged aphids tends to make their offspring parthenogenetic. Alternating light and darkness tend to make them gametic. Determination in these cases is prenatal.

If prenatal development took place under light conditions tending to produce parthenogenesis and temperature conditions tending to produce gamic, development proceeded more slowly than when both prenatal conditions acted in the same direction.

Gerould (*Jour. Morph.*, 48, p. 385) discussed a phenomenon which he reported was first observed by Malpighi (1628-1694), that in insects there is a periodical reversal in the direction of flow of blood in the heart, varying in its rhythm at different times in the life cycle of the animal. A similar rhythm has been observed in ascidians where it has been explained as due to alternate actions of nerve centres, but Gerould did not think that this explanation applies to the insect. Another explanation, ascribing the reversal to back pressure on the blood stream, cannot apply for it will take place in excised hearts. A common text-book statement is that the insect heart is composed of a series of chambers separated by valves, but Gerould denied this, pointing out that while there may be valves in the ostia, preventing a backward flow into the pericardium, there are none in the heart itself. The blood flow is set up by a peristaltic contraction of the wall of the heart.

Shipitzina (*Bull. Biol. Inst. Perm University*, 7, No. 4) showed that *Anopheles* larvae, which feed by filtering water through their highly specialized mouth parts, are not dependent merely on the larger particles in the water but may take in and retain even colloidal substances. Meyer (*Zcit. f. vergl. Phys.*, 11) disproved the commonly held notion that the pigments of insect bodies are obtained from plants by showing that the green pigment in hemolymph may be formed as an oxidation product of protein. Beeson (*Nature*, 126, p. 12) found a definite reaction to smell in the beetle *Hoplocerambyx* where the insects came in great numbers to newly felled trees of *Shorea robusta*, coming upwind in remarkably straight courses toward their objective point. When there was an appreciable wind blowing, none came from windward. This trait was utilized in trapping these beetles in protective work against their injurious activities.

Sachorov (*Ecology*, 11, p. 505) reported that cold resistance in insects depends on a lowering of water, and increasing of fat, content. Neave (*Ecology*, 10, p. 568) described peculiar migration phenomena in May-fly nymphs. Five to ten weeks before their final metamorphosis they migrate from the more permanent waters into temporary overflow areas and streams.

Weyer (*Zool. Anz.*, 90, p. 177) found that germ glands are present in worker and soldier termites and that they differ from the sexually mature females in that there are fewer follicles as well as fewer ova. In some males of these castes mature sperm were found. Concerted rhythmical activities of insects have often been observed, generally in connection with the production of sounds. Ittis (*Zool. Anz.*, 90, p. 58) described a peculiar rhythmical movement in the larvae of *Lophyrus sertifer*, a tenthredinid fly, occurring in large numbers on the leaves of a pine tree. At intervals of three to five seconds they would bend the anterior end of their bodies backward in perfect unison. This action was entirely independent of any observable external stimulus such as wind movements or motions of the observer. Ittis called it an autonomous group movement due to some internal stimulus.

Tanner (*Science*, 72, p. 560) described synchronous pumping movements in plant lice, which go on even if one is isolated from the rest. The movement is synchronous in all members of a single colony, but not with that of any other colony. Wigglesworth (*Proc. Royal Soc.*, London, 106, p. 230) proposed a new theory of insect respiration. He believed that the fine tracheoles contain water and are not filled with air, and their walls are semipermeable with respect to lactic acid. This water will be drawn along the tracheoles by hydrostatic pressure and the osmotic pressure in the tissues. When, in consequence of activity, lactic acid is in excess in the tissues, the water is absorbed and air passes down into the tracheoles.

The Japanese beetle has in recent years presented a serious economic problem in New Jersey, as it feeds on a wide variety of plants and control measures are difficult to apply. Glaser and Fox (*Science*, 71, p. 16) reported that in a limited locality in New Jersey, these insects are parasitized by a nematode worm, described as a new genus and species under the name of *Neomplectana glasceri*, which is fatal to infected insects. It is hoped that this worm may prove to be an efficient control for the beetles. A later report (*Science*, 72, Suppl. Dec. 19) states that a small hymenopterous parasite, which after ten years of experiment has been successfully reared and proves to be of much aid in the fight against the beetle, lives and feeds on the wild carrot, a plant which for years has been a much hated pest in meadows.

A novel application of economic entomology is the use of fly larvae in the treatment of osteomyelitis. During the World War Dr. N. S. Baer noted cases where much neglected wounds, which were swarming with fly larvae, healed with great rapidity, apparently due to the cleansing action of the larvae, feeding on the decaying tissues. Later he tried these larvae as above mentioned, with remarkable success. The U. S. Department of Agriculture was actively engaged in propagating species of flies which may be useful for this purpose. See SURGERY, PROGRESS OF.

During the year enormous swarms of locusts (grasshoppers) occurred, especially in the Palestine region. Uvarov (*Nature*, 126, p. 706) stated that there are two phases of this insect, a solitary and a gregarious, the former quite harmless, the latter often very destructive. The two differ in structure, color, and habits. If reared singly, the insects develop into the solitary form, if reared under crowded conditions into the gregarious. Adequate preventive measures can be developed only when more is known of the conditions governing the transformation from one to the other phase. A commission was appointed by the British Government to study this problem.

ARACHNIDA. Bristowe (*Ann. and Mag. Nat. Hist.*, 6, p. 334) discussed the mode of origin of spiders' webs. Originally, he thought, the purpose of the web was as a covering for egg masses, but secondarily became employed for catching insects.

MOLLUSCA. Butcher (*Biol. Bull.*, 59, p. 154) studied the development of the eyes in the scallop, *Pecten*, where they are arranged around the margin of the mantle. As the animal grows and the increase in size of the mantle separates eyes already formed, others will develop in the spaces between them. Eyes will regenerate

if cut away, and "anlagēn" of eyes, if transplanted to other localities, will develop there. They are, therefore, self differentiating tissues. Baker (*Ecology*, 11, p. 489) studied the distribution of the North American mollusca as affected by the Glacial period and concluded that following the recession they populated the lakes. Under these new environmental conditions they changed rapidly in external form and to a certain extent internally as well, giving rise to ecological or environmental varieties and species. Ankel (*Zool. Anz.*, 89, p. 129) found in the egg capsules of *Natica catenata* an average of 50 eggs would be laid, but only three or four would develop. Those which develop have typical cleavage; those which do not develop have atypical. He was unable to explain this condition.

The U. S. Bureau of Fisheries laboratory at Fairport, Iowa, had for one of its major problems how to increase the number of fresh water clams from whose shells pearl buttons are made. Normally, the young clams attach themselves to fishes, living there for some time as parasites, and a part of the problem was to secure as great an infection as possible. It was announced during the year, that it had been found possible to rear these larvæ on artificial culture media and thus secure much more efficient results than followed upon the most successful of the experiments on infection of fish.

FISHES. Carter and Beadle (*Jour. Linnean Soc.*, 37, p. 197) described the nesting habits of *Lepidosiren paradoxa*. The fish burrows down through the mud and into the clay which underlies the mud. This latter layer is impervious to water, hence this part of the burrow is full of water which protects the fish from drying. There may be one or several plugs to the burrow. Another fish, *Symbranchus marmoratus*, though not related to *Lepidosiren*, builds similar burrows, which it uses for estivation. The breeding nest is a nearly horizontal burrow with a nest lining of leaves and grass. The male guards the eggs. Both of the above fish will grasp firmly a stick thrust into the burrow and can be drawn out without loosing their hold.

AMPHIBIA. Witschi (*Jour. Exp. Zool.*, 56, p. 149) recorded observations on the European frog *Rana temporaria*. According to his interpretation, in a narrow region running through southern Germany, west into France, and east into Russia, which was not covered by ice during the Glacial Epoch, there are descendants of the original amphibian fauna which inhabited this region before Glacial times. In these is found a tendency toward hermaphroditism. North and south of the above mentioned area are "North German" and "Pre-Alpine" regions where there are semi-differentiated sex races and still farther north and south are the "Baltic" and the "Alpine" regions where differentiation is complete. He thinks that these steps represent stages in orthogenetic development from the hermaphroditic to the separate sexed, the process being somewhat influenced by temperature conditions.

Parker (*Proc. Nat. Acad. Sci.*, 16, p. 395) found that as compared with flat-fish, tree frogs have a very limited ability to develop a resemblance to any mottling of their background. Figge (*Jour. Exp. Zool.*, 56, p. 241) studied the question why some amphibians, e.g. *Neoturus*, do not metamorphose. Dissection showed

that the sixth aortic arch, which in other amphibians carries blood to the lungs, is absent in this amphibian and this led to the conclusion that since the lung gets no impure blood it does not become functional. This conclusion was strengthened by the results of experiments on *Ambystoma*, where, when the ventral part of the sixth arch is ligated, metamorphosis does not take place.

REPTILIA. Notes on the venom of the Gila Monster of the southwestern United States, the only poisonous lizard known, are given by Arrington (*Bull. Antivenin Inst. of America*, 4, p. 29). Two species occur in the above localities, *Heloderma suspectum* and *H. horridum*. The venom is not a specialized substance as in most snakes, but is mixed with the saliva, both being secreted by the submaxillary gland. The reptile strikes laterally with great force and accuracy and the teeth are shut in a "bull-dog" grip which it is impossible to loosen. Authentic cases of death solely from the venom are not known, where death has resulted it probably occurred from blood poisoning or other complication. The mouth of the reptile swarms with bacteria, and infection follows the bite. No anti-venom has yet been developed, the best remedy being thorough sterilization of the wound, and injection of potassium permanganate.

AVES. It is generally believed that the passenger pigeon is extinct in the United States, a considerable reward offered some years ago for the discovery of either adult or nest never having been claimed. Hadley (*Science*, 71, p. 187) described several observations which indicated that possibly some of these birds were still living in northern Michigan. Van Oordt and Junge (*Zool. Anz.*, 91, p. 1) experimented on the effects of castration on the Laughing Gull in which a definite sequence of colors appears in feathers, beak and leg, the first adult coloration appearing two years after the animal hatches. Males that were entirely castrated failed to develop the full summer coloration, but retained the color of the immature male. If only partially castrated, the summer color will develop but the beak and feet are in this respect intermediate between the normal and the fully castrated.

MAMMALIA. In a symposium conducted by the American Society of Mammalogists, in New York City (*Jour. of Mammalogy*, 11, p. 325) it was stated that at present the coyote was the most destructive of all predatory mammals not only because it kills other animals, but also because in some parts of the western United States it has spread rabies among human beings as well as among the lower animals. It seemed, however, to be the general consensus of the discussion that by keeping down the number of rodents which would do immense damage to farmers' crops the coyote in large measure atones for the damage it does and that no protective measures thus far devised sufficiently discriminate between the coyote and other carnivorous animals. See ENTOMOLOGY, ECONOMIC.

ZUIDER ZEE. See RECLAMATION.

ZULULAND, zool'loo-länd. A portion of the Province of Natal in the Union of South Africa, to which it was annexed Dec. 30, 1897. Area, 10,427 square miles; population in 1911, 219,606. There are extensive sugar and tea plantations. See SOUTH AFRICA, UNION OF, for data on Natal.

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